

UNIVERSITY OF WASHINGTON GENERAL CATALOG 2014–2016

Version 0.5

Undergraduate Study

Graduate Study

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ABOUT THE UNIVERSITY OF WASHINGTON

Founded in 1861, the University of Washington is one of the oldest state-assisted institutions of higher education on the Pacific coast. From its original site on a 10-acre tract of wooded wilderness that is now located in downtown Seattle, the campus has grown to comprise 703 acres of trees, landscape, and buildings. Located between the shores of Lake Washington and Lake Union, it is in a residential section of the city that long has been considered one of the most attractive in the nation. Two additional campuses, one south of Seattle in Tacoma, and one north in Bothell, were opened in 1990.

Enrollment at the University in autumn quarter 2014 was more than 54,000, including its campuses in Bothell and Tacoma, of which 39,000 were undergraduates and the balance were in professional and graduate programs. Seventy-five percent of the undergraduates enter as freshmen from Washington high schools or as transfer students from Washington community colleges or other colleges and universities in the state. The grade-point average for the regularly admitted freshman class entering in autumn quarter 2014 was 3.75. In 2014, the teaching faculty of the University numbered nearly 4,600 members.

ROLE AND MISSION OF THE UNIVERSITY

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

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

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

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

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

BR, February 1981; revised February 1998; December 2001

NON-DISCRIMINATION POLICY

The University of Washington reaffirms its policy of equal opportunity regardless of race, color, creed, religion, national origin, sex, sexual orientation, age, marital status, disability, or status as a disabled veteran or Vietnam era veteran. This policy applies to all programs and facilities including, but not limited to, admissions, educational programs, employment, and patient and hospital services. Any discriminatory action can be a cause for disciplinary action. Discrimination is prohibited by Presidential Executive Order 11246 as amended; Washington State Gubernatorial Executive Orders 89-01 and 93-07; Titles VI and VII of the Civil Rights Act of 1964; Washington State Law Against Discrimination RCW 49.60; Title IX of the Education Amendments of 1972; State of Washington Gender Equity in Higher Education Act of 1989; Sections 503 and 504 of the Rehabilitation Act of 1973; Americans with Disabilities Act of 1990; Age Discrimination in Employment Act of 1967 as amended; Age Discrimination Act of 1975; Vietnam Era Veterans' Readjustment Act of 1972 as

amended; other federal and state statutes, regulations; and University policy. Coordination of the compliance efforts of the University of Washington with respect to all of these laws and regulations is provided by the Equal Opportunity Office, Box 354560, 4045 Brooklyn Avenue Northeast, Seattle, WA 98195, 206-543-1830, eoaa@uw.edu.

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

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

ACCREDITATION

The University of Washington is accredited by the Northwest Association of Schools and Colleges and is a member of the Association of American Universities. Individual schools and colleges are members of the various accrediting association in their respective fields.

Currently enrolled or prospective students should contact the Office of the Registrar to review accreditation documents for the University and the respective departments to review programmatic accreditation documents.

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KEY TO SYMBOLS AND ABBREVIATIONS

COURSE DESCRIPTIONS

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

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

COURSE NUMBERS

100–299 Lower-division courses primarily for freshmen and sophomores.

300–499 Upper-division courses primarily for juniors, seniors, and postbaccalaureate (fifth-year) students. Graduate students may enroll in 300- and 400-level courses. When acceptable to the major department and the Graduate School, approved 400-level courses may be applied as graduate credit in the major field and approved 300-level courses may be applied in the supporting field(s).

500- Restricted to graduate students. (Courses numbered in the 500 and 600 series with a P before the course title denote professional courses for students in the schools of Dentistry and Medicine, and such courses may not be applied as graduate credit in the Graduate School.) Undergraduate, postbaccalaureate, and nonmatriculated students who wish to register for 500-level courses must obtain permission from the instructor of the class, departmental Chair, or other designated person.

Graduate School-restricted courses

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

- **(PREFIX) 600 Independent Study or Research (*)**

Individual readings or study, including independent study in preparation for doctoral examinations, research, etc. *Prerequisite:* permission of Supervisory Committee or graduate program advisor.

- **(PREFIX) 600 Internship (3–9, max. 9)**

Internship required of students in a graduate degree program. *Prerequisite:* permission of Supervisory Committee chair or graduate program advisor.

- **(PREFIX) 700 Master's Theses (*)**

Research for the master's thesis, including research preparatory or related thereto. Limited to premaster graduate students (i.e., those who have not yet completed the master's degree in their major field at the University of Washington). *Prerequisite:* permission of Supervisory Committee or graduate program advisor.

- **(PREFIX) 750 Internship (*)**

Internship required of all graduate students in the Doctor of Arts degree program.

- **(PREFIX) 800 Doctoral Dissertation (*)**

Research for the doctoral dissertation and research preparatory or related thereto. Limited to graduate students who have completed the master's degree or the equivalent, or Candidate-level graduate students. Premaster students initiating doctoral dissertation research should register for 600. *Prerequisite:* permission of Supervisory Committee or graduate program advisor.

CREDIT DESIGNATION

- **ART 100 (5)** 5 credits are received for the quarter.
- **ART 100 (5-)** Course may take longer than one quarter to complete or is the first course in a hyphenated sequence. Credit is earned, but may not be applied toward graduation until the entire sequence is completed. If not part of a hyphenated sequence, repeated registration may be necessary. An N grade is received until the final grade is submitted.
- **ART 100 (2, max. 8)** 2 credits per quarter; course may be repeated up to four times to earn a maximum of 8 credits.
- **ART 100 (1–5)** Up to 5 credits may be taken in a given quarter. Specific number is determined in consultation with instructor of adviser. When a maximum is not stated, course is not repeatable.
- **ART 100 (1–5, max. 15)** Up to 5 credits may be taken in a given quarter. Course may be repeated to a maximum of 15 credits.
- **ART 100 (*, max. 10)** Credit to be arranged per quarter; course may be repeated to a maximum of 10 credits.

- **ART 100 (3/5)** 3 or 5 credits are earned in a given quarter. Specific amount is determined by school or college offering the course. The Time Schedule may indicate 3 credits, 5 credits, or 3 or 5 credits. Credits may vary by section.
- **ART 100 (3/5, max. 15)** 3 or 5 credits are earned in a given quarter. Course may be repeated to earn a maximum of 15 credits.
- **ART 700 (*)** Credit is to be arranged with school or college offering the course. No maximum stated. Only 600-, 700-, and 800-level courses do not require a maximum.

UNDERGRADUATE GENERAL EDUCATION

REQUIREMENT DESIGNATORS

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

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

BACKGROUND REQUIRED

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

QUARTERS OFFERED

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

Abbr.	Quarter
A	Autumn
W	Winter
Sp	Spring
S	Summer

Example

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

UNIVERSITY OF WASHINGTON 2014–2016 GENERAL CATALOG

ACADEMIC CALENDAR

2014–2015

Autumn Quarter 2014

Classes begin September 24
Last day of instruction December 5
Final examinations December 6–12

Winter Quarter 2015

Classes begin January 5
Last day of instruction March 13
Final examinations March 14–20

Spring Quarter 2015

Classes begin March 30
Last day of instruction June 5
Final examinations June 6–12
Commencement June 12–14

Summer Quarter 2015

Full-term and term a classes begin June 22
Term a classes end July 22
Term b classes begin July 23
Full-term and term b classes end August 21

2015–2016

Autumn Quarter 2015

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

Winter Quarter 2016

Classes begin January 4
Last day of instruction March 11
Final examinations March 12–18

Spring Quarter 2016

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

Summer Quarter 2016

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

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

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

Address correspondence to:

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

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

It is the University's expectation that all students follow University regulations and procedures as they are stated in the General Catalog. Appeals may be filed with the stu-

dent's dean or with the Vice President for Student Affairs in nonacademic matters. Students are expected to observe the standards of conduct contained in the Student Conduct Code (WAC 478-120).

UNDERGRADUATE ADMISSION

admit.washington.edu

Contact Information

1. On the Internet/E-mail: Search our website, or, to get connected and stay informed throughout the application process, sign up for HuskyPass—admit.washington.edu/HuskyPass. E-mail and other contact information are available at admit.washington.edu/Contact.
2. By Telephone: To speak with office staff or to schedule an appointment, call 206-543-9686.
3. In Person: Building address: 1410 NE Campus Parkway. The Office of Admissions is located in 320 Schmitz Hall, one block west of campus. If you wish to meet with an admissions counselor, please call ahead (206-543-9686) or check our website for current information about our business hours. Schmitz Hall is bounded by 41st St. NE, 15th Ave. NE, Campus Parkway NE, and University Way NE (The Ave). admit.washington.edu/Visit/Directions. Wheelchair access is on NE 41st.
4. Postal Mail:
University of Washington
Office of Admissions
1410 NE Campus Parkway
Box 355852
Seattle WA 98195-5852

FRESHMAN APPLICANTS

Definition of Freshman Status

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

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

Admission Policy

Selecting the Freshman Class

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

Academic Preparation and Performance

While the UW looks at many factors in reviewing applications for admission, academic preparation and perfor-

mance are still primary. Indicators of preparation and performance include:

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

Personal Achievements and Characteristics

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

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

The entire application, including the Writing Section and Activities Log, is important in the individualized application review. Because the University receives about 23,000 freshman applications every year, this process takes time to complete. The University takes great care in assessing applications and does not rush the selection of future students. While this process requires patience on the part of many applicants, the benefit is that each applicant is reviewed as an individual. Applications for 2011 may be submitted between October 1 and December 15, 2010. An admission decision will be mailed to all freshman applicants between March 15 and 31, 2011.

College Academic Distribution Requirements (CADR)

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

1. Submit official admission test scores from either SAT Reasoning Test or ACT with Writing.
2. Completion of a college-preparatory course of study to include the following high school credits*:
 - a. 4 high school credits of English
 - b. 2 high school credits of a single world language
 - c. 3 high school credits of mathematics: algebra, geometry, and preferably trigonometry (a fourth high school credit of mathematical analysis or calculus is recommended for students preparing for majors in the sciences or engineering)
 - d. 3 high school credits of social science
 - e. 2 high school credits of science including one laboratory science course in biology chemistry or physics

- f. 1 senior-year math-based quantitative course
- g. 0.5 high school credits of the fine, visual, or performing arts
- h. 0.5 high school credits of electives taken from the above areas

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

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

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

Grading Restrictions

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

Applicants using a college course to satisfy the mathematics CADR: specific restrictions on grading apply. See the Mathematics section.

English Composition/Literature

1. IF TAKEN IN HIGH SCHOOL

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

- One of the four credits may be satisfied by courses in drama as literature, public speaking, debate, journalistic writing, business English, or English as a Second Language (ESL).
- Courses that are generally not acceptable include those identified as remedial or applied (e.g., acting, basic English skills, developmental reading, library, newspaper staff, remedial English, review English, vocabulary, yearbook/annual).

2. IF SATISFIED BY COLLEGE COURSE WORK

College course work must be at the 100 level or higher. For the composition/literature component, generally any course with an English or Writing prefix is acceptable.

- One of the four credits may be satisfied by a college course in speech, drama as literature, journalistic writing, business English, ESL, or engineering/technical writing.
- Courses such as developmental or speed reading, vocabulary, or remedial English are not acceptable.
- English courses are considered equivalent to ESL unless taken in Australia, Canada, Ireland, New Zealand, the United Kingdom, or the U.S.

3. APPLICANTS WHOSE FIRST LANGUAGE IS NOT ENGLISH

Although the four-credit English high school course requirement cannot be waived, there are some alternatives for meeting the English subject requirement for U.S. citizens, permanent residents or refugees

- whose first language is not English or,
- who attended school in a non-English speaking country.

English-speaking countries are defined as Australia, Canada, Ireland, New Zealand, the United Kingdom, or the U.S.

ALTERNATIVE ONE (Applicants with Test Scores)

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

A: Test Score Requirement

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

- SAT Critical Reading 430
- ACT English 17

Other tests (e.g., Test of English as a Foreign Language [TOEFL] or IELTS) cannot be used to meet this requirement.

B: Coursework Requirement

A total of four years of study are required.

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

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

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

- A. A minimum of 60 transferable quarter credits from a regionally accredited college or university in the U.S. or from an accredited college or university in Australia, Canada, Ireland, New Zealand, or the United Kingdom must be completed at the time of application. Transcripts showing 60 completed credits must be submitted by the application closing date.
- B. A minimum of two college-level English composition courses, for a minimum of six credits, taken at a regionally accredited college or university in the U.S., or from an accredited college or university in Australia, Canada, Ireland, New Zealand, or the United Kingdom. All college-level English composition and literature courses must be completed with a minimum cumulative grade-point average (GPA) of 3.00 (B) and must be recorded on a transcript at the time of application.
- C. Additional English Course Work Requirements

The remaining two units of the requirement may be satisfied by any combination of course work from among the following options:

- 1. Up to two units may be satisfied by high school English composition or literature courses from high schools where the primary language of instruction is English.
- 2. Up to two units may be satisfied by composition or literature courses in the student's first language (when the first language is not English) for coursework completed

in educational systems other than the U.S., Australia, Canada, Ireland, New Zealand, or the United Kingdom.

- 3. Only one unit (year) of the requirement may be satisfied by one of the following:
 - English courses taken in countries where English is NOT recognized as the primary language of instruction.
 - ESL courses taken in the U.S.
 - Courses in drama as literature, public speaking, debate, journalistic writing, or business English that were completed in Australia, Canada, Ireland, New Zealand, the United Kingdom, or the U.S.
- 4. Up to two units may be satisfied by additional college-level English composition or English literature courses from a regionally accredited college or university in the U.S., or from an accredited college or university in Australia, Canada, Ireland, New Zealand, or the United Kingdom.

Mathematics

1. IF COMPLETED IN HIGH SCHOOL

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

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

2. IF SATISFIED BY COLLEGE COURSE WORK

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

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

Social Science

1. IF COMPLETED IN HIGH SCHOOL

Three high school credits are required in history or in any of the social sciences, e.g., anthropology, contemporary world problems, economics, geography, government, political science, psychology, sociology.

Credit for religion courses, consumer economics, student government, or community service will not count towards the requirement.

2. IF SATISFIED BY COLLEGE COURSE WORK

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

World Languages

1. IF COMPLETED IN HIGH SCHOOL

Two high school credits are required. The two credits must be completed in the same language.

Note: The world language requirement will be considered satisfied for applicants who complete their education through the 7th grade in school(s)

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

International applicants who entered the U.S. education system prior to the 8th grade must satisfy the foreign language requirement.

Any natural language that has been formally studied may be used to satisfy this requirement, including American Sign Language (ASL, the language of the deaf community), and languages no longer spoken, such as Latin and ancient Greek. However, neither computer 'languages' nor forms of deaf signing aside from ASL are acceptable.

A world language course taken in the eighth grade may satisfy one credit of the requirement if the second-year course is completed in high school.

2. IF SATISFIED BY COLLEGE COURSE WORK

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

Lab Science

1. IF COMPLETED IN HIGH SCHOOL

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

2. IF SATISFIED BY COLLEGE COURSE WORK

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

Fine, Visual, or Performing Arts

1. IF COMPLETED IN HIGH SCHOOL

One-half credit is required in the fine, visual, or performing arts, to be chosen from art appreciation, band, ceramics, choir, dance, dramatic performance and production, drawing, fiber arts, graphic arts, metal design, music appreciation, music theory, orchestra, painting, photography, print making, or sculpture.

Courses that do NOT satisfy this requirement include architecture, color guard, creative writing, drafting, drill team, fashion design, foreign languages, interior design, sewing, speech, web design or graphics, woodworking, and year-book.

2. IF SATISFIED BY COLLEGE COURSE WORK

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

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

Academic Electives

1. IF COMPLETED IN HIGH SCHOOL

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

2. IF SATISFIED BY COLLEGE COURSE WORK

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

High School Students Enrolled in Dual-Credit Programs

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

ADMISSION

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

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

APPLICATION PROCEDURES

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

Recommendations for Academic Planning

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

- Keep in mind that you have established a college record. Grades you earn now could affect admission to the University and to your intended major.
- If you anticipate entering the UW with 90 or more transferable credits, please know that you will be expected to declare a major at the end of your first quarter at the UW or request an extension from your adviser.

Two online tools will help you look ahead toward UW requirements—for your intended major and for graduation—while still completing course work at the college you are now attending:

- For transferable courses at Washington State community colleges and transfer credit policies, get to know the Equivalency Guide.
- Consult the Academic Planning Worksheets, to help you prepare for your intended major and UW graduation requirements.

Transfer Credit Policy

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

Scholarships

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

Homeschooled Applicants

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

College Academic Distribution Requirements (CADR)

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

Test Score Requirements

- CADR subjects completed at a high school or regionally accredited college do not require test score validation.
- CADR subjects completed through homeschooled coursework require validating test scores.

The UW does not have an established list of predetermined minimum scores but reviews each homeschooled applicant in light of their unique educational history. All applicants are assessed holistically in the context of the UW's comprehensive review process.

Examination Options	
<i>Scores from ACT with Writing or SAT Reasoning Test are required of all freshman applicants and may also serve as a validation option for some CADR subjects.</i>	
CADR	
English	SAT Reasoning Test or ACT with Writing
Mathematics	SAT Reasoning Test or ACT with Writing
Lab Science:	ACT with Writing or SAT Subject Test or Advanced Placement (AP)
<i>Validation is required for at least one of the following: Biology, Chemistry, or Physics.</i>	

	Examination Options <i>Scores from ACT with Writing or SAT Reasoning Test are required of all freshman applicants and may also serve as a validation option for some CADR subjects.</i>
CADR	
World Languages	UW proficiency examination results for subject area (Comparable proficiency exam from another regionally accredited college or university may be an option; contact UW Admissions Office in advance.) SAT Subject Test or Advanced Placement (AP)
Social Science	No additional test required.
Fine Visual & Performing Arts	No additional test required.

Required Documents

Transcripts

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

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

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

Test Scores

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

Applicants with College Coursework: Freshman vs. Transfer Application

Freshman

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

Transfer

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

College Credit

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

English Language Proficiency Requirement

Enrollment Requirement

All new freshman and transfer students must satisfy an English language proficiency requirement upon enrolling at the Seattle campus of the University of Washington. Applicants should review the English language proficiency

requirement section of the catalog so they will know what to expect when they enroll at the UW.

Admission Requirement

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

Freshman Application Checklist

A complete application file for freshman admission must include:

- Application
- \$60 nonrefundable application fee OR approved fee waiver
- Official test scores from SAT Reasoning Test or ACT with Writing
- Transcripts: Do not send unless you receive a request from the Office of Admissions. The application requires that you self-report your academic course work.
- Letters of Recommendation: Do not send.
- The Writing Section: a required and important part of your application for admission: admit.washington.edu/Apply/Freshmen/WritingSection.

Application Deadlines

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

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

TRANSFER APPLICANTS

Definition of Transfer Status

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

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

Admission Policy

Selecting the Transfer Class

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

Minimum Requirements

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

1. Completion of the College Academic Distribution Requirements (see Freshman Admission section for complete details)
2. Transfer GPA of 2.50 or better

3. Submission of scores on the SAT or ACT unless the applicant has earned at least 40 reasonably distributed transferable quarter-credits after high school graduation

Comprehensive Review

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

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

Enrollment Goals and Priorities

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

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

English Language Proficiency Requirement

Enrollment Requirement

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

Admission Requirement

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

Transfer Application Checklist

A complete application file for transfer admission must include:

- Application
- \$60 nonrefundable application fee OR approved fee waiver
- Academic Planning Worksheet for intended major
- Personal Statement
- Official high school transcript (if homeschooled, see Homeschool section)
- Official college or university transcript(s)
- Test scores (for applicants with fewer than 40 transferable credits)

Application Deadlines

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

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

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

- Bioengineering
- Chemical Engineering

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

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

INTERNATIONAL APPLICANTS

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

Admission Policy and Requirements

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

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

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

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

English Proficiency for Admission

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

Exception. Non-U.S. citizens whose primary and secondary education took place in Australia, Canada, Great Britain, Ireland, New Zealand, or the US are exempt from this requirement. Students who were born in one of these countries but educated elsewhere are still required to satisfy the English proficiency requirement. SAT or ACT Scores. Although the SAT and ACT are not required for international student applicants, the University may consider the English proficiency requirement satisfied if you have achieved academic success in English writing or literature courses and have a minimum SAT critical reading score of 550 or an ACT English/Writing score of 22. Official SAT or ACT scores must be sent directly from the testing organization.

English Language Proficiency Requirement for UW Enrollment

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

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

Test Score Requirements

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

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

Selecting International Students for Admission

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

International Application Checklist

A complete application file for transfer admission must include:

- Application
- \$75USD nonrefundable application fee
- Official scores from English proficiency exam
- Academic Credentials (transcripts)
- Official secondary school transcripts
- Official transcripts from each college, university, or other post-secondary institution attended

Application Deadlines

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

POSTBACCALAUREATE APPLICANTS

Admission Policy

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

Postbaccalaureate Application Checklist

A complete application file consists of:

- Application, available online
- \$60 nonrefundable application fee via Visa, MasterCard or electronic check
- Statement of Purpose
- One official transcript from each college or university attended

Statement of Purpose

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

The Statement of Purpose will be evaluated as part of the admission decision. Content as well as form (spelling, grammar, punctuation) will be considered.

Applicants are expected to answer the following questions in their statements:

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

Application Deadlines

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

TRANSFER CREDIT POLICY

General Policy

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

State Policy on Inter-college Transfer and Articulation

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

Class Standing

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

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

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

Quarter vs. Semester Credits

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

Applying Transfer Credit to Degree Requirements

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

Alternative Credit Options

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

- Once enrolled at the UW, students may explore the possibility of obtaining departmental approval for transfer of credit earned through coursework taken at a non-regionally accredited institution.
- Students may arrange to challenge specific UW courses via credit by examination if the same knowledge has been gained through independent study outside a formal educational setting.

For course work taken at an unaccredited institution, contact Admissions. For credit by examination for independent study completed outside a formal educational setting, contact the Graduation and Academic Records Office, ugradoff@uw.edu.

Transfer Credit Limit

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

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

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

Extension Credit from Other Schools

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

Foreign Language Courses

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

Military Credit

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

Native Language

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

Out-of-Sequence Courses

Credit is not awarded for prerequisite courses in mathematics or foreign languages completed after a more ad-

vanced course has been completed. For example, students will not be awarded credit for Spanish 102 if taken after Spanish 103.

Overlapping Content

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

Physical Education

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

Restricted Transfer Credit

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

Senior Residency Requirement

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

Appeal Procedure

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

The Direct Transfer Agreement (DTA)

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

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

- Students will be assigned junior standing upon admission.
- The UW transfers credit on a course-by-course basis. However, approved DTA degree-holders may use transfer courses toward the UW Areas of Knowledge requirements comparable to those the community college used toward DTA associate degree distribution requirements—even if those courses would not otherwise be allowed toward specific Areas of Knowledge requirements at the UW—if doing so is to the student's advantage.
- The UW's College of Arts and Sciences agrees that transfer students from Washington community colleges who complete approved associate degree programs will be considered to have satisfied the College's general

education and proficiency requirements with the following provisos:

1. Students who have completed the minimum of 45 credits of distribution (15-15-15) as part of their DTA degree will be required to take an additional 5 credits in each area *plus* an additional 15 credits drawn from their choice of one or more of the three areas in order to satisfy the Arts and Sciences Areas of Knowledge requirement.
2. Up to 15 credits in the student's major may be applied towards the 75-credit Areas of Knowledge requirement.
3. Students who complete first-year language courses as a part of the transfer degree distribution requirement, and later use that foreign language to satisfy the Arts and Science language proficiency requirement (see item 4), may NOT use those foreign language credits towards the Arts and Science Areas of Knowledge requirement.
4. Students will be required to complete foreign language study through the 103-level or to demonstrate language proficiency at the 103-level through an examination.
5. Ten credits in courses emphasizing writing (W-courses or English composition) are required in addition to the 5-credit English composition requirement. W-courses must have attributes as defined by Arts and Sciences. If not completed as part of the transfer degree, this requirement must be completed at the University.

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

ADVANCED PLACEMENT PROGRAM (COLLEGE BOARD)

AP Credit Policies

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

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

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

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

AP Subject	Score	Credit/Placement Awarded and Additional Information
Computer Science AB	5	CSE 142, 143 (4, 5 cr.) Computer programming for engineering and science students. Counts toward Natural World general education requirements for graduation. Also satisfies Quantitative and Symbolic Reasoning graduation requirement.
Computer Science AB	3,4	CSE 142 (4 cr.) Computer programming for engineering and science students. Counts toward Natural World general education requirements for graduation. Also satisfies Quantitative and Symbolic Reasoning graduation requirement.
Economics: Micro	4,5	ECON 200 (5 cr.) Introduction to Microeconomics. Counts toward Individuals & Societies general education requirement for graduation. Also satisfies Quantitative and Symbolic Reasoning graduation requirement.
Economics: Macro	4,5	ECON 201 (5 cr.) Introduction to Macroeconomics. Counts toward Individuals & Societies general education requirement for graduation. Also satisfies Quantitative and Symbolic Reasoning graduation requirement.
English: Language & Composition	4,5	ENGL 190 (5 cr.) AP English. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation.
English: Literature & Composition	4,5 on both	ENGLISH 191 (5 cr.) AP English. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation.
Environmental Science	3,4,5	ESRM 100 (5 cr.) Introduction to environmental science. Counts toward Natural World general education requirement for graduation.
European History	4,5	HIST 113 (5 cr.) Western Civilization history survey (modern). Counts toward Individuals & Societies general education requirement for graduation.
French Language	3,4,5	FRENCH 201, 202, 203 (5, 10, 15 cr., respectively) Intermediate French. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
French Literature	3,4,5	FRENCH 298 (5, 10, 15 cr., respectively) Does not imply a particular placement. French credit at the second-year college level. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.

AP Subject	Score	Credit/Placement Awarded and Additional Information
German Language	3,4,5	GERMAN 201, 202, 203 (5, 10, 15 cr., respectively) Intermediate German. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
Government and Politics: American	4,5	POL S 202 (5 cr.) American politics. Counts toward Individuals & Societies general education requirement for graduation.
Government and Politics: Comparative	4,5	POL S 204 (5 cr.) Comparative politics. Counts toward Individuals & Societies general education requirement for graduation.
Human Geography	3,4,5	GEOG 100 (5 cr.) Introduction to geography. Counts toward Individuals and Societies general education requirement for graduation.
Italian Language & Culture	3,4,5	ITAL 201, 202, 203 (5, 10, 15 cr., respectively) Intermediate Italian. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation. Also satisfies foreign language graduation requirement of the College of Arts and Sciences. .
Japanese Language	3,4,5	JAPAN 133, 231, 232 (5, 10, 15 cr., respectively) Courses are parallel to JAPAN 113, 211, 212; cannot earn credit for both sequences. Credit for 133, 231, 232 does not imply placement into specific JAPAN courses.
Latin Literature	4,5	LATIN 305, 306 (10 cr.) Latin literature courses. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
Latin Literature	3	LATIN 103 (5 cr.) Third quarter of elementary Latin. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
Latin: Vergil	4,5	LATIN 305, 307 (10 cr.) Latin literature courses. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
Latin: Vergil	3	LATIN 103 (5 cr.) Third quarter of elementary Latin. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.

AP Subject	Score	Credit/Placement Awarded and Additional Information
Latin Literature and Latin: Vergil	4,5	LATIN 305, 306, 307 (15 cr.) Latin literature courses. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
Latin Literature and Latin: Vergil	3	LATIN 103 (5 cr.) Third quarter of elementary Latin. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
Music Theory	-	None Awarded. See Music adviser for placement.
Physics B	4,5	PHYS 114/117, 115/118, 116/119 (15 cr.) First-year general physics sequence. Also satisfies Quantitative and Symbolic Reasoning graduation requirement.
Physics C: Mechanics	4,5	PHYS 121 (5 cr.) First quarter of engineering physics sequence. Also satisfies Quantitative and Symbolic Reasoning graduation requirement.
Physics C: Electricity & Magnetism	4,5	PHYS 122 (5 cr.) Second quarter of engineering physics sequence. Also satisfies Quantitative and Symbolic Reasoning graduation requirement.
Psychology	4,5	PSYCH 101 (5 cr.) Introductory psychology. Counts toward Individuals & Societies general education
Spanish Language	3,4,5	SPAN 201, 202, 203 (5, 10, 15 cr., respectively). Intermediate Spanish. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
Spanish Literature	3,4,5	SPAN 298 (5, 10, 15 cr., respectively). Spanish credit at the second-year college level. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
Statistics	3,4,5	STAT 311 (5 cr.) Statistical Methods. Counts toward Natural World general education requirement for graduation. Also satisfies Quantitative and Symbolic Reasoning graduation requirement.
U.S. History	4,5	HSTAA 101 (5 cr.) American history survey. Counts toward Individuals & Societies general education requirement for graduation.
World History	4,5	HIST 100 (5 cr.) AP World History. Counts toward Individuals & Societies general education requirement for graduation.

INTERNATIONAL BACCALAUREATE PROGRAM

Policy Overview

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

IB Credit Policies

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

IB Subject	Score	Courses and Credits Counts Toward/Comments
Chemistry	6	CHEM 142, 152 (5, 5) General chemistry for science and engineering majors. Counts toward Natural World general education requirement for graduation. CHEM 142 also satisfies Quantitative and Symbolic Reasoning general education requirement for graduation. Note: Students with IB scores of 5, 6, or 7 who plan to major in chemistry or biochemistry are strongly encouraged to discuss with the undergraduate advisers in the Chemistry department the option of enrolling in the honors introductory chemistry sequence, CHEM 145-165..
Chemistry	5	CHEM 142 (5) General chemistry for science and engineering majors. Counts toward Natural World general education requirement for graduation. CHEM 142 also satisfies Quantitative and Symbolic Reasoning general education requirement for graduation. Note: Students with IB scores of 5, 6, or 7 who plan to major in chemistry or biochemistry are strongly encouraged to discuss with the undergraduate advisers in the Chemistry department the option of enrolling in the honors introductory chemistry sequence, CHEM 145-165.
Chinese A		No credit.
Chinese B	7	CHIN 201, 202, 203 (15 cr.) Satisfies foreign language requirement, and credits count toward general education requirement for graduation. For further study, instructor evaluation required for placement.
Chinese B	6	CHIN 201, 202 (10 cr.)
Chinese B	5	CHIN 201 (5 cr.)
Computer Science and Engineering	7,6,5	CSE 100 (5 cr.) Satisfies Quantitative and Symbolic Reasoning graduation requirement.
Design Technology	7,6,5	ENGR 100 (5 cr.) Counts toward Individuals & Societies general education requirement for graduation.
East/Southeast Asia and Oceania History	7,6,5	HISTAS 108 (5 cr.) Counts toward Individuals & Societies general education requirement for graduation.
Economics	7,6	ECON 200, 201 (10 cr.) Satisfies Quantitative and Symbolic Reasoning graduation requirement and/or counts toward Individuals & Societies general education requirement for graduation.

IB Subject	Score	Courses and Credits Counts Toward/Comments
Economics	5	ECON 200 (5 cr.) Satisfies Quantitative and Symbolic Reasoning graduation requirement or counts toward Individuals & Societies general education requirement for graduation.
English A	7,6,5	ENGL 193 (5 cr.) Counts toward Visual, Literary, and Performing Arts general education requirement for graduation.
English B		No credit.
European History	7,6,5	HIST 113 (5 cr.) Counts toward Individuals & Societies general education
French A		No credit.
French B	7	FRENCH 201, 202, 203 (15 cr.) Satisfies foreign language requirement, and credits count toward Visual, Literary, and Performing Arts general education requirement for graduation.
French B	6	FRENCH 201, 202 (10 cr.)
French B	5	FRENCH 201 (5 cr.)
Geography	7,6,5	GEOG 100 (5 cr.) Counts toward Individuals & Societies general education requirement for graduation.
Germanics A		No credit.
Germanics B	7	GERMAN 201, 202, 203 (15 cr.) Satisfies foreign language requirement, and credits count toward Visual, Literary, and Performing Arts general education requirement for graduation.
Germanics B	6	GERMAN 201, 202 (10 cr.)
Germanics B	5	GERMAN 201 (5 cr.)
History		See African History; American History; East/Southeast Asia and Oceania History; European History
Italian A		No credit.
Italian B	7	ITAL 201, 202, 203 (15 cr.) Satisfies foreign language requirement, and credits count toward general education requirement for graduation.
Italian B	6	ITAL 201, 202 (10 cr.)
Italian B	5	ITAL 201 (5 cr.)
Japanese A		No credit.
Japanese B	7	JAPAN 321, 322, 323 (15 cr.) Satisfies foreign language requirement, and credits count toward general education requirement for graduation.
Japanese B	6	JAPAN 321, 322 (10 cr.)
Japanese B	5	JAPAN 321 (5 cr.)

IB Subject	Score	Courses and Credits Counts Toward/Comments
Latin	7,6,5	LATIN 305, 306, 307 (15 cr.) Satisfies foreign language requirement, and credits count toward Visual, Literary, and Performing Arts general education requirement for graduation.
Mathematics	7	MATH 124 (5 cr.) Satisfies Quantitative and Symbolic Reasoning basic skills requirement and/or Natural World general education requirement for graduation
Mathematics	6,5	MATH 120 (5 cr.) Satisfies Natural World general education requirement for graduation
Music	7,6,5	MUSIC 120 (5 cr.) Counts toward Visual, Literary, and Performing Arts general education requirement for graduation.
Near East	7,6,5	NEAR E 210 (5 cr.) Counts toward Visual, Literary, and Performing Arts or Individuals & Societies general education requirement for graduation.
Philosophy	7,6,5	No credit
Physics	7,6,5	PHYS 114/117, 115/118, 116/119 (15 cr.) Satisfies Natural World general education requirement for graduation. PHYS 114 also satisfies Quantitative and Symbolic Reasoning basic skills requirement for graduation.
Psychology	7,6,5	PSYCH 101 (5 cr.) Counts toward Individuals & Societies general education requirement for graduation.
Russian A		No credit. Consult the departmental adviser for case-by-case review.
Russian B	7	RUSS 301, 302, 303 (15 cr.) Satisfies foreign language requirement, and credits count toward general education requirement for graduation.
Russian B	6	RUSS 301, 302 (10 cr.)
Russian B	6	RUSS 301, 302 (10 cr.)
Spanish A		No credit.
Spanish B	7	SPAN 201, 202, 203 (15 cr.) Satisfies foreign language requirement, and credits count toward general education requirement for graduation.
Spanish B	6	SPAN 201, 202 (10 cr.)
Spanish B	5	SPAN 201 (5 cr.)
Swahili A		To be determined.
Swahili B	7	AFRAM 306, 307, 308 (15 cr.) Satisfies foreign language requirement.
Swahili B	6	AFRAM 306, 307 (10 cr.) Counts toward foreign language requirement.
Swahili B	5	AFRAM 306 (5 cr.) Counts toward foreign language requirement.

IB Subject	Score	Courses and Credits Counts Toward/Comments
Theater Arts	7,6,5	DRAMA 101, 201 (10 cr.) Counts toward Visual, Literary, and Performing Arts general education requirement for graduation.

REGISTRATION POLICIES

Full-time Requirements

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

Class Attendance

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

An instructor may allow you to attend his or her class only if your name appears on the official class list from Office of the Registrar. A faculty member may attend informally with the approval of the instructor.

Satisfactory Progress

If you are pursuing a baccalaureate degree, you are expected to make satisfactory progress toward the attainment of that degree and are expected to enter a major and graduate after completion of a reasonable number of credits.

NOTE: Individual departments may have additional satisfactory progress requirements.

The 105-Credit Rule

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

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

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

allowed additional time if necessary to meet the admission requirements of your new major.

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

The 210-Credit Rule

The University's satisfactory progress policy requires students to complete their undergraduate degree programs within 30 credits beyond the minimum required for the degree. Because most degrees require 180 credits, students generally must complete their programs by the time they earn 210 credits. Undergraduates who have completed over 210 credits will be notified by e-mail the third week of the quarter that a hold is being placed on their registration due to lack of satisfactory progress. Students ineligible to graduate will be permitted to register for succeeding quarters only if they receive approval from their department and college after filing a graduation plan. Approval to enroll beyond 210 credits may not extend beyond two additional quarters.

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

Postbaccalaureate Students

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

Excessive Course Repeats and/or Drops

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

Registration Tampering

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

Registration Abuse

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

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

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

GRADING SYSTEM

Standard Grading System

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

Letter	Number	Note
A	4.0–3.9	
A-	3.8–3.5	
B+	3.4–3.2	
B	3.1–2.9	
B-	2.8–2.5	
C+	2.4–2.2	
C	2.1–1.9	
C-	1.8–1.5	
D+	1.4–1.2	
D	1.1–0.9	
D-	0.8–0.7	Lowest passing grade.
E	0.0	Academic failure. No credit earned.

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

The following letter grades also may be used:

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

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

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

In no case can an Incomplete received by an undergraduate be converted to a passing grade after a lapse of one year.

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

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

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

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

Nontraditional Grading Options

Credit/No Credit-Only as a Course Option

With appropriate departmental review and approval, a course may be offered on a credit/no credit-only basis. The

standard for granting credit in credit/no credit-only courses under this option is the demonstration of competence in the material of the course to the instructor’s satisfaction.

Satisfactory/Not-Satisfactory Grading Option

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

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

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

If you are a graduate student and earn grades of 2.7 or above, you will receive a grade of S while 2.6 or below are recorded as NS. With the approval of your graduate program adviser or the Supervisory Committee Chairperson, you may elect to take any course for which you are eligible outside of your major academic unit on an S/NS basis.

In cases of withdrawal, the W is recorded. Neither S nor NS is included in the grade-point average.

Grade-Point Average (GPA)

The University’s cumulative GPA is based solely on courses taken in residence at the UW; this includes some, but not all, courses taken through UW Extension. The UW transcript also reflects grades for UW Extension course work that is not residence credit, and the grades for credit by examination. These latter grades do not affect the University cumulative GPA.

Computation of GPA

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

EXAMPLE 1

Course	Credits	Grade	Grade Points
CLAS 205	3	CR	
OCEAN 101	5	2.7	= 13.5
HIST 111	5	4.0	= 20.0
SCAND 100	2	3.3	= 6.6

Total credits earned toward graduation 15

Total graded credits attempted 12 40.1

GPA = $40.1 \div 12 = 3.34$

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

EXAMPLE 2

Course	Credits	Grade	Grade Points
ENGL 121	5	2.3	= 11.5

Course	Credits	Grade	Grade Points
OCEAN 101	5	0.0	= 0.0
SPHSC 100	3	2.7	= 8.1
ART 121	5	I	= 0.0

Total credits earned toward graduation 8

Total graded credits attempted 13 19.6

GPA = $19.6 \div 13 = 1.51$

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

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

Repeating Courses

Undergraduates

With the approval of the academic department offering the course, an undergraduate may repeat a course once. Both the original grade and the second grade are computed in the GPA but credit is allowed only once. Veterans receiving benefits must receive approval from the Veterans Center before a course is repeated.

Graduates

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

Grading Procedures

Change of Grade

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

Grade Appeal Procedure

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

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

Grade Reports

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

PROCEDURES AND FEES

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

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

Registration

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

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

Registration Period I

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

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

Registration Period II

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

Registration Period III

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

Late Add Period

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

Unrestricted Drop Period

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

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

Late Course Drop Period (Annual Drop)

Students may drop one course each academic year (autumn through summer quarters) after the fourteenth calendar day of the quarter through the seventh week of the quarter. A course drop will be recorded on the transcript with a W followed by the number of the week of the drop (W3-W7). A Change of Registration service fee is charged.

Credits Required for Full- or Half-Time Status Requirements

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

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

Restrictions on Attending Classes

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

No person, other than a faculty member attending informally with the approval of the instructor, may attend a University course in which that person has not been registered.

An instructor may allow a student to attend his or her class only if the student's name is on the official class list from the Office of the Registrar. An unregistered student may attend through the fourteenth calendar day of the quarter if the student is on an official wait list for the course.

Adding Courses/Permission Guidelines

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

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

1. Through the second week of the quarter, departments may choose to overload courses up to 115% of the room capacity to offset anticipated student course drops and withdrawals as demonstrated by past registration activity. Students must secure entry codes from instructors or departments to add closed courses. However, if enrollment is at 115% of room capacity, registration requests are denied. Students should be informed when receiving entry codes to overload courses that registration is not guaranteed if enrollment exceeds 115% of room capacity. If centralized room-capacity records do not correctly reflect the actual seating capacity, notification should be made to the Room Assignments/Time Schedule Office in the Office of the Registrar.
2. Students may add courses during the Late Add Period or through the twenty-first calendar day of the quarter. Adds after the seventh calendar day of the quarter require an entry code or faculty number. Departments may also add students to departmental courses during this period through departmental registration screens. To add courses after this period, students must submit a faculty-approved Late Add Petition form to the Registration Office.
3. A course may not be changed to or from an audit registration after the first two weeks of the quarter. See below for transcript entry.

Dropping a Course

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

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

A course drop made during the third through the seventh weeks of the quarter is recorded on a student's transcript with a W grade and a number designating the week of the quarter in which the course drop was transacted. Only one

drop after the fourteenth day of a quarter is permitted each academic year (autumn through summer quarter).

A student who does not officially drop a course through the registration system or the offering department is given a grade of 0.0.

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

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

Complete Withdrawal from the University for a Registered Quarter

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

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

1. To withdraw from a quarter, students may complete a Withdrawal form and submit it in person to the Registration Office, 225 Schmitz, or write to the Registration Office, Box 355850, Seattle, WA 98195-5850. Withdrawal forms are available at advising offices and the Registration Office. An official withdrawal is effective the day it is received in the Registration Office, or if submitted by mail, the date of the postmark.
2. Students who drop the last course on their schedules will be considered withdrawn for the quarter. Students who drop courses beginning the eighth calendar day of the quarter are charged a Change of Registration service fee per day for any course drops.
3. Submission of a graduate On-Leave application does not constitute official withdrawal from the University.
4. Refer to the grading section in the Graduate School: Graduate Study section.
5. Students receiving veterans' benefits should immediately notify the Veterans Center of withdrawal.
6. Students with a scholarship or loan awarded through the University should notify Student Fiscal Services.
7. Students who withdraw due to conscription into the armed forces or who are called to active duty military service may be entitled to either a full refund of tuition and fees or academic credit, depending on when in the quarter official withdrawal occurs. Students should contact the Registration Office for complete information.

ADDITIONAL INFORMATION

Address Change

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

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

Residence Classification Requirements

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

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

Student Identification Cards

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

All new students should go to the Husky Account and ID Card Center, Ground Floor, Odegaard Library, to be issued

a permanent student identification card. Photo identification (such as a driver's license, state ID card, or passport) is required to obtain a student ID card. Returning students who have not retained a previous ID card should obtain a new one. The student ID card is used for a variety of campus services. It is the student's means of identifying his or her status as a student at the University.

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

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

Transcripts

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

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

Transcript Fee

A charge of \$9, paid to the Transcript Office in advance, is required for each transcript.

Transcripts from Other Schools

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

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

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

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

TUITION, FEES, AND SPECIAL CHARGES

Estimated Expenses

The cost of a student's education at the University varies, the amount depending on his or her classification, status as resident or nonresident, and field of study. In computing college costs, a student should consider such additional expenses as insurance coverage, books, and laboratory supplies. Personal expenses (e.g., clothing, laundry, recreation, and transportation), which vary with each individual, as well as between-quarter expenses, should not be overlooked.

Definitions

- *Lives Away from Home* — All single undergraduate students without dependents (spouse or children) who are living away from parents' home; undergraduate married students without children, whose spouses are also students.
- *Non-Traditional* — Undergraduates who have children; married students whose spouses are not also enrolled students.
- *Tuition and Fees* — Figures presented here are for full-time enrollment, i.e., 10–18 credits per quarter; however, for purposes of financial aid eligibility, full-time is defined as 12 or more credits.

Tuition is due quarterly by Friday of the third week of the quarter. The following figures are prepared and updated each year by the Office of Student Financial Aid and reflect modest, but adequate, probable costs for students attending the University during the nine-month academic year. They should be used only as a guide in determining the year's expenses.

- *Room and Board* — The Office of Student Financial Aid uses a figure of \$8,701 in determining students' financial need. This figure includes food, utilities, and housing. It is higher than the figure of \$8,169 charged by Housing & Food Services (for double-room occupancy and preferred dining allowance) because it includes the cost of meals not covered in the campus dining plan.

For students living on campus, room and board is paid quarterly. The first payment, approximately \$2,200, is due on September 1 for autumn quarter, except for financial aid recipients, who pay after aid is dispersed.

New Undergraduates — New Student Enrollment and Orientation Fee

As a new undergraduate, you must return the Enrollment Confirmation Form and the \$272 nonrefundable New Student Enrollment and Orientation Fee (NSEOF) to confirm your intention to enroll at the University of Washington.

If you have applied for financial aid and you and your family cannot afford the \$272 NSEOF, you may apply for a fee deferral. Write to the Office of Admissions; include your name, student number, phone number, and reason for the deferral. Send your letter, along with the Enrollment Confirmation Form. Any deferral will be conditional on the verification of your financial aid status.

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

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

1. A new or returning matriculated student who is unable to obtain courses required for the completion of the degree or certificate program, or courses which are determined by an appropriate academic adviser to be acceptable alternate courses. A written verification from the appropriate academic adviser must be attached to this petition. Such requests for refund must be submitted by Friday of the second week of the quarter. A new or returning matriculated student who, after meeting with an appropriate academic adviser, determines that the program for which admission was granted differs substantially from what the student was led to expect based upon earlier available information. This petition for re-

fund must be submitted before the student registers for courses and in no case later than the first day of the quarter for which admission has been granted. A written verification from the appropriate academic adviser must be included.

2. A new or returning student who applies by the prescribed deadline for financial aid administered by the University's Office of Student Financial Aid, and who cannot be awarded financial aid adequate to his or her needs as determined by that office, and who is therefore unable to attend the University. This petition and a copy of the Notice of Award and Acceptance must be submitted no later than two weeks after receipt of notice of the financial aid award.
3. A new or returning student who is unable to attend the University because of pregnancy, disability, or death, or because of being called involuntarily into the military service of the United States or into civil duty. Documentation is required.

Fee Payment

f2.washington.edu/fm/sfs/

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

Payment of this obligation is due by Friday of the third week of the quarter. Nonpayment of tuition and fees by the due date results in a charge of \$120 for late payment. For balances under \$150, the late fee is \$50. There is no late fee for balances under \$50. One-half of tuition is assessed when registration is canceled for nonpayment of tuition and fees. The Student Guide should be consulted for fees and fee payment schedule applicable to summer quarter only.

When the payment is not in conformance with the tuition and fee billing, specific instructions on how the payment is to be applied must accompany the payment. In the absence of instructions, the University makes a reasoned interpretation of the student's intent and accounts for the funds accordingly. The student number must be specified on all payments.

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

Special Course and Laboratory Fees

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

Other Fees

- **Auditors:** There is no reduction in fees for auditors.
- **Admission Application Fees:** Graduate, \$45 (online); Medicine, Dentistry, \$35; Law, \$50. Former students returning in the same classification, \$60.
- **On-Leave Registration Fee:** This fee of \$35, charged to graduate students only, provides for a maximum on-leave period of four successive academic quarters or any part thereof and is not refundable.
- **Late Registration/Reregistration Fees:** A late registration service charge of \$25 is assessed when a student registers after the last scheduled day of Period II registration and through the fourteenth day of the quarter. Students registering after the fourteenth day pay a \$75 Late Registration Fee. Waiver or refund of the Late Registration Fee may be petitioned in the Registration Office. Waiver or refund of the \$75 reregistration fee may be petitioned in the Student Fiscal Services Office.

- **Change of Registration Service Fee:** A charge of \$20 is made for any number of add, drop, or change transactions processed during a given day beginning the eighth calendar day of the quarter.
- **Transcript Fees:** A charge of \$9, paid to the Transcript Office in advance, is required for each transcript.
- **Replacement Fees:** Duplicate diploma, \$20; student identification card, \$10.
- **U-PASS Fee:** The U-PASS is valid on all Metro and Community Transit routes at all times and provides parking privileges to carpoolers, riding privileges to vanpool and Night Ride passengers, and merchant discounts. The quarterly fee of \$80 (subject to change) is included on the tuition bill.

All fees are subject to change without notice.

Cancellation of Tuition

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

Continuing Students

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

New and Returning Students

1. A student who withdraws on or before the seventh calendar day forfeits the \$300 New Student Enrollment and Orientation fee or the \$100 Enrollment Confirmation Deposit but does not pay the regular tuition.
2. A student who withdraws after the seventh calendar day through the thirtieth calendar day of the quarter must pay one-half tuition. The \$100 Enrollment Confirmation Deposit is applied toward payment of tuition.
3. A student who withdraws after the thirtieth calendar day of the quarter must pay full tuition. The \$100 Enrollment Confirmation Deposit is applied toward payment of tuition.

Fee Forfeiture

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

Fee Refund

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

Financial Obligations

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

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

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

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

Tuition Exemptions and Reductions

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

Faculty, Staff, and Washington State Employee Tuition Exemption Programs

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

"Access" Program for Older Adults

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

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

Tuition Reductions

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

Tuition Exemptions

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

Tuition Reductions

Category	Contact Office
Active duty military assigned to Washington and their children and spouses	Office of Residency Classification 264 Schmitz Hall, (206) 543-5932 request@u.washington.edu
Award recipient under the Washington State Scholars and Washington Award for Vocational Excellence (WAVE) programs	Registration Office (206) 543-4000 regoff@u.washington.edu
Children of POWs or MIAs	Veterans Center 520 Schmitz Hall, (206) 543-6122 specserv@u.washington.edu
Children of Washington law enforcement officers or firefighters who died or became totally disabled in the line of work	Veterans Center 520 Schmitz Hall, (206) 543-6122 specserv@u.washington.edu
Financial Aid Waivers	Office of Financial Aid 172 Schmitz Hall, (206) 685-3504
Graduate Merit Waivers	The Graduate School G-1 Communications, (206) 543-7152
Immigrants holding a refugee classification who have been in the United States less than one year	Office of Residency Classification 264 Schmitz Hall, (206) 543-5932 request@u.washington.edu
Intercollegiate Athletics Gender Equity	Department of Intercollegiate Athletics Student Athlete Academic Services, (206) 543-0611
Medical students in the WWAMI Program	School of Medicine Office of Academic Affairs A300 Health Sciences, (206) 543-5560
Students of foreign nations in exchange programs	International Programs and Exchanges 453 Schmitz Hall, (206) 543-9272
Students participating in the WICHE Program	Student Fiscal Services 129 Schmitz Hall, (206) 543-4694
Students registered in excess of 18 hours if registered in 1st professional programs of medicine, dentistry, doctor of pharmacy or law	Budget Office 128A Gerberding Hall, (206) 685-9962
TAs/RAs with half-time appointments	Graduate School 201 Gerberding Hall, (206) 543-7152
UW faculty members and their children and spouses who are not Washington state residents	Academic Human Resources 85 Gerberding Hall, (206) 543-5630

Category	Contact Office
UW staff members and their children and spouses who are not Washington state residents	Office of Residence Classification 264 Schmitz Hall, (206) 543-5932
Veterans who served in the Persian Gulf combat zone in 1991 <i>Repealed July 2005</i>	Veterans Center 520 Schmitz Hall, (206) 543-6122 specserv@u.washington.edu
Veterans who served in Southeast Asia during the period of August 5, 1964-May 7, 1975 <i>Repealed July 2005</i>	Veterans Center 520 Schmitz Hall, (206) 543-6122 specserv@u.washington.edu
Veterans, Reservists, or Washington State National Guard members who served under Title 10 or Title 32 <i>New!</i>	Veterans Center 520 Schmitz Hall, (206) 543-6122 specserv@u.washington.edu

STUDENT LIFE AND STUDENT SERVICES

Freshman Convocation

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

Student Health Insurance Program

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

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

Insurance for Foreign Students

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

International Services Office

The International Services Office provides assistance to international students, scholars, and faculty in meeting

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

UW Veterans' Center

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

Office of Student Financial Aid

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

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

Student Legal Services

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

Student Publications

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

Student Union Facilities

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

Husky Union Building

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

South Campus Center

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

the University Book Store, a newsstand, and lounges with beautiful views of Portage Bay.

Student Activities and Organizations

Student Activities Office

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

Student Organizations

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

Associated Students of the University of Washington

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

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

Recreational Sports

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

formation visit the Recreational Sports website at depts.washington.edu/ima/.

Student Rights and Responsibilities

Student Conduct Code

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

Computer Use Policy

All faculty, staff, and students who use any computer at the University are responsible for using computer resources in an ethical and legal manner. For example, it is not appropriate to share computer accounts or use them for commercial purposes, to send unwanted e-mail, or to distribute copyrighted software, music, or images. Those who do not follow the rules could lose their UW computing privileges. For detailed information see www.washington.edu/itconnect/policy/.

University Policy on Student Education Records

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

Sexual Harassment Complaint Procedure

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

Office of Minority Affairs and Diversity

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

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

Residence Halls

Students like the convenience of living in the residence halls (being close to classes and having access to a vari-

ety of dining options), but that's just the beginning. Those who live on campus are part of a community that offers opportunities for fun, friendships, personal development and academic success.

Safety and Security

The University of Washington is a relatively safe place; however, it can be subject to the same problems as the surrounding urban community. The following information describes programs and policies established to protect your safety and well-being.

Residence Hall Patrol

Plainclothes University Police patrol the halls each night from 7 p.m. to 5 a.m. Officers are fully commissioned and have the same authority as other law enforcement officers. RDs and RAs are on duty to handle security issues from 5 p.m. to 8 a.m. and RDs are on duty 24 hours a day on weekends and holidays.

Locked Halls

Residence halls are locked 24 hours a day, except those with food service operations, which remain open from 7 a.m. until 7 p.m. The residence hall desks are staffed from 8 a.m. to 7 p.m. Monday—Friday, 8 a.m.—5 p.m. on Saturday and 10 a.m. to 5 p.m. on Sunday.

Fire Safety

The fire alarms for all residence halls comply with City of Seattle high-rise fire codes. The systems consist of area-sensitive and building heat and smoke detectors. Each student room contains a smoke/heat detector. Sprinkler systems exist in Terry, Lander, McCarty, McMahon, Haggett and Hansee Halls. Sprinkler systems will be added to Mercer Hall by autumn 2004. All heating and ventilating fans within a facility are interlocked with the fire alarm system for that facility. The system is hardwired directly into the University Police Department, which notifies the City of Seattle Fire Department if problems arise. The University of Washington's Environmental Health and Safety (EHS) department conducts a comprehensive annual inspection of all physical fire safety attributes. In addition, HFS is subject to random inspection by the City of Seattle Fire Department, and semiannual fire drills are conducted in every hall.

Other Safety Measures

- All residence hall rooms have peepholes.
- Women's restrooms are locked.
- Residence hall keys are high-security keys; duplicate keys can only be made using factory equipment.
- Throughout the year residents receive information about safety issues, and Resident Advisers offer programs on personal safety, property protection, emergency procedures and related topics.

Undergraduate Study

Office of Undergraduate Academic Affairs

www.washington.edu/uaa/

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

Intercollege Programs

The following programs, described in detail in other sections of the catalog, are administered by the Office of Undergraduate Academic Affairs.

Individualized Studies

www.washington.edu/students/gencat/academic/individualstudies.html

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

Undergraduate Majors

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

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

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

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

Satisfactory Progress

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

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

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

Postbaccalaureate students are expected to be either preparing for admission into a degree program, seeking an additional baccalaureate degree. Students admitted as "postbaccalaureate undeclared" must declare a major by the time they have earned 30 credits beyond their last degree, and once a degree objective has been declared, must make progress toward that degree as evidenced by the courses they have completed satisfactorily. Advisers may grant extensions beyond the 30-credit limit.

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

Undergraduate Minors

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

Undergraduate Degrees

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

- Bachelor of Arts B.A.
- Bachelor of Arts in Business Administration B.A.B.A.
- Bachelor of Clinical Health Services B.C.H.S.
- Bachelor of Fine Arts B.F.A.
- Bachelor of Landscape Architecture B.L.Arch.
- Bachelor of Music B.Mus.
- Bachelor of Science B.S.
- Bachelor of Science in Aeronautical and Astronautical Engineering B.S.A&A.
- Bachelor of Science in Bioengineering B.S.Bio.E.
- Bachelor of Science in Chemical Engineering B.S.Ch.E.
- Bachelor of Science in Civil Engineering B.S.C.E.
- Bachelor of Science in Computer Engineering B.S.Comp.E.
- Bachelor of Science in Construction Management B.S.C.M.
- Bachelor of Science in Electrical Engineering B.S.E.E.
- Bachelor of Science in Engineering B.S.E.
- Bachelor of Science in Health Information Administration B.S.H.I.A.
- Bachelor of Science in Human Centered Design B.S.H.C.D.E.
- Bachelor of Science in Industrial Engineering B.S.I.E.
- Bachelor of Science in Informatics BSIInfo

- Bachelor of Science in Materials Science and Engineering BSMSE
- Bachelor of Science in Mechanical Engineering BSME
- Bachelor of Science in Medical Technology BSMedTech
- Bachelor of Science in Nursing BSNurs

Freshmen Interest Groups

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

Freshman Seminars

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

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

Phi Eta Sigma

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

University Honors Program

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

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

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

Honors students benefit from unique opportunities such as:

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

CLUE

The Center for Learning and Undergraduate Enrichment (CLUE) is a free late-night study center. It is designed to

provide supplementary educational opportunities for and enhance the academic achievement of all UW undergraduates. The program places a strong emphasis on creating a rich learning community while supporting freshmen, sophomore, and transfer students who are enrolled in many of the UW's crucial lower-division courses. CLUE services include drop-in help sessions for subjects like chemistry, math, biology, writing, economics, and foreign languages; evening discussion and review sessions with TAs and fellow students; and exam reviews for a variety of courses.

Computing Resources

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

Educational Opportunity Program

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

Libraries

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

Women's Center

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

The Graduate School: Graduate Study

www.grad.uw.edu

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

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

Interdisciplinary Programs

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

Student Success and Diversity

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

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

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

Quality and Assessment

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

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

Public Scholarship and Outreach

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

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

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

Graduate Degree Programs

College of Arts and Sciences

• Anthropology	PhD
• Applied Mathematics	MCFRM, MS, MSc, PhD
• Art	MDes, MFA
• Art History	MA, PhD
• Asian Languages & Literature	MA, PhD
• Astronomy	PhD
• Biology	PhD
• Chemistry	PhD
• Classics	MA, PhD
• Communication	MA, MC, PhD
• Comparative Literature	MA, PhD
• Creative Writing	MFA
• Dance	MFA
• Digital Arts and Experimental Media	PhD
• Drama	MFA, PhD
• Economics	PhD
• English	MA, MAT, PhD
• French Studies	MA, PhD
• Gender, Women, and Sexuality Studies	PhD
• Geography	MA, MGIS, PhD
• Germanics	MA, PhD
• Hispanic Studies	MA, PhD
• History	MA, PhD
• International Studies	MAIS, PhD

• China Studies	
• Comparative Religion	
• International Studies	
• Japan Studies	
• Korea Studies	
• Middle East Studies	
• Russian, East European, and Central Asian Studies	
• South Asian Studies	
• Southeast Asian Studies	
• Linguistics	MA, MS, PhD
• Mathematics	MA, MS, PhD
• Music	MA, MMus, DMA, PhD
• Near Eastern Languages & Civilization	MA
• Philosophy	PhD
• Physics	PhD
• Political Science	PhD
• Psychology	PhD
• Scandinavian Studies	MA, PhD
• Slavic Languages & Literatures	MA, PhD
• Sociology	PhD
• Spanish and Portuguese	MA, PhD
• Speech and Hearing Sciences	MS, PhD, AudD
• Statistics	MS, PhD

College of Built Environments

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

Foster School of Business

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

School of Dentistry

• School of Dentistry	MSD
• Oral Biology	MS, PhD

College of Education

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

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

College of Engineering and School of Medicine

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

College of the Environment

• Aquatic and Fishery Sciences	MS, PhD
• Atmospheric Sciences	PhD

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

The Information School

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

• Biology Teaching	MS
• Biological Physics, Structure, and Design	PhD
• Biological Structure	PhD
• Health Services Administration	MHA
• Individual PhD	PhD
• Molecular and Cellular Biology	PhD
• Museology	MA
• Near and Middle Eastern Studies	PhD
• Neuroscience	PhD
• Pathobiology	PhD
• Quantitative Ecology and Resource Management	MS, PhD
• Urban Design and Planning	PhD

School of Law

• School of Law	LLM, PhD
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School of Medicine

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

School of Medicine and School of Public Health

• Global Health	MPH, PhD
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School of Nursing

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

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

Evans School of Public Affairs

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

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

School of Social Work

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

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

University of Washington Tacoma

• Accounting	MAcc
• Business Administration	MBA
• Computer Science and Systems	MSCSS
• Cybersecurity and Leadership	MCL
• Education	MEd, EdD
• Interdisciplinary Studies	MAIS
• Nursing	MN
• Social Work	MSW

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

GRADUATE ADMISSIONS

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

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

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

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

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

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

Admission to the UW is necessarily a selective process. The prospective student must hold a baccalaureate de-

gree from an accredited college or university in this country or an equivalent degree from a foreign institution. The student's record should be a strong one with an average grade of "B" or a 3.00 grade-point, or better.

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

1. Priority for admission of applicants into a graduate degree program based upon the applicant's apparent ability, as determined by the University, to complete the program with a high level of achievement.
2. No practice may discriminate against an individual because of race, color, creed, national origin, sex, sexual orientation, age, marital status, disability, or status as a disabled veteran or Vietnam era veteran.
3. Sustained efforts shall be made to recruit qualified applicants who are members of groups that are underrepresented in certain disciplines.
4. All applicants to a degree-offering unit shall be processed through the same set of procedures to assure that all applicants are evaluated on their individual merits.
5. Tests and criteria for admission should relate to the actual requirements of the graduate program. Reasonable accommodation for testing conditions may be made to compensate for relevant disabilities.
6. Additional factors may be used in developing a pool of qualified applicants for admission to the Graduate School. Weights given these and other factors may vary among graduate degree programs. No factor will confer admission on an academically unqualified applicant. These factors include, but are not limited to, the following:
 - a. Grades earned, especially for subjects in or closely related to the field of the applicant's proposed graduate work.
 - b. Scores on the Graduate Record Examination (GRE) verbal, quantitative and analytical tests, on the GRE advanced test, on other tests related to the applicant's field, and on other aptitude tests which may be required.
 - c. Personal interviews of the applicant by the department admissions committee.
 - d. The career objectives of the applicant and the extent to which the graduate degree program may be expected to prepare the applicant for those objectives.
 - e. Written and oral recommendations from persons who are qualified to evaluate the applicant's academic record and promise.
 - f. The applicant's degree objective (i.e., master's degree, doctoral degree, or a master's followed by a doctoral degree).
 - g. Activities or accomplishments; educational goals; prior employment experience; living experiences, such as growing up in a disadvantaged or unusual environment; special talents.
 - h. Academic accomplishments in light of the applicant's life experiences and special circumstances. These experiences and circumstances may include, but are not limited to disabilities, low family income, first generation to attend college, need to work during college, disadvantaged social or educational en-

vironment, difficult personal and family situation or circumstances, and refugee status or veteran status.

Importance given to these factors will vary among degree programs.

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

Admission Process

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

Registration

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

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

Financial Aid for Graduate Students

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

Fellowships, Traineeships, and Scholarships

A limited number of fellowships, traineeships, and scholarships is available through individual departments to outstanding students in fields of study leading to advanced degrees. Application forms may be obtained from the graduate program advisors in the departments.

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

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

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

Work Study Graduate Assistantships

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

Employment Opportunities

The campus offers other job opportunities for graduate students. Students may apply directly to the department in which they hope to work or check the Career Center's Husky Jobs website careers.washington.edu/HuskyJobs/Students. Students seeking part-time employment must be enrolled and on campus before they may obtain jobs.

Advisory positions in University residence halls paying room and board are available for graduate students. Additional information may be obtained from the Housing and Food Services Human Resources Office, 305 Schmitz Hall, hfsjobs@uw.edu.

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

Loans

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

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

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

GRADUATE DEGREE POLICIES

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

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

graduate faculty from some other discipline participates as an official representative of the Graduate School, including various major evaluations such as the general examination and final examination.

Graduate Program Coordinator

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

Graduate Courses

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

Repeating Courses

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

Grading System for Graduate Students

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

Correspondence between number grades and letter grades is as follows:

Numeric Grade-Point Equivalent	Letter Grade
4.0	A
3.9	
3.8	A-
3.7	
3.6	
3.5	
3.4	B+
3.3	
3.2	

Numeric Grade-Point Equivalent	Letter Grade
3.1	
3.0	B
2.9	
2.8	B-
2.7	
2.6	
2.5	
2.4	C+
2.3	
2.2	
2.1	
2.0	C
1.9	
1.8	
1.7	
1.6–0.0	E

The following letter grades also may be used:

- **I Incomplete.** An Incomplete may be given only when the student has been in attendance and has done satisfactory work to within two weeks of the end of the quarter and has furnished proof satisfactory to the instructor that the work cannot be completed because of illness or other circumstances beyond the student's control. To obtain credit for the course, a student must successfully complete the work and the instructor must submit a grade. In no case may an Incomplete be converted into a passing grade after a lapse of two years or more. An incomplete received by the graduate student does not automatically convert to a grade of 0.0 but the "I" will remain as a permanent part of the student's record.
- **N No grade.** Used only for hyphenated courses and courses numbered 600 (Independent Study and Research), 601 (Internship), 700 (Thesis), 750 (Internship), and 800 (Dissertation). An N grade indicates that satisfactory progress is being made, but evaluation depends on completion of the research, thesis, internship, or dissertation, at which time the instructor or Supervisory Committee Chairperson should change the N grade(s) to one reflecting the final evaluation.
- **S/NS Satisfactory/Not-Satisfactory.** A graduate student, with the approval of the Graduate Program Coordinator or Supervisory Committee Chairperson, may elect to be graded S/NS in any numerically-graded course for which he or she is eligible. If a student does not so elect, then he/she will be graded on a numerical basis. If approval is granted the student must elect the S/NS option either when registering or no later than the end of the seventh week of the quarter. The instructor shall submit a numeric grade to the Registrar, who shall convert grades of 2.7 and above to S and grades lower than 2.7 to NS.
- **CR/NC Credit/No Credit.** With the approval of the faculty in the academic unit, any course may be designated for grading on the CR/NC basis by notice in the appropriate Time Schedule. For such courses, the instructor will submit a grade of CR or NC to be recorded by the Registrar's Office for each student in the course at the end of the quarter. All courses numbered 600, 601, 700, 750 and 800 may be graded with a decimal grade, a CR/NC or N at the instructors' option.
- **W Withdrawal.** Refer to the University of Washington timeschedule or homepage at www.washington.edu/students/reg/wdoffleave.html.
- **HW Hardship withdrawal.** Grade assigned when a graduate student is allowed a hardship withdrawal

from a course after the seventh week of the quarter. Unofficial withdrawal from a course shall result in a grade of 0.0.

The grade W and HW count neither as completed credits nor in computation of grade-point average.

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

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

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

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

Scholarship

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

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

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

Withdrawal Policy

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

Language Competency Requirements and Examinations

Competence in one or more languages in addition to English is desirable for all fields of advanced study and is often required, especially in the scholarly and research-oriented programs leading to the degrees of Master of Arts, Master of Science, and Doctor of Philosophy.

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

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

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

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

Enrollment Requirement

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

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

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

Full-Time Enrollment

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

Final Quarter Registration

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

Continuous Enrollment and Official On-Leave Requirement

Policy

To maintain graduate status, a student must be enrolled on a full-time, part-time, or official on-leave basis from the time of first enrollment in the Graduate School until completion of all requirements for the graduate degree. (Summer quarter on-leave enrollment is automatic for all graduate students who were either registered or officially on-leave during the prior spring quarter.) Any student who fails to register for classes or on-leave status after being admitted to the UW will need to be approved for reinstatement by his or her program to regain active student status within the Graduate School. Failure to maintain either con-

tinuous enrollment or on-leave status constitutes evidence that the student has resigned from the Graduate School.

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

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

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

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

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

Readmission

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

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

Concurrent Degree Programs

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

Formal Concurrent Degree Programs

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

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

1. Graduate/Professional Degrees

Examples of formal graduate/professional concurrent degrees:

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

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

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

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

2. Graduate/Graduate degrees

Examples of formal graduate/graduate concurrent programs:

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

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

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

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

Informal Concurrent Degree Programs

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

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

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

Master's Degree

Summary of Requirements

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

Second Master's Degree Requirement

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

Transfer Credit

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

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

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

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

Thesis Program

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

Non-thesis Programs

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

Final Examination for Master's Degree

As soon as is appropriate, the faculty in the student's graduate program appoints a supervisory committee, consisting of two to four members. The chair and at least one-half of the total membership must be members of the graduate faculty. (See Graduate School Memorandum 13 grad.washington.edu/policies/memoranda/memo13.shtml.) The committee chairperson arranges the time and place of the

final examination, the results of which must be reported to the Graduate School by the last day of the quarter (last day of finals week) in which degree requirements are met. The examination may be oral or written, and all members of the supervisory committee must certify its results. If the examination is not satisfactory, the committee may recommend to the dean of the Graduate School that the student be allowed to take another examination after a period of further study. A student must be registered the quarter in which any required exam or presentation occurs.

Application for Master's Degree

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

Master of Arts for Teachers

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

Doctoral Degree

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

Summary of Requirements

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

- Completion of a program of study and research as planned by the graduate program coordinator in the student's major department or college and the supervisory committee. At least 18 credits of course work at the 500 level and above must be completed prior to scheduling the general examination.
- Presentation of 90 credits, 60 of which must be taken at the University of Washington. With the approval of the degree-granting unit, an appropriate master's degree from an accredited institution may substitute for 30 credits of enrollment.
- Numerical grades must be received in at least 18 quarter credits of course work taken at the UW prior to scheduling the general examination. The Graduate School accepts numerical grades in approved 400-level courses accepted as part of the major, and in all 500-level courses. A minimum cumulative GPA of 3.00 is required for a graduate degree at the University.

- Creditable passage of the general examination.
- Registration as a graduate student is required the quarter the exam is taken and candidacy is conferred.
- Preparation of and acceptance by the dean of the Graduate School of a dissertation that is a significant contribution to knowledge and clearly indicates training in research. Credit for the dissertation ordinarily should be at least one-third of the total credit. The candidate must register for a minimum of 27 credits of dissertation. At least one quarter must come after the student passes the general examination. With the exception of summer quarter, students are limited to a maximum of 10 credits per quarter of dissertation (800).
- Creditable passage of a final examination, which is usually devoted to the defense of the dissertation and the field with which it is concerned. The general and final examinations cannot be scheduled during the same quarter. Registration as a graduate student is required the quarter the exam is taken and the degree is conferred.
- Completion of all work for the doctoral degree within 10 years. This includes quarters spent on-leave or out of status, as well as applicable work from the master's degree from the UW.
- Registration maintained as a full- or part-time graduate student at the University for the quarter in which the degree is conferred (see detailed information under final quarter registration).
- A student must satisfy the requirements that are in force at the time the degree is to be awarded.

Appointment of Doctoral Supervisory Committee

A supervisory committee is appointed by the dean of the Graduate School to guide and assist a graduate student working toward a doctoral degree and is expected to evaluate a student's performance throughout a program. A supervisory committee should be appointed no later than four months prior to a general examination. Appointment of a supervisory committee indicates that the graduate faculty in a student's field finds a student's background and achievement a sufficient basis for admission into a program of doctoral study and research. "Preliminary" examinations, if required, should be completed prior to a request for appointment of a supervisory committee. If preliminary examinations are not an academic unit's requirement, it is appropriate to request appointment of a supervisory committee during a student's first year of study. See Graduate School Memorandum 13: Supervisory Committees for Graduate Students, grad.washington.edu/policies/memoranda/memo13.shtml.

Admission to Candidacy for Doctoral Degree

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

If the general examination is satisfactory, the supervisory committee members who participate at the examination sign the warrant and return it to the student's graduate program by the last day of the quarter. If an examination is unsatisfactory, a supervisory committee may recommend that the dean of the Graduate School permit up to a maximum of two additional re-examinations after a period of

additional study. Any members of a supervisory committee who do not agree with the majority opinion are encouraged to submit a minority report to the dean of the Graduate School.

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

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

Candidate's Certificate

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

Dissertation and Final Examination

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

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

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

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

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

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

Publication of Doctoral Dissertations

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

Individual PhD Program

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

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

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

ACADEMIC PROGRAMS AND COURSES

College of Arts and Sciences

Dean
Robert Stacey
50 Communications

Divisional Deans
Betsy Cooper -- Arts
Judith Howard -- Social Sciences
Michael Shapiro -- Interim Dean, Humanities
Werner Stuetzle -- Natural Sciences

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

UNDERGRADUATE STUDY

Graduation Requirements

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

Requirement*	Credits	
Language Skills	5–20	English composition (5 credits) Foreign language (0–15 credits, depending on placement or high school background)
Reasoning and Writing in Context	15	Quantitative/symbolic reasoning (QSR) (5 credits) Additional writing (W) courses (10 credits)
Areas of Knowledge	75	General-education courses to include at least 20 credits in each of the following three areas: <ul style="list-style-type: none">• Visual, Literary, & Performing Arts (VLPa)• Individuals & Societies (I&S)• The Natural World (NW)
Major	50–90	An area of specialization, usually in a single department
Minor (optional)	25–35	An additional area of specialization
Electives	varies	Free choice; as many credits as necessary to bring the total to 180

Language Skills

To receive a degree from the College of Arts and Sciences, students whose first enrollment in college (whether at the UW or elsewhere) was in autumn quarter 1985 or later are required to complete 5 credits of English composition with a minimum grade of 2.0. They must also complete coursework through the end of the first-year college sequence in a foreign language, with at least a 2.0 in the third-quarter course, or demonstrate equivalent proficiency through one of the following: successful completion of the third-year or higher level of high school language instruction (effective autumn 2009); by passing an examination; or by receiving a passing grade in a qualifying course beyond the first-year level. Credits used for these two requirements (including the entire first year of foreign language, if taken) cannot also be applied to the Areas of Knowledge requirements described below.

Reasoning and Writing in Context

Students who first entered college autumn quarter 1985 or later must complete a minimum of 5 credits in Quantitative or Symbolic Reasoning (QSR) and 10 credits of additional composition courses or courses that emphasize the development of writing skills in the context of an academic discipline (W courses). QSR and writing courses, if they apply, can also be counted toward Areas of Knowledge or major requirements. The writing requirement is in addition to the English composition requirement mentioned in the preceding paragraph.

Areas of Knowledge

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

Course Designators

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

- VLPa -- Visual, Literary, & Performing Arts (Area of Knowledge requirement)
- I&S -- Individuals & Societies (Area of Knowledge requirement)
- NW -- The Natural World (Area of Knowledge requirement)
- QSR -- Quantitative and Symbolic Reasoning

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

Major

In fulfilling the requirements for a major, the student engages in thorough study of a discipline or subject, aimed at developing knowledge in depth. This part of the student's program is determined by the department, school, or faculty committee with which the major study is pursued. Measured in academic credits, the "major" required of

each student consists of 50 or more prescribed credits in a department of the College or a closely related group of departments. Descriptions of major programs are printed below.

Minor

Completion of a minor, available through many departments, is optional. Requirements are shown under individual department undergraduate programs, below, or in a minors handout available in the Undergraduate Gateway Center, 171 Mary Gates Hall. The following interdisciplinary minors are also offered: Disability Studies; Diversity; Education, Learning, and Society; Human Rights; Labor Studies; and Values in Society. Websites for these minors may be found in the alphabetical listing of Arts & Sciences degree programs.

Credits Required Outside Major Department

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

GPA Required for Graduation

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

Applying for Graduation

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

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

Limits on Physical Education Courses Allowed Toward Graduation

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

Graduate Study

Students who intend to work toward advanced degrees must apply for admission to the Graduate School and must meet the general requirements outlined in this General Catalog, as well as the requirements established by the graduate faculty in the department or unit offering the

degree program. Graduate students must satisfy the requirements for an advanced degree in force at the time the degree is to be awarded.

American Ethnic Studies

B510 Padelford

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

UNDERGRADUATE PROGRAM

Adviser

B509 Padelford, Box 354380

(206) 221-0664

aes@uw.edu

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

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

Bachelor of Arts

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

Department Admission Requirements

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

Major Requirements

60 credits as follows:

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

Minor

Diversity minor requirements: 25 credits to include the following:

4. One foundation course (5 credits) chosen from the following: AES 151, ANTH 330, HSTAA 105, LSJ 332/CHID 332, PSYCH 250, GWSS 200
5. A minimum of four additional courses, with at least one each from four of the five following categories (20 credits): arts/cultural; historical; global; contemporary/institutional; applications. A list of courses by category is available at depts.washington.edu/divminor/.
6. Minimum 15 credits must be completed in residence at the UW.
7. Maximum 10 credits from one department and maximum 10 credits from the student's major department may be applied toward the minor.
8. Diversity minor students are strongly encouraged to complete an internship, volunteer project, research project, study abroad program, intergroup dialogue course,

or some applied learning opportunity that promotes the goals of the minor.

Contact information for the minor is as follows: Address: B505 Padelford, Box 354380; Phone: (206) 616-5789; Email: divminor@uw.edu. Program director is Professor Rick Bonus at rbonus@uw.edu.

Student Outcomes and Opportunities

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

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

African-American Studies

AFRAM 101 Introduction to African American Studies (5) I&S, DIV History, culture, religion, institutions, politics, economics, arts, and psychology of peoples of African descent as developed from experience in both the old and new worlds. Multidisciplinary analysis of social life from a black perspective as illustrated in selected historical and contemporary writings.

AFRAM 150 Introduction to African American History (5) I&S Introductory survey of topics and problems in Afro-American history with some attention to Africa as well as to America. Basic introductory course for sequence of lecture courses and seminars in Afro-American history. Offered: jointly with HSTAA 150.

AFRAM 214 Survey of Afro-American Literature (5) VLPA Butler A chronological survey of Afro-American literature in all genres from its beginnings to the present day. Emphasizes Afro-American writing as a literary art; the cultural and historical context of Afro-American literary expression and the aesthetic criteria of Afro-American literature. Offered: jointly with ENGL 258.

AFRAM 220 African American Film Studies (5) VLPA/I&S, DIV Examines the history and theory of African American filmmaking, introducing central political and aesthetic debates by way of different cinematic eras, genres, and filmmakers. Focuses primarily on black directors and producers independent and commercial contexts as they confront popular representations of U.S. blackness in their own cinematic practice.

AFRAM 246 African American Politics (5) I&S, DIV C. PARKER Survey of African Americans within the U.S. socio-political processes. Situates African Americans within a

post-civil rights context where there is debate about race's centrality to an African American politics. Recommended: either AES 150, AFRAM 201, or POL S 202. Offered: jointly with POL S 246.

AFRAM 260 African American Family (5) I&S, DIV Explores the structures and functioning of various types of black families. Single-parent families, two-parent families, extended families, and consensual families are explored. Their consequences for male/female relationships are linked and critiqued. Offered: jointly with SOC 260.

AFRAM 261 The African American Experience Through Literature (5) VLPA/I&S Scott Instructs students in hermeneutical and sociological methods of analyses. Analyzes selected novels, essays, poems, short stories, and plays with the purpose of understanding the structures and functions of both society and personality. Offered: jointly with SOC 261.

AFRAM 270 The Jazz Age (5) I&S, DIV Walter Interdisciplinary study of period after World War I to Great Crash. Afro-American and Anglo-American currents and impulses that flowed together in the Roaring Twenties. Covers politics of normalcy, economics of margin, literature of indulgence and confusion, transformation of race relations, and cultural influence of jazz. Offered: jointly with HSTAA 270.

AFRAM 272 History of the South Since the Civil War (5) I&S, DIV Walter Reconstruction and its aftermath, the Agrarian (Populist) revolt, disfranchisement and segregation, the effects of urbanization and subsequent depression, desegregation, and the struggle for civil rights. Examines the New South, the conflict of ideology with structural and material change, and the place of the South in contemporary America.

AFRAM 315 Black Identities and Political Power (5) I&S Rivers Relates the deployment of political power within institutions to shifting racial identities. Shows how racial identities both reflect and inflect relations of domination and resistance within and between cultures in the black diaspora. Prerequisite: either AES 150, AFRAM 150, AFRAM 201, or POL S 201. Offered: jointly with POL S 315.

AFRAM 318 Black Literary Genres (5) VLPA Ibrahim, Retman Considers how generic forms have been discussed, distributed, and valued in the larger context of African American, or other African-Diasporic literary studies. Explores how black writers and artists treat the terms and conventions of generic forms in response, and comparison, to their cultural treatment of others. Offered: jointly with ENGL 318; AWSp.

AFRAM 320 Black Women in Drama (5) VLPA, DIV Character types of black women as represented in plays by black women. Some black male playwrights are juxtaposed with black female writers for comparative analysis. Playwrights include Georgia Douglas Johnson, Angelina Grimké, Alice Childress, Lorraine Hansberry, Ira Aldridge, LeRoi Jones.

AFRAM 321 History of Afro-American Women and the Feminist Movement (5) I&S "Feminist Movement" from early nineteenth century to present. Treats relationship between black and white women in their struggle for independence, at times together and at times apart. Discusses the reasons, process, and results of collaboration as well as opposition. Examines recent and contemporary attempts at cooperation. Offered: jointly with GWSS 321.

AFRAM 330 Music, Folklore, and Performance in Black Society (5) VLPA Steptoe

Focuses on cultural expressions created by people of African descent in the United States in the twentieth century, with an emphasis on music, folklore, dance, and humor. Offered: WSp.

AFRAM 334 Civil Rights and Black Power in the United States (5) VLPA/I&S Steptoe Examines the politics and culture of the modern African American freedom struggle, which began after WWII and continued into the 1970s. Interrogates political strategies associated with nonviolent direct action, armed self-reliance, and black nationalism,

as well as the cultural expression that reflect these political currents. Recommended: AFRAM 150; AFRAM 270. Offered: jointly with HSTAA 334.

AFRAM 337 Music and Social Change in the Sixties Era (5) VLPA/I&S *Walter* Introduction of popular music and social change in 1950s and 1960s. How this interaction effects significant change. Considers political activism for civil rights and against the Vietnam War as they intersect with the development of rock and roll, R&B, acoustic and political folk music, and post-bebop jazz.

AFRAM 340 The Harlem Renaissance: A Literary Study (5) VLPA Highlights Harlem Renaissance - 1912 through mid-1930s - as establishing a role for twentieth-century African American writer, encompassing literature, politics, and decolonization of the image of Africa, and solidifying integrationist and nationalist schools of thought. Examines images, themes, and characterizations in creating a literary aesthetic simultaneously American and African American.

AFRAM 350 Black Aesthetics (5) VLPA/I&S Draws on both multi-media and print sources, including fiction, poetry, prose, films, polemics, historiography and speeches to explore the idea of a black aesthetic in various cultural, historical, and political contexts within the twentieth century.

AFRAM 358 Literature of Black Americans (5) VLPA Selected writings, novels, short stories, plays, poems by Afro-American writers. Study of the historical and cultural context within which they evolved. Differences between Afro-American writers and writers of the European-American tradition. Emphasis varies. Offered: jointly with ENGL 358.

AFRAM 370 Afro-American Political Thought (5) I&S Political ideologies and philosophies of pivotal Afro-American historical figures and the conditions under which these ideologies are developed, rejected, and transformed. How ideologies relate to solution of Afro-American political problems.

AFRAM 437 Blacks in American Law (5) I&S *Walter* Historical continuity for changing relationship between American jurisprudence and black Americans, 1640-1986. Statutory and case law which determined role of blacks in American society, and use of law by blacks to gain civil and personal rights.

AFRAM 498 Special Topics in African American Studies (3-5, max. 15) I&S Topics in which students and faculty have developed an interest as a result of work done in other classes or as a result of the need to investigate in greater depth Afro-American Studies issues. Topics vary.

AFRAM 499 Independent Study and Research (1-5, max. 10) Identification and investigation of the problems and needs of the black community. Methods and alternatives of approaching these problems and needs. Students designate their areas of interest and subsequently pursue research and problem solving.

American Ethnic Studies

AES 150 In-Justice for All: Intersection of Race, Ethnicity, Class, and Gender in the United States (5) I&S, DIV *Gamboa, Salas* Focusing on pre-Columbus era to 1970, students develop an understanding of how race, ethnicity, nationality, class, and gender impact all Americans - especially those viewed as racial ethnic minorities.

AES 151 Identities, Cultures, and Power Across American Ethnic Groups (5) I&S, DIV Provides an introduction to the major theories, debates, and issues concerning the study of identities and cultures of American ethnic groups as they are constituted through relationships of power.

AES 211 Environmental Justice (5) I&S *D. PENA* Examines introductory studies of environmental racism and ecological injustice in the United States and select areas of the world. Reviews environmental justice theories and methods applied to risk science, ecosystem management, biodiversity conservation, and sustainable development. Includes comparative studies of social movements for "eco-justice." Offered: jointly with ANTH 211/ENVIR 211.

AES 212 Comparative American Ethnic Literature (5) VLPA/I&S, DIV *Butler*

Reviews selected texts by African American, American Indian, Asian American, Chicano/Latino, and Euro American writers. Includes a comparison of how texts envision and interpret a diverse American culture and social, political relations among peoples of the United States. Explores the power of cultural agency in the creation of America's literature.

AES 250 Race in the American University (5) I&S Racial integration in American institutions of higher education. Entry to, and impact on, American universities by people of color. History of ethnic studies and its relation to other disciplines. Recommended: AES 150; AES 151.

AES 322 Gender, Race, and Class in Social Stratification (5) I&S, DIV The intersection of race, class, and gender in the lives of women of color in the United States from historical and contemporary perspectives. Topics include racism, classism, sexism, activism, sexuality, and inter-racial dynamics between women of color groups. Prerequisite: GWSS 200. Offered: jointly with GWSS 300.

AES 330 Beyond Civil Rights: Law, Culture, and Change (5) I&S Assessment of the contemporary politics of civil rights as shaped by an identity politics that is both significant and passe. Recommended: either LSJ 363 or one course in either AES or GWSS. Offered: jointly with LSJ 330.

AES 333 Race and Ethnicity in the U.S. Military (5) I&S *Salas* The experiences of racial minorities in the military. Topics include segregation of units, desegregation of military, career limitations and opportunities, minority women, military families, racism, and role of veterans in civil rights struggles after service.

AES 335 Sports and Social Change in the Twentieth Century (5) I&S *Walter* Development of sport in the United States and its importance for U.S. culture and society. Covers increased centrality of athletic competition as part of the new leisure time in the late nineteenth century, revival of the Olympic movement, racial segregation/integration, today's American notions of celebrity and social style.

AES 340 Race, Ethnicity, and Education (5) I&S, DIV Focuses on critical social and political dimensions of race and ethnicity as they relate to issues and practices of pedagogy and power in American education. Considers schooling as sites at which contemporary politics of diversity play out amidst increasingly diverse demographics of students, teachers, and parents.

AES 345 Ethnographies of School Inequalities (5) I&S, DIV *Bonus* Explores various issues and practices of school inequalities through the methods of critical ethnography.

AES 361 Ethnicity, Business, Unions, and Society (5) I&S *Scott* Interrelationships of ethnicity, business, unions, and the larger society. Examines financial and sociological structure of business and manufacturing sector, how this sector performs, and consequences of performance for selected ethnic groups in United States. Offered: jointly with SOC 363.

AES 389 Race, Gender, and Sexuality in the Media (5) I&S, DIV Introduction to media representations of gender, race, and sexuality. Offered: jointly with COM 389/GWSS 389.

AES 446 Music in American Cultures (3) VLPA/I&S Compares musical history and experience of selected American cultures that have fed into the American musical mainstream or had significant popularity on its periphery. Case studies may include African Americans, Latino/a Americans, Jewish Americans, Asian Americans, or European Americans. Considerations of social identity as well as musical styles. Offered: jointly with MUSIC 446.

AES 450 American Ethnic Health: Race, Gender, and Status Groups (5) I&S, DIV *Kashima* Introduces newer social science and health science related work on race, ethnicity, culture, socio-cultural, and environmental issues affecting American racial minorities. Considers differential rates of physical and medical problems such as cardiovascular dis-

ease rates, diabetes statistics, low birth weight children, etc. Offered: AWSp.

AES 461 Comparative Ethnic Race Relations in the Americas (5) I&S Sketches the ethnoracial systems operating in American society. Studies these systems as systems and examines their institutional and interpersonal dynamics. Compares ethnoracial systems in order to arrive at empirical generalizations about race/ethnorelations in the Americas. Offered: jointly with SOC 461.

AES 462 Comparative Race and Ethnic Relations (5) I&S, DIV Race and ethnicity as factors of social differentiation in a number of Western and non-Western societies in Europe, Africa, Asia, and the Americas. Offered: jointly with SOC 462.

AES 487 Cultures and Politics of Environmental Justice (5) I&S, DIV *D. PENA* Comparative survey of environmental justice movements in the world with focus on critical studies of environmental racism, risk, and sustainable development. Provides theoretical knowledge and research methods incorporating the study of equity and autonomy in environmental impact and risk assessment and other aspects of environmental policy politics. Offered: jointly with ANTH 487.

AES 489 Black Cultural Studies (5) I&S, DIV Examines how images of blackness have been (re)constructed through identity formation and entrenched inequality. Topics include black women's bodies, black men's bodies, blackface minstrelsy, black queer studies, black power, and black hybridities. Offered: jointly with COM 489/GWSS 489.

AES 490 Representing Beyond the Binaries: Mixing Race, Gender, and Sexuality in the Media (5) I&S, DIV *Joseph* Cultural studies approach to examining the mixed formations that race, sexuality, and gender take in the contemporary United States media. Draws upon multi-disciplinary scholarship in examination of the media. Offered: jointly with COM 490/GWSS 486.

AES 494 Community Practicum and Internship (3-5, max. 10) Faculty supervised practicum and internship experience in variety of settings and agencies, e.g., ethnic specific agencies, government and civic community-based offices. Students contribute skills and knowledge to respective communities and gain experience by working with professionals and community organizers. Credit/no-credit only.

AES 496 Honors Senior Thesis (5-10, max. 10) Supervised individual and independent/tutorial study for AES Departmental Honors students involving research, writing, project completion, and completion of a major 30-page paper or commensurate project. Offered: AWSpS.

AES 498 Special Topics in American Ethnic Studies (1-5, max. 15) I&S Designed to provide the student an opportunity to concentrate on one specific aspect of American Ethnic Studies through a comparative, interdisciplinary approach.

AES 499 Independent Study or Research (1-5, max. 10) Independent readings and/or research under the supervision of a faculty member.

Asian-American Studies

AAS 101 Introduction to Asian American Studies (5) I&S, DIV Provides an introduction to the interdisciplinary study of Asian Americans and Pacific Islanders in the United States. Examines issues of race, class, gender, and sexuality, immigration/migration, citizenship, labor, racialization, exclusion, social and political activism and social movements, family, community-building, war, imperialism, sovereignty, (post) colonialisms, transnationalism, culture, and creative expressions.

AAS 206 Contemporary Issues of Asian and Pacific Islander Americans (5) I&S Critically examines contemporary Asian and Pacific Islander American issues, ranging from the Cold War era to the present-day America. Topics include ethnic enclaves, community-building, civil rights, identity problems, family conflict, social organizations, political movements, and immigration.

AAS 210 Asian American and Pacific Islander American Identity: Race, Ethnicity, and Culture (5) I&S, DIV Examines the interdisciplinary nature of Asian-American and

Pacific Islander American identity. Explores influences and manifestations of Asian and Pacific Islander ethnic identity, using literature, history, and social sciences. Topics include gender issues, socio-economic class, and mixed heritage in the United States. Recommended: AAS 101; AAS 206.

AAS 220 Asian American Stereotypes in the Media (5) I&S Asian stereotypes popularized by American literature, film, radio, and television and their effects on Asian American history, psychology, and community.

AAS 250 Asian American Oral Histories (5) I&S, DIV *Nomura*

Explores the intersection of race, class, gender, and sexuality in the lives of diverse Asian Americans through readings of oral histories narrating powerful stories including immigration, war, refugee flight, exclusion and discrimination, activism, community building, labor, race relations, family, generation gap, gender role changes, domestic violence, adoption, mixed race, religion, and culture.

AAS 300 U.S. Pacific Islander Contemporary Culture (5) I&S, DIV Examines United States Pacific Islander culture as informed by Pacific history, social and cultural organization. Emphasis on understanding contemporary experience in the United States and other diaspora communities. Major themes include post-colonialism, migration, family, religion, politics, gender, education, and transnational identity. Recommended: either ANTH 202 or AES 151. Offered: jointly with ANTH 307; Sp.

AAS 310 Asian Americans and Pacific Islanders in the Pacific Northwest (5) I&S, DIV Examines the history and lives of Asian Americans and Pacific Islander communities in the Pacific Northwest from the eighteenth century. Topics include immigration, labor, gender, community building, challenges to racial discrimination and inequities, and activism to achieve social justice. Emphasizes Washington/Seattle with discussion of Oregon, Idaho, and British Columbia.

AAS 314 Ethnography, Transnationalism, and Community in Island Southeast Asia/Asian America (5) I&S, DIV C. *LOWE* Ethnographic exploration of the transformative processes of transnationalism in relation to identity and community formation in Southeast Asia and among Southeast Asian Americans. Experiential learning format concentrates on mini-ethnographic projects, field trips, and group presentations. Prerequisite: either one 200-level ANTH course or one AAS/AES course. Offered: jointly with ANTH 314.

AAS 320 Hawaii's Literatures (5) VLPA, DIV *Sumida* Covers views by Native Hawaiian and multicultural writers and composers, studied within historical contexts ranging from the eighteenth century to the present. Examines how the colonization of a sovereign people redefines culture in ethnocentric, racist, Orientalist ways. Analyzes strategies of decolonization as presented and interpreted in works studied.

AAS 330 Asian American Theater (5) VLPA, DIV Covers drama from the 1970's to now, in historical contexts. They study of drama is dialogical, through dialogue. Themes are contested among the characters. Our studies participate, with the plays, in questioning race, ethnicity, gender, sexuality, and class. Includes students' performances of dramatic readings. No prior experience in theater is required.

AAS 350 Critical Overseas Chinese/Chinese American Histories (5) I&S, DIV Explores the differences and similarities of race, class, gender, sexuality, and generation influence on the life experiences of the Chinese (among the most diasporic people in the world) in America Recommended: AAS 205.

AAS 360 Critical Filipino-American Histories (5) I&S, DIV *Revilla*

Examines the diverse historical and contemporary experiences of Filipinas and Filipinos in the United States in order to critically understand their immigration patterns, colonial histories, practices of identity constructions, and interactions with other groups. Recommended: AAS 205.

AAS 370 Japanese Americans: Race, Culture, Discrimination, Gender, and Endurance (5) I&S, DIV Explores the changing nature of Japanese Americans from the first, Issei, to the latest generation. Topics include arrival, inequal-

ity and discrimination, Picture Brides, WW II, and minority-majority race relations. Lectures, readings, discussion, and videos offer varied approaches to view culture, values, community, concentration camps, gender, socio-economic, and psychological issue. Recommended: AAS 205.

AAS 372 American Internment and Incarceration: Race, Discrimination, and Power (5) I&S, DIV Explores the racial animus, failure of political leadership, and war hysteria in WW II that resulted in Japanese Americans incarcerated into American concentration camps. Conceptually different internment camps held thousands of Japanese, German, and Italian alien nationals. Topics include why, how, past and present concerns. Recommended: AAS 370.

AAS 380 Asian American Community: Discrimination, Power, and Affirmation (5) I&S, DIV Covers three "sea-change" eras for Asian American communities: 1850 to 1941 (racial prejudice, discrimination, and perseverance); World War II to 1965 (inclusion of Asian communities except Japanese Americans); and 1965 to present (new Asian immigrant communities). Topics include theory, comparative history, gender issues, cultural norms and values, and socio-economic endeavors. Recommended: AAS 205.

AAS 385 Asian Americans and Pacific Islander Americans: Race, Law, and Justice (5) I&S, DIV Explores relationship of race, law, and justice in history of Asian Americans and Pacific Islander Americans. Examines how challenges and resistance to racial discrimination, inequality, and colonialism transformed our political and legal justice system. Issues include citizenship, immigration, sovereignty, gender, civil liberties, national security, work, property, language, education, and marriage. Recommended: either AAS 205 or AAS 206.

AAS 392 Asian American and Pacific Islander Women (5) I&S, DIV

Explores the intersection of race, ethnicity, gender, class, and sexuality in the lives of Asian American and Pacific Islander women. Examines how forces such as immigration, colonialism, sovereignty, labor, family, gender roles and relations, community, war, homeland politics, transnationalism, and social movements shaped and were shaped by these women. Recommended: either AAS 205 or AAS 206. Offered: jointly with GWSS 392.

AAS 395 Critical Studies of Post-Vietnam War Southeast Asian Americans: Not Just Refugees (5) I&S, DIV Focuses on the experiences of Vietnamese, Cambodians/Khmer, Lao, and Indo-Chinese, addressing the various waves of these Southeast Asians to the USA after 1975. Beyond refugee status and the Vietnam War, students explore how ethnicity, age, class, gender and generation influences Southeast Asian groups in America.

AAS 401 Asian American Literature to the 1940s (5) VLPA Asian American literature from nineteenth-century immigrants to the 1940s. Emphasis on Chinese, Japanese, and Filipino writings detailing the experience and sensibility of first generation immigrants. Early twentieth-century writing focus on the development not only of Asian American community, but also of second generation American-born Asian American writers. Recommended: either AAS 205 or AAS 206.

AAS 402 Contemporary Asian American Literature (5) VLPA, DIV Examines Asian American literature from the 1950s to the present that require analyses of structures of power and possibilities for empowerment of an American "minority" group. Multi-ethnic focus, including Filipino American, Japanese American, Chinese American, Korean American, Vietnamese American, and South Asian American subjects.

AAS 403 Survey of Asian American Poetry (5) VLPA Asian American poetry, nineteenth century to present. Readings include poetry of the early immigrant to America, cultural imperatives transferred from old world to new world, and establishment of an Asian American identity in poetry from 1870s through 1890s.

AAS 406 Asian American Activism (5) I&S, DIV Explores the multiple political traditions forged by Asian Americans, from the earliest challenges to racist laws and unequal wages to

the latest debates over affirmative action and racial profiling. Examines Asian American communities organized to oppose and to perpetuate social inequalities. Offered: jointly with HSTAA 406.

AAS 498 Special Topics (5, max. 10) I&S

AAS 499 Undergraduate Independent Study (1-5, max. 10)

Chicano Studies

CHSTU 101 The Chicano/Mexican Ethnic Experience in the United States (5) I&S, DIV *Gamboa, Salas* Examines the Chicano/Mexican American experience, with a focus on past and contemporary issues of race, ethnicity, and socio-economic status.

CHSTU 200 Latinos in the United States: Patterns of Racial, Ethnic, and Socio-Economic and Political Inequality (5) I&S, DIV *Gamboa, Salas* Studies broad patterns of inequality formed by historical forces, race, ethnicity, nationality, gender, immigration, and social capital. Analyzes rapid growth and adjustment of old and newly established Latino communities, resulting from transnational migration from Latin America.

CHSTU 254 Northwest Latino Ethnic Communities: Culture, Race, Class, Immigration, and Socio-Economic and Political Marginalization (5) I&S, DIV *Gamboa* Traces the history and development of the Latino community in the Pacific Northwest. The study engages racial and ethnic identities, rural to urban, inter-regional, and trans-border migration, and labor and economy to approach issues of marginalization. The Latino community is also contrasted across rural and urban spaces.

CHSTU 255 Mexican Women: Past and Present (5) I&S, DIV *Salas*

Survey of women in Mexican society from Meso-American times to the 1940s.

CHSTU 256 Chicanas: Gender and Race Issues (5) I&S *Salas* Contemporary issues in the Chicana movement since the 1940s. Issues range from feminism and Chicana political, educational, and social organizations, to work, family, health, and the arts.

CHSTU 260 Introduction to Chicano Politics (5) I&S, DIV Surveys the political position and activities of Mexican American peoples in the United States from two perspectives: (1) Chicanos as objects of the political process of U.S. life, (2) contributions of the Chicano people to U.S. politics.

CHSTU 320 Food Sovereignty Movements in Mexico and the United States (5) I&S *Pena* Interdisciplinary study of agri-food systems and food sovereignty movements in Mexico and Mexican-origin communities in the United States. Uses the methods and materials of ethnography, agroecology, and political ecology in concert with environmental history, rural sociology, deconstructive discourse analysis, eco-criticism, and predictive ecology. Offered: A.

CHSTU 330 Chicano/Chicana Autobiography (5) I&S Explores the issue of Chicano, or Mexican American, identity. Examines statements of selfhood by Chicanos, studied in order to understand the relationship between individual and society in creating identity.

CHSTU 332 Chicano Film and Narrative (5) VLPA/I&S, DIV *Flores* Provides a historical overview of the evolution of Chicano culture through film. Critically examines the portrayal and self-portrayal of Chicanos in film and selected works of narrative. Taught in English.

CHSTU 340 Latina/Latino Theater (5) VLPA *Habell-Pallan* Explores the contextual, theoretical, thematic, and formal dimensions of U. S. Latina and Latino theater and performance art in the contemporary period. Examines performances and play scripts as a way of analyzing innovations in form, language, and content produced by Chicano/Latino teatro and performance art.

CHSTU 342 Working Latinas and Latinos: Changing Sites of Identity in Daily Life (5) I&S, DIV Sociological examination of Latina/o working lives. Focuses on inequalities and power relations that shape diverse socio-economic working

experiences and social change across distinct Latino communities. Covers race and gender consciousness, informal/formal work, labor recruitment, changing contexts of home and family, youth and children's work, entrepreneurship, organizing, and immigration and labor legislation.

CHSTU 352 Latina/o Migrations: A Comparative Analysis (5) I&S, DIV Gamboa, Salas Comparative studies of migrations to the U.S. from Mexico, the Caribbean, Central and South America. Key theories and conceptual frameworks for understanding Latina/o migration and other key migrations to the U.S. Analyses of structural powers, the state, and identity formation in areas such as work, family, political participation, and community.

CHSTU 354 Unions, Labor, and Civil Rights in California and Pacific Northwest Agriculture (5) I&S Gamboa Comparative study of Southwest and Pacific Northwest farm workers against the social movement of the 1960s, its significance in the socio-political development of the Chicano civil rights movement, and its legacy. Uses historical and social science research methods along with analytical criticism to examine the period of social history.

CHSTU 356 The Chicano Family (5) I&S Salas

The historical, psycho-social, and sociocultural role of the Chicano family from Meso-American times to the present.

CHSTU 359 U.S. Latino Politics (5) I&S, DIV M. BARRETO Examines historical and current political incorporation of Latinos in the United States. Topics include Latino voting and voter mobilization, office seeking and representation, Latino public opinion, and public policy formation on "Latino issues." Offered: jointly with POL S 359.

CHSTU 405 Advanced Chicano Studies (5) I&S Gamboa Chicano culture as related to current values and health practices, Mexican labor and immigration in both historical and contemporary setting. Chicano politics 1848 to present. Recurrent problems of Chicanos in society; social movement for acceptance and for self-determination.

CHSTU 416 Comparative Social Movements: Mexico and the United States (5) I&S, DIV D. PENA

Historical, ethnographic, and theoretical perspectives in the study of Mexican-origin communities in social movements in Mexico and the United States with a focus on workers, immigrants, peasants, women, indigenous peoples, and students as forces of collective mobilization and social, cultural, and political change. Offered: jointly with ANTH 416.

CHSTU 465 Contemporary Chicano Literature (5) VLPA Flores Examines one or more problems, themes, and/or figures in the developing body of Chicano literature. Taught in English.

CHSTU 466 Chicano Literature: Fiction (5) VLPA Flores Examines nineteenth- and early twentieth-century fiction, as well as contemporary works in attempts to trace the development of Chicano fiction in the proper historical trajectory. Taught in English.

CHSTU 498 Special Topics in Chicano Studies (3-5, max. 10) I&S Gamboa, Olguin, Salas Interdisciplinary course concentrating on one or more aspects of the Chicano experience.

CHSTU 499 Independent Study and Research (1-6, max. 10) Gamboa, Olguin, Salas Students work individually or in teams.

Swahili

SWA 101 Basic Swahili (5) Maulana Introduces the Swahili language and the diverse cultures and customs of the people of East Africa. Provides a basic foundation in speaking, reading, and writing. First in a sequence of three.

SWA 102 Basic Swahili (5) Maulana Introduces the Swahili language and the diverse cultures and customs of the people of East Africa. Provides a basic foundation in speaking, reading, and writing. Second in a sequence of three. Prerequisite: SWA 101.

SWA 103 Basic Swahili (5) Maulana Introduces the Swahili language and the diverse cultures and customs of the people of East Africa. Provides a basic foundation in speaking,

reading, and writing. Third in a sequence of three. Prerequisite: SWA 102.

SWA 134 Intensive Basic Swahili (15) Maulana Introduces the Swahili language and the diverse cultures and customs of the people of East Africa. Provides a basic foundation in speaking, reading, and writing. Offered: S.

SWA 201 Intermediate Swahili (5) VLPA Builds proficiency in the language by speaking, reading, and writing. Includes children's stories, newspaper articles, poetry, and folklore. First in a sequence of three. Prerequisite: either SWA 103 or SWA 134.

SWA 202 Intermediate Swahili (5) VLPA Builds proficiency in the language by speaking, reading, and writing. Includes children's stories, newspaper articles, poetry, and folklore. Second in a sequence of three. Prerequisite: SWA 201.

SWA 203 Intermediate Swahili (5) VLPA Builds proficiency in the language by speaking, reading, and writing. Includes children's stories, newspaper articles, poetry, and folklore. Third in a sequence of three. Prerequisite: SWA 202.

Tagalog

TAGLG 101 Basic Tagalog (5) Introduces the Filipino language and culture. Students use the language through speaking, listening, reading, and writing at the novice level. Examines basic language structures, appropriate forms of address, and vocabulary for communication. First in a sequence of three Offered: A.

TAGLG 102 Basic Tagalog (5) Introduces the Filipino language and culture. Students use the language through speaking, listening, reading, and writing at the novice level. Examines basic language structures, appropriate forms of address, and vocabulary for communication. Second in a sequence of three. Prerequisite: TAGLG 101. Offered: W.

TAGLG 103 Basic Tagalog (5) Introduces the Filipino language and culture. Students use the language through speaking, listening, reading, and writing at the novice level. Examines basic language structures, appropriate forms of address, and vocabulary for communication. Third in a sequence of three. Prerequisite: TAGLG 102. Offered: Sp.

TAGLG 134 Intensive Basic Tagalog (15) Intensive introduction to the Filipino language and culture. Uses language through speaking, listening, reading, and writing at the novice level. Explores language structures, appropriate forms of address, and vocabulary for communication.

TAGLG 201 Intermediate Tagalog (5) VLPA Provides further reinforcement and practice of the lessons learned in basic Tagalog. Improves the communicative competence of the student by teaching the social rules along with the linguistic rules. First in a sequence of three. Prerequisite: either TAGLG 103 or TAGLG 134. Offered: A.

TAGLG 202 Intermediate Tagalog (5) VLPA Provides further reinforcement and practice of the lessons learned in basic Tagalog. Improves the communicative competence of the student by teaching the social rules along with the linguistic rules. Second in a sequence of three. Prerequisite: TAGLG 201. Offered: W.

TAGLG 203 Intermediate Tagalog (5) VLPA Provides further reinforcement and practice of the lessons learned in basic Tagalog. Improves the communicative competence of the student by teaching the social rules along with the linguistic rules. Third in a sequence of three Prerequisite: TAGLG 202. Offered: Sp.

TAGLG 301 Advanced Tagalog (5) VLPA Reading of contemporary Filipino (Tagalog) prose, poetry, and drama. Advanced conversation and composition. First in a sequence of three. Prerequisite: TAGLG 203. Offered: A.

TAGLG 302 Advanced Tagalog (5) VLPA Reading of contemporary Filipino (Tagalog) prose, poetry, and drama. Advanced conversation and composition. Second in a sequence of three. Prerequisite: TAGLG 301. Offered: A.

TAGLG 303 Advanced Tagalog (5) VLPA Reading of contemporary Filipino (Tagalog) prose, poetry, and drama. Advanced

conversation and composition. Third in a sequence of three. Prerequisite: TAGLG 302. Offered: A.

American Indian Studies

C514 Padelford

American Indian Studies offers students a wide range of opportunities to learn about the histories, cultures, arts, and contemporary lives of North America's diverse indigenous peoples. The AIS curriculum is multi-disciplinary; it encompasses knowledge, theory, and methods characteristic of several fields in the social sciences and humanities, including history, anthropology, political science, sociology, law, art, and communications.

UNDERGRADUATE PROGRAM

Adviser

C514 Padelford, Box 354305

(206) 543-9082

The American Indian Studies Center offers the following undergraduate programs:

- Bachelor of Arts degree with a major in American Indian studies
- A minor in American Indian studies.

Bachelor of Arts

Suggested First- and Second-Year College Courses: Completion of two courses from AIS 102, AIS 201, AIS 202, AIS 203

Department Admission Requirements

1. 10 credits of college American Indian studies classes.
2. Minimum 2.00 cumulative GPA.
3. Upon satisfying items 1 and 2, above, students may declare the major any time. Transfer students must be enrolled at the UW before applying.

Major Requirements

55 credits as follows:

1. *Introductory courses (10 credits):* Two courses from AIS 102, AIS 201, AIS 202, and AIS 203. Other courses may be approved by the American Indian Studies chair.
2. *American Indian Studies electives (45 credits):* Chosen from AIS courses or a select list of courses from other departments. (See program adviser or departmental website for complete list.)
3. Minimum 25 credits for the major at the 300 level or above must be completed at the UW.

Minor

Minor Requirements: Minimum 30 credits to include:

1. 10 credits of introductory coursework in American Indian studies, chosen from AIS 102, AIS 201, AIS 202, AIS 203. Other courses may be allowed with the approval of the American Indian Studies program chair.
2. 20 credits of AIS electives, chosen from AIS courses or from a select list of courses in other departments (see program adviser or program Website for complete list).

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* American Indian studies graduates possess a broad knowledge of historical and contemporary American Indian cultures,

have the ability to develop both written and oral arguments, possess knowledge of American Indian philosophy and world view, and possess an understanding of Native Nation sovereign status and treaty status.

- **Instructional and Research Facilities:** None
- **Honors Options Available:** For Interdisciplinary Honors, see University Honors Program.
- **Research, Internships, and Service Learning:** None offered
- **Department Scholarships:** None offered
- **Student Organizations/Associations:**
 - American Indians in Science and Engineering Society (AISES), UW Chapter Office: Ethnic Cultural Center and 207 Loew Hall (MSEP), (206) 685-8688
 - First Nations at the UW, Office: Ethnic Cultural Center, American Indian Room, (206) 543-4635, ext. 12
 - Medicine Wheel Society, Office: Ethnic Cultural Center and School of Medicine

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

American Indian Studies

AIS 102 Survey of American Indian Studies (5) I&S, DIV T. COLONNESE Explores basic issues of American Indian studies including theories about American Indian origins and demography; the impact of European disease and colonialism, the formation of American Indian stereotypes, the resistance of native peoples to racism and oppression, and the treaty status and continuing challenges for Indian nations. Introduces American Indian studies faculty and their research and teaching specialties.

AIS 110 Musical Traditions of Native North America (5) VLPA Utilizes historical and contemporary sources to survey the music and music-related traditions of Native North America. Examines traditional music and context from the Northwest Coast, Arctic, Southwest, Great Basin, Plains, Plateau, California, and Eastern Woodlands music-style areas, as well as contemporary neo-traditional and popular genres of American Indian music.

AIS 170 Survey of North American Indian Art (5) VLPA Major American Indian art traditions of North America. Pre-contact and early-contact-era traditions and the evolution of Indian art forms in contemporary times. Design and techniques in Indian art.

AIS 201 Introduction to American Indian Histories (5) I&S Survey of histories of Indians in the United States from Native perspectives. Presents traditional creation accounts and oral histories, archaeological, and historical evidence. Focus is cultural dynamics, considering change and continuity through prehistoric, protohistoric, colonial, and American periods.

AIS 202 Introduction to Contemporary Experience in Indian America (5) I&S, DIV Survey of contemporary Native American people, cultures, and issues. Focus on modern experiences through readings from Native-American autobiographies, contemporary narratives and literature, and reports of important topical issues, e.g., water rights, Indian gaming, treaty law.

AIS 203 Introduction: Philosophical and Aesthetic Universes (5) I&S Social constructions of reality, aesthetic as well as philosophic, as conceptualized by approximately five traditional American Indian cultures from different regions of North America.

AIS 230 Contemporary Indian Gaming and Casinos (5) I&S Overview of the contemporary \$18.5 billion Indian tribal gaming industry (with a focus on the Pacific Northwest),

which is heavily regulated, is an economic engine for non-Indian communities, and funds economic, social, and cultural revitalization of Indian reservations, yet often generates intense political discussions.

AIS 240 Native North American Women (5) I&S Indian women in the social structure; historical and contemporary roles; changes in male-female relationships; problems and opportunities of contemporary women; the feminist movement and Indian rights.

AIS 253 Wood Design (5, max. 15) VLPA M. OLIVER Studio course in wood sculpture utilizing Pacific Northwest Indian hand tools. Properties of woods and their uses.

AIS 270 Native Peoples of the Pacific Northwest (5) I&S, DIV C. COTE, D. MILLION Examines indigenous societies on the Pacific Northwest's western slope, from southeast Alaska to California, including social structures and relations, subsistence strategies, belief systems, and changes over time, both before and after non-Natives' arrival. Offered: jointly with JSIS A 270.

AIS 271 Native Peoples of the Intermountain West (5) I&S Examines societies of the Columbia and Fraser River Plateau and Great Basin, including social structures and relations, subsistence strategies, belief systems, and changes over time, both before and after non-Natives' arrival.

AIS 272 Native Peoples of the Southeast (5) I&S Examines indigenous societies of North America's southeastern sector, including social structures and relations, subsistence strategies, belief systems, and changes over time, both before and after non-Natives' arrival.

AIS 309 Methods in Amerindian Linguistics (5) VLPA/I&S Survey of native North American languages; introduction to systems of transcription; focus on reading of texts and analysis of grammatical structure in two languages; introduction to the use of microcomputers in the description and analysis of Native American texts.

AIS 310 A Linguistic Approach to Culture (3) VLPA/I&S Analytical study of a language, with special focus on Native Indian languages of North America. Emphasizes analysis of sound systems of languages, as well as a universal system of classifying and writing speech sounds. Emphasis on practical application, with time devoted to sound transcription practice.

AIS 317 North American Indians: The Southwest (5) I&S Overview of history and ethnography of the Southwest with emphasis on Apacheans, Pueblos, and Pimans/Yumans. Social organization, religion, worldview, and expressive culture of such specific groups as Navajo, Hopi, Zuni, Tewa, and Tohono O'odham.

AIS 330 United States-Indian Relations (5) I&S History of relations between American Indians and non-Indians in the United States with emphasis on national laws and policies. Examines origins and impacts of Indians' and non-Indians' strategies for dealing with each other, historical reasons for Indians' contemporary conditions and status.

AIS 331 American Indian History I to 1840 (5) I&S, DIV A. HARMON History of indigenous peoples and their descendants in the area that now constitutes the United States, from the eve of European discovery of the Americas to 1840. Emphasis on relations between indigenous peoples and immigrants. Offered: jointly with HSTAA 331.

AIS 332 American Indian History II Since 1840 (5) I&S, DIV A. HARMON History of American Indians in the United States from 1840 to the present. Emphasis on relations between Indians and non-Indians, government policies, and Indian strategies of survival. Offered: jointly with HSTAA 332.

AIS 335 American Indians and the Law (5) I&S, DIV C. COTE, A. HARMON History of laws governing American Indians: aboriginal law systems, U. S. laws, and contemporary tribal laws. Effects of laws and legal institutions on contemporary Indian identity and tribal status, self-government, land ownership and use, natural resources, religion, fam-

ily life, cultural and spiritual practices, crimes and punishment, and federal responsibilities for Indians.

AIS 340 Indian Children and Families (5) I&S, DIV D. MILLION Cross-cultural survey of Indian child rearing, family structure, and related social issues. Includes historical changes in family structure, value orientation and adaptation to a bicultural environment, education, child welfare, health problems, and aging.

AIS 341 Native Women in the Americas (5) I&S Historiography, sociology, biography, autobiography, and fiction about native women in the United States and Canada. Offered: jointly with GWSS 341.

AIS 350 Two-Dimensional Art of the Northwest Coast Indians (5, max. 15) VLPA Oliver Studio course emphasizes principles of structure and style of two-dimensional art which can be found on many old, traditional Northwest Coast pieces, such as painted storage boxes and chests, house panels, and ceremonial screens. Students apply these principles in creating a variety of graphic projects.

AIS 360 American Indians in Cinema (5) VLPA/I&S, DIV T. COLONNESE Studies representations of American Indians in American films from 1900 to present. Examines the foundations of American Indian stereotypes and how Hollywood helped create and perpetuate those stereotypes. Activities include reading critical materials, and viewing, discussing, and writing critically about films by non-Native directors.

AIS 370 Researching Indians' History (5) I&S A. HARMON Finding and interpreting sources of information about American Indians' history. Offered: jointly with HSTAA 315.

AIS 376 First Nations Literature (5) VLPA Literature written by First Nations Canadian authors as a form of cultural resistance and a re-seizing of identity.

AIS 377 Contemporary American Indian Literature (5) VLPA, DIV Creative writings (novels, short stories, poems) of contemporary Indian authors; the traditions out of which these works evolved. Differences between Indian writers and writers of the dominant European/American mainstream. Offered: jointly with ENGL 359.

AIS 378 Contemporary American Indian Literature: A Northwest Focus (5) VLPA D. MILLION Literature and poetry of the Pacific Northwest (Coast and Plateau) Native peoples. Contemporary literature and discussion of social and cultural issues raised by American Indian writers and writing.

AIS 379 Powwow: Tradition and Innovation (5) VLPA/I&S, DIV Explores the historical and cultural roots of powwow. Discusses the ways this indigenous Native art form has adapted since prehistoric times.

AIS 425 Indians in Western Washington History (5) I&S, DIV A. HARMON Relations of Indians and non-Indians in the Puget Sound region, from the 1790s to the present, with emphasis on evolving ideas about Indian identity. Offered: jointly with HSTAA 417.

AIS 431 History of American Indian Education (5) I&S Traditional and European-introduced methods of schooling, the federal role in Indian education, and contemporary Indian education issues. Special attention to Indian concepts of learning; boarding school education; the role of the Bureau of Indian Affairs; current trends in bilingual and bicultural education for Indians.

AIS 435 Spiritual Encounters: Native Spirituality in the Contact Era (5) I&S Explores North American indigenous interaction with, resistance to, and syncretization with Christianity, the European colonizers' religious system. Focuses on Native revitalization movements and new forms of religious expression such as the Indian Shaker Church and the Peyote Road, as well as the legal, social, and cultural issues of Native freedom of religion.

AIS 440 Reading Native American Women's Lives (5, max. 10) I&S, DIV Seminar based on social science writings, autobiographies, biographies, and fiction written by, with, or

about indigenous women of the United States and Canada. Offered: jointly with GWSS 440.

AIS 441 Gender in Native American Societies (5) I&S, DIV D. MILLION Examines gender roles, identity, and relations in Native American pre- and post-contact societies. Analyzes how contact with European gender customs influenced and altered traditional gender practices, especially in regard to women's social position and the roles of the third/ fourth genders in Native American communities.

AIS 442 Images of Natives in the Cinema and Popular Cultures (5) VLPA/I&S, DIV D. HART, L. ROSS Cultural examination of images of Native people in cinema and popular culture based on social science writings and films by or about Natives in the United States and Canada. Offered: jointly with GWSS 442.

AIS 443 Indigenous Films, Sovereign Visions (5) VLPA/I&S D. HART, L. ROSS Explores fiction, documentary, experimental film, and digital media by indigenous artists from around the world. Focuses on personal, political, and cultural expression. Issues include media and sovereignty movements, political economy, language revitalization, the politics of decolonization, and indigenous aesthetics. Offered: jointly with COM 443.

AIS 444 Criminality and "Deviance" in Native Communities (5) L. ROSS Seminar based on social science writings and biographies written by and about incarcerated Natives and "deviance" in Native communities in the United States and Canada. Offered: jointly with GWSS 444.

AIS 446 American Indian Economic History (5) I&S Harmon Surveys and analyzes the history of American Indians' economic challenges and strategies. Topics include the economic cultures of indigenous North American societies, the impacts of European colonization and U.S. government policies, and tribal strategies aimed at improving Indians' economic circumstances. Offered: jointly with HSTAA 446.

AIS 451 Critical Conversations in American Indian Studies (5, max. 10) D. MILLION Critical issues in American Indian studies. Topics vary.

AIS 461 First Nations Government and Politics in Canada (5) I&S Cote Focuses on First Nations government and politics in Canada. Examines development of First Nations political governing structures with an introduction to the values, perspectives, concepts, and principles in Native political cultures. Explores federal Indian policy in context of First Nations strategies to become self-governing. Offered: jointly with JSIS A 426.

AIS 465 First Nations Filmmaking in Canada (5) VLPA Cote Examines First Nations video production in Canada; how film is utilized as a medium for addressing issues significant to First Nations. First Nations filmmakers "decolonize" the screen by providing real and positive images of First Nations people that correspond to their cultural and social experiences. Offered: jointly with JSIS A 422.

AIS 466 Producing the Documentary Short (5) VLPA D. HART, L. ROSS Explores documentary theory, methods, and aesthetics. From humanities, social science, and indigenous studies perspectives, students critique a self-produced documentary, looking at methodology, perspective, and ethics. Students also explore pre-production, production, and post-production documentary techniques.

AIS 475 Special Topics in Indian Studies (1-5, max. 15) I&S Current research and readings in American Indian Studies content areas.

AIS 499 Independent Study (1-5, max. 15) VLPA/I&S Readings and/or research under faculty supervision.

AIS 501 Documentary Film/Video Research Methods in Native Communities (5) D. HART, L. ROSS Seminar exploring theoretical, methodological, and aesthetic issues when researching documentary film and video projects in Native American communities. Utilizes readings, screening, discussions, and a major research project to explore issues of documentary representation, ethics, and historiography.

First part of a two-quarter documentary production sequence. Offered: jointly with GWSS 510.

AIS 503 Documentary Theory, Form, and Practice (5) D. HART, L. ROSS Explores documentary theory and practice, utilizing readings and documentary filmmaking exercises. Students create short documentary sequences while investigating traditional and more experimental ideas about the non-fiction form; theories of representation, subject ethics, documentary authenticity, the intersection of fiction and non-fiction forms, documentary and performance, documentary and historiography.

AIS 590 Special Topics (1-5, max. 15) Offered by visitors or resident faculty as a one-time, in-depth study of special interest.

Anthropology

M32 Denny

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

The study of anthropology at the University of Washington is comprised of three sub-disciplines:

Archaeology is the study of the human past through investigation of material remains (artifacts, food remains, features, structures, etc.) and their relationships in space and time.

Biocultural anthropology focuses on understanding human variation through the study of the ecological, demographic, genetic, developmental, and epidemiological dimensions of modern human adaptation and its evolutionary basis.

Sociocultural anthropology is the study of human societies from the perspective of culture as a comparative frame.

UNDERGRADUATE PROGRAM

Adviser

247 Denny, Box 353100

(206) 543-7772

The Department of Anthropology offers the following undergraduate programs:

- The Bachelor of Arts degree with a major in anthropology
- The Bachelor of Arts degree with a major in anthropology, with an option in medical anthropology and global health (MAGH), anthropology of globalization (AG), or in archaeological sciences (ASc)
- A minor in anthropology

Bachelor of Arts

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

Department Admission Requirements

1. Minimum 15 ANTH/ARCHY/BIO A credits.
2. Minimum cumulative 2.50 GPA for ANTH/ARCHY/BIO A credits, with at a minimum 2.0 grade in each course.
3. Minimum cumulative 2.50 GPA for all prior college work, including transfer credits.

4. Transfer students must be admitted to the UW before they can apply.

Additional requirements for students applying to medical anthropology and global health (MAGH) or anthropology of globalization (AG) options.

Admission to the MAGH or AG options is competitive. Meeting minimum requirements for admission to the major does not guarantee admission to either option. Applications are available on the department website on the first day of the quarter. Application deadline is the second Friday of autumn, winter, or spring quarters. Students are notified of the admission decision by the end of week five of the quarter in which they apply.

See department advising office for additional requirements.

Admission to the archaeological sciences (ASc) option is not competitive and is open to all students accepted into the anthropology major. A passing grade in ARCHY 205 is required for admission to the archaeological sciences (ASc) option.

Major Requirements

55 credits as follows:

1. *Core courses (20 credits):* ARCHY 205, BIO A 201; any 200-level ANTH course; and one of the following: CS&SS 221/SOC 221/STAT 221, STAT 220, STAT 311, Q SCI 381, or ARCHY 495
2. 35 additional ANTH, ARCHY, and BIO A credits distributed across the subfields or concentrated as suits the interests of the student. 20 of these credits must be in upper-division (300- or 400-level) courses. Students may count one 100-level ANTH, ARCHY, or BIO A course toward the major, but are not required to do so.
 - a. The following AIS courses may apply toward this requirement: AIS 201, AIS 202, AIS 203, AIS 240, AIS 311, AIS 312, AIS 316, AIS 317, AIS 330, AIS 335, AIS 340, AIS 443. There is no limit on the number of AIS course that may apply to this requirement.
 - b. Maximum 12 credits (18 credits for departmental honors students) from ANTH 499, ARCHY 499, and BIO A 499 combined can be counted toward the major.
3. *Additional major requirements:*
 - a. Courses with a grade of 1.9 or lower do not count toward the major.
 - b. At least 25 credits in the major must be completed with a minimum 2.50 grade.
 - c. Transfer students must complete a minimum of 15 upper-division credits in anthropology at the UW.
4. Students may pursue either the general anthropology major or one of the three options shown below.

Medical Anthropology and Global Health (MAGH) Option: Requirements for the general anthropology major, as shown above, to include ANTH 215 and 15 credits from ANTH and BIO A courses approved for the MAGH option. A list of approved courses available at the department advising office (247 Denny) or on the department website.

Anthropology of Globalization (AG) Option: Requirements for the general anthropology major, as shown above, to include 20 credits from courses in ANTH, ARCHY, and BIO A approved for the AG option. A list of approved courses is available at the department advising office (247 Denny) or on the department website.

Archaeological Sciences (ASc) Option: Requirements for the general anthropology major, as shown above, to include at least 15 credits from ARCHY 372, ARCHY 373, ARCHY 465, ARCHY 467, ARCHY 480, ARCHY 481, ARCHY 482, ARCHY 483, ARCHY 484, ARCHY 486, ARCHY 495, BIO A 487, and at least 15 credits from courses approved for the ASc option. The list of approved courses is available on the

department website or at the department advising office (247 Denny).

Minor

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

Student Outcomes and Opportunities

- **Learning Objectives and Expected Outcomes:** The study of anthropology develops skills in critical thinking, research, and writing, as well as technical skills specific to the different subfields (ethnographic field techniques, interpretation of data, statistical analysis, archaeological methods of data collection and interpretation). An undergraduate degree prepares students for many positions that involve working with people, as well as for academic studies in a variety of fields. Careers in anthropology can be developed through employment with government agencies, museums, teaching and research, private consulting firms, and nongovernmental organizations.
- **Instructional and Research Facilities:** Undergraduate students have access to the following facilities for classroom training in laboratory methods and for research experiences subject to faculty approval and supervision: the Burke Museum (ethnological, archaeological, natural history, and archival collection), Quaternary Research Center, Biodemography laboratory, Luminescence Dating laboratory, Electron Microscope laboratory, Cooperative, Geoarchaeology laboratory, Digital Imaging and Microscopy laboratory, Geographical Information System (GIS) Computer laboratory. In addition, the department co-sponsors with the Department of Geography a writing center offering undergraduate writing support for anthropology classes.
- **Honors Options available:** With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- **Research, Internships, and Service Learning:** The Department of Anthropology supports students who undertake community-based internships under faculty supervision.
- **Department Scholarships:**
 - The Brett E Baldwin Scholarship, for approximately \$1,000, is awarded to an outstanding graduate or undergraduate majoring in anthropology.
 - The Wienker Prize for Best Undergraduate Essay. Four awards are given each year, one in each sub-discipline for the best essay in an undergraduate anthropology class, and one for the best senior honors thesis.
- **Student Organizations/Associations:** The Anthropology Club is run by and for students in the department.

GRADUATE PROGRAM

Graduate Program Coordinator
M31 Denny Hall, Box 353100
(206) 685-1562

The department recognizes three principal subfields of anthropology within its faculty, programs, and curriculum: archaeology, biocultural anthropology, and sociocultural anthropology (including linguistic anthropology). The department offers three distinct PhD programs within the sub-disciplines. Additionally, the department has an

informal program in environmental anthropology which applicants may pursue within one of the traditional PhD track programs. A concurrent degree program with Health Services offers an MPH/PhD. A PhD program in sociocultural anthropology with emphasis in ethnomusicology is offered in cooperation with the School of Music. The MA degree may be earned within the PhD programs. Graduate students are admitted to, and specialize in, their chosen subfields from the beginning of their graduate studies.

Admission Requirements

Applicants are admitted to begin study only during autumn quarter and are advised to have their application materials completed by the beginning of the prior January. A complete application file includes the online application to the Graduate School, official transcripts, the supplementary application to anthropology, three recommendations, a statement of purpose, and scores from the Graduate Record Examination (GRE). International students are required to take the TOEFL exam as well as the GRE.

Degree Requirements

For each of the respective graduate programs, completion of the core requirements and a reading knowledge of one foreign language are required. Under the guidance of a Supervisory Committee selected from the appropriate subfield, the student shapes an individual program. The major areas emphasized in the faculty and curriculum are the United States, Mexico, Africa, South Asia, Southeast Asia, China, Oceania, Middle East, and the post-Soviet states. The MA degree usually requires two years of graduate study; the PhD programs usually require at least three years beyond the master's level, including a year of independent field research and a year to organize field materials and write a doctoral dissertation. The MA degree can be earned only within the PhD programs as a thesis or non-thesis degree.

Financial Aid

Two multi-year recruitment fellowships are awarded to outstanding entering students. A limited number of teaching and research assistantships and hourly positions are offered primarily to advanced students. Applicants should apply for Foreign Language Area Studies Fellowships if qualified. Work-study positions may also be available for eligible graduate students.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsat/

Anthropology

ANTH 100 Introduction to Anthropology (5) I&S Introduction to the subfields of archaeology, biocultural anthropology, and sociocultural anthropology through the examination of selected problems in human physical, cultural, and social evolution. Not recommended for students who have had other courses in anthropology, archaeology, or biocultural anthropology.

ANTH 101 Exploring Sociocultural Anthropology (5) I&S D. HOFFMAN Introduces perspectives from sociocultural anthropology on the diversity and the dynamics of collective human life. Examines how individual lives are shaped by broader social and cultural contexts, how people make meaning, and how power relations work. Introduces ethnography as a method for documenting and understanding social and cultural life.

ANTH 150 Culture and Rights: Exploring the Meaning and Practice of Human Rights (5) I&S Examines social justice issues with the aim of obtaining deeper understanding of human rights. Analyzes historical and theoretical founda-

tions and introduces international and regional institutions designed to implement and enforce human rights. Case studies in sovereignty, war crimes, ethnic cleansing, genocide, torture, truth commissions, and forgiveness.

ANTH 202 Principles of Sociocultural Anthropology (5) I&S Comparison of life ways of various non-Western and Western peoples. Introduction to basic theories and methods used in the field.

ANTH 203 Introduction to Anthropological Linguistics (5) VLPA/I&S Linguistic methods and theories used within anthropology. Basic structural features of language; human language and animal communication compared; evidence for the innate nature of language. Language and culture: linguistic relativism, ethnography of communication, sociolinguistics. Language and nationalism, language politics in the United States and elsewhere. Offered: jointly with LING 203.

ANTH 204 Reading Ethnography (5) I&S Introduction to the descriptive and analytic literature of cultural anthropology. Extended examination of representative accounts of the lifeway of peoples from selected areas of the world with an emphasis on methods of observation and analysis.

ANTH 206 The Cultural Animal (5) I&S/NW Examination of the interaction between biology and culture in shaping human social behavior. Basic principles of natural selection, gene-environment interaction, cultural transmission, learning, and cultural evolution; application of these to various topics, including gender, violence, politics, kinship, and religion.

ANTH 207 Class and Culture in America (5) I&S, DIV Anthropological view of the contemporary United States with emphasis on social class. Through ethnographic readings examines education, work, political economy, working class experience and the ideology of the middle class, and relations between class and race, gender, ethnicity, language, place, sexuality, and culture.

ANTH 208 The Culture Concept (5) I&S History of the culture concept and its use in the field of cultural anthropology. History of its emergence in European colonial expansion and contemporary debates about its place as the central concept defining the field of anthropology.

ANTH 209 Anthropology through Visual Media (5) VLPA/I&S S. WELLAND Theories of culture and cultural variation, as seen and understood through visual media such as films, video, and photography.

ANTH 210 Introduction to Environmental Anthropology (5) I&S S. HARRELL, D. PENA Introduction to human/environment interactions from various anthropological perspectives. Intellectual history of anthropological approaches to environment, emphasizing the mutual interconnectedness of people and nature. Survey of evolutionary models; cultural ecology; systems approaches; indigenous knowledge; ethnoecology; nature and the state; political ecology; ecofeminism; and environmentalism.

ANTH 211 Environmental Justice (5) I&S D. PENA Examines introductory studies of environmental racism and ecological injustice in the United States and select areas of the world. Reviews environmental justice theories and methods applied to risk science, ecosystem management, biodiversity conservation, and sustainable development. Includes comparative studies of social movements for "eco-justice." Offered: jointly with AES 211/ENVIR 211.

ANTH 213 Anthropology and Sport (5) I&S H. BARKER Introduces theories, methods, and findings of sociocultural anthropology through a focus on sport. Considers sport as linked to identities, nationalism, gender, race, class, religion, and other issues. Explores cultural rituals of sport, potentials and obstacles to sport transcending social differences, and sport's role in education, youth development, and community building.

ANTH 215 Introduction to Medical Anthropology and Global Health (5) I&S R. CHAPMAN Explores influences of global processes on health of U.S. and other societies from a

social-justice perspective. Emphasizes inter-relationships between cultural, environmental, social-economic, political, and medical systems that contribute to health status, outcomes, policies, and healthcare delivery. Focuses on health disparities within and between societies and communities around the world.

ANTH 228 Identities: Race, Class, Gender, and Sexuality in Anthropology (5) I&S, DIV An introduction to the study of race, class, gender, and sexuality in anthropology. Through ethnographic and theoretical readings, students are introduced to the concept of identity as intersectional construction and social performance.

ANTH 233 Introduction to Language and Society (5) VLPA, DIV Evans, Wassink Introduces the study of sociolects, the varieties of language that arise from differences in cultural and societal groups, often reflective of power inequalities. Raises awareness of the role that society and the individual play in shaping sociolects via the systematic observation and critical discussion of linguistic phenomena. Offered: jointly with COM 233/LING 233; A.

ANTH 235 Global Feminist Art (5) VLPA/I&S Introduces feminism as a way of thinking about visual art practice in terms of social hierarchy, aesthetic form, and ideology. Explores how feminist artists working in diverse locations and cultural traditions challenge, at the local and global level, artistic conventions and representations of gender, sexuality, race, class, and nationality. Offered: jointly with GWSS 235.

ANTH 269 Special Topics in Anthropology (3-5, max. 10) I&S Delineation and analysis of a specific problem or related problems in anthropology.

ANTH 280 Cultures of Global Capital (5) I&S Designed to introduce students to the study of cross-border phenomenon including global capital, migration, international philanthropy, and terrorism from an anthropological perspective. Introduces theories of globalization and the approaches anthropologists have taken in studying patterns of movement and circulation.

ANTH 289 Identities: Service Learning (3) I&S

ANTH 301 Human Nature and Culture (3) I&S Comparison of various anthropological perspectives on the sources of variation in customs, values, and beliefs of human groups, including non-Western peoples and contemporary Americans.

ANTH 305 Anthropology of the Body (5) I&S Surveys classic anthropological literature examining the relationship between culture and the body. Examines Euroamerican body culture historically. Explores how the body is represented in mass media and the effects this has on everyday body ideologies.

ANTH 306 The Power of Representation: Pacific Islander Voices (5) VLPA/I&S, DIV M. KAHN Focuses on how Pacific Islands and Islanders are being represented by Pacific Islander artists, writers, performers, poets, filmmakers, and scholars. By creatively challenging older dominant misrepresentations in ways these individuals are fashioning new identities that transform images and identities, as well as extend the boundaries of "the Pacific."

ANTH 307 U.S. Pacific Islander Contemporary Culture (5) I&S, DIV Examines United States Pacific Islander culture as informed by Pacific history, social and cultural organization. Emphasis on understanding contemporary experience in the United States and other diaspora communities. Major themes include post-colonialism, migration, family, religion, politics, gender, education, and transnational identity. Recommended: either ANTH 202 or AES 151. Offered: jointly with AAS 300; Sp.

ANTH 310 Native North American Societies (5) I&S Smith Traditional cultures of America north of Mexico, emphasizing diversity of North American Indian and Eskimo societies. Origins of Native-American culture areas and language groupings; subsistence systems; levels of social organization; European conquest and colonialism; and description

of representative cultures from the ten culture areas. Recommended: ANTH 100.

ANTH 311 The Cultural Politics of Diet and Nutrition (5) I&S A. ANAGNOST Examines current debates within the United States about what dietary guidelines are optimal for human health; how changing conceptions of individual responsibility and political life are framing these debates; how social movements for food sovereignty are changing food practices; and how eaters define their ethics through food. Offered: AWSpS.

ANTH 312 Pacific Islands Literature (5) VLPA/I&S Focuses on works written by Pacific Islanders (novels, short stories, plays, and poetry) since the 1970s. Explores colonialism and its effects on indigenous peoples. Examines discourses of gender, class, and cultural identity within the Pacific Islands region.

ANTH 313 Peoples of Africa (5) I&S Survey of the many cultures of pre- and post-colonial sub-Saharan Africa. Appreciation of the adaptability, strength, and creativity of African peoples. Recommended: ANTH 100.

ANTH 314 Ethnography, Transnationalism, and Community in Island Southeast Asia/Asian America (5) I&S, DIV C. LOWE Ethnographic exploration of the transformative processes of transnationalism in relation to identity and community formation in Southeast Asia and among Southeast Asian Americans. Experiential learning format concentrates on mini-ethnographic projects, field trips, and group presentations. Prerequisite: either one 200-level ANTH course or one AAS/AES course. Offered: jointly with AAS 314.

ANTH 315 Southeast Asian Civilization: Buddhist and Vietnamese (5) I&S C. KEYES Civilizations of Theravada Buddhist societies in Burma, Thailand, Cambodia, and Laos and in Vietnamese societies of Southeast Asia. Culture of tribal peoples who live on peripheries of these societies. Cultural transformations consequent upon the war in Indochina and resettlement of Indochinese refugees in United States. Offered: jointly with JSIS A 315.

ANTH 316 Modern South Asia (5) I&S Twentieth-century history and society of Indian subcontinent. Topics include nationalism, rural and urban life, popular culture, gender, and environmental politics. Offered: jointly with JSIS A 316.

ANTH 317 Anthropology of Tibetan Civilization (5) I&S Introduces the basic features of Tibetan society and culture, exploring how the global debate over Tibet's past, present, and future relates to contemporary concerns in anthropology, through the examination of Tibetan history, social and political organization, religion, and other cultural themes in both traditional and contemporary contexts.

ANTH 318 Anthropology of Islam and Muslim Societies (3) I&S Examines diverse expression and experiences of Islam from anthropological perspective. Considers Islam as a lived experience by emphasizing everyday lives of Muslims in context through ethnographic accounts. Covers range of issues including identity, rituals, gender, and political Islam. Prerequisite: one 200-level anthropology course.

ANTH 321 Comparative Religion (3) I&S Anthropological approaches to religious experience and belief with emphasis on conceptual issues such as ritual, symbolism, identity, ecstatic experience, and revitalization movements in the context of globalization. Also addresses the diversity of religious expression in American culture and how that compares with other societies. Offered: jointly with JSIS C 321.

ANTH 322 Comparative Study of Death (5) I&S Death analyzed from a cross-cultural perspective. Topics include funerary practices, concepts of the soul and afterlife, cultural variations in grief, cemeteries as folk art, and medical and ethical issues in comparative context. American death practices compared to those of other cultures. Offered: jointly with JSIS C 320.

ANTH 323 Human Rights Law in Culture and Practice (5) I&S, DIV A. OSANLOO Introduces the complexities of issues surrounding human rights. Examines human rights

concerns through critical analyses, taking into account legal, social, economic, and historical variables. Offered: jointly with LSJ 321.

ANTH 330 Religion, Identity, and Cultural Pluralism (5) I&S, DIV The role of religion in shaping personal and communal identity in a pluralistic society. Themes include current dimensions of American pluralism, effects of ethnicity, immigration, and electronic communication on building religious communities, and issues of conflict, violence, and reconciliation. Offered: jointly with JSIS C 329.

ANTH 331 Native Art of the Pacific Northwest Coast (5) VLPA/I&S Survey of the indigenous arts of the Pacific Northwest Coast from the Columbia River in the south to Southeast Alaska in the north. Overview of ancient through contemporary times, focusing on the historical and cultural contexts of the arts and the stylistic differences between tribal and individual artists' styles. Offered: jointly with ART H 331.

ANTH 339 Social Movements in Contemporary India (5) I&S P. RAMAMURTHY Covers issues of social change, economic development, and identity politics in contemporary India studied through environmental and women's movements. Includes critiques of development and conflicts over forests, dams, women's rights, religious community, ethnicity, and citizenship. Offered: jointly with GWSS 339/JSIS A 339.

ANTH 341 Political Violence and the Post-Colonial State in South Asia (5) I&S, DIV Examines theoretical approaches to the analysis of collective, state, and anti-state violence in post-colonial South Asia through the study of specific cases of political violence in modern India, Pakistan, Sri Lanka, and Nepal. Offered: jointly with JSIS A 341.

ANTH 345 Women and International Economic Development (5) I&S, DIV P. RAMAMURTHY Questions how women are affected by economic development in Third World and celebrates redefinitions of what development means. Introduces theoretical perspectives and methods to interrogate gender and development policies. Assesses current processes of globalization and potential for changing gender and economic inequalities. Offered: jointly with GWSS 345/JSIS B 345.

ANTH 349 Dance/Performance Ethnography (3) VLPA/I&S J. MCMAINS Explores theoretical and practical experience in dance and performance ethnography, ethnology, and oral history. Introduces theories and methods of ethnographic fieldwork, ethnographic writing, and ethnologic analysis. Focuses primarily on dance. Also discusses methods and theories applicable to other physical practices such as music, theatre, sports, and performance arts. Offered: jointly with DANCE 350.

ANTH 352 Buddhism and Society: The Theravada Buddhist Tradition in South and Southeast Asia (5) I&S Religious tradition of Theravada Buddhism (as practiced in Sri Lanka, Burma, Thailand, Laos, and Cambodia). Variations in ethical orientations developed through Theravada Buddhist ideas. Recommended: either JSIS C 202 or one eastern religions course. Offered: jointly with JSIS C 356.

ANTH 353 Feminist Anthropology (5) I&S, DIV Explores the history and contemporary practice of feminist ethnography at the interdisciplinary intersection of anthropology and gender studies. Examines how the inclusion of women, as subjects and researchers, has influenced anthropological knowledge production, and how the cross-cultural imperative of anthropology has influenced understandings of gender, sexuality, and race. Offered: jointly with GWSS 353; W.

ANTH 356 Visual Anthropology (3) VLPA/I&S S. WELLAND The place of photography and films in ethnography; their use in the documentation and interpretation of cultural and social systems.

ANTH 358 Culture and Cognition (5) I&S/NW Surveys anthropological theories and research on the relationship between language, thought, and behavior. Examines the influence of cultural inheritance on perception, classification,

inference, and choice. Describes relevant cross-cultural research methods and evaluates theoretical models used by cognitive anthropologists. Prerequisite: either ANTH 203, LING 203, or PSYCH 355.

ANTH 359 Linguistic Ethnography (5) I&S Language use in cultural contexts. How language reflects world view. Language use in culturally significant settings. Analyzes sets of culturally specific terms in semantic domains. Includes projects demonstrating application of theory and method to data addressing specific problems. Workshop format.

ANTH 360 Anthropology of Popular Culture (5) I&S L. BILANIUK Analysis of the forces that shape popular culture. Examination of the local meanings of global trends in music, clothing, and leisure activities through case studies around the world. Students learn ethnographic methods and conduct an original research project. Prerequisite: one 200-level ANTH course.

ANTH 361 Anthropology of Food (5) I&S Explores how foods reproduce social relations, the meanings food acquires within culture, how food systems are intertwined with structures of power and economic inequality, national cuisines and restaurant cultures, the global marketing of foods, controversies surrounding GMO foods, and alternative food communities. Prerequisite: one 200-level ANTH course.

ANTH 362 Anthropology of Tourism (5) I&S M. KAHN Anthropological approaches to tourism. Debates about cultural encounters and cultural change, authenticity, economic development, social inequalities, identity, gender, ethnicity, nationality, and cultural representation. Prerequisite: one 200-level ANTH course.

ANTH 368 Mythical Figures and Cultural Formations (3) I&S Anthropological perspective on the social and cultural formation of a variety of mythical figures. Examines their emergence and historical specificity, cultural meaning, and social implications. Emphasizes narrative in considering how contemporary institutions and public perceptions of danger are shaped by notions of "character" and the "monstrous."

ANTH 369 Special Problems in Anthropology (3-5, max. 10) I&S Delineation and analysis of a specific problem or related problems in sociocultural anthropology.

ANTH 370 Han Chinese Society and Culture (5) I&S S. HARRELL Themes in the society and culture of the Han Chinese people. Concepts of self; personal interaction; family, gender, and marriage; communities and the state; religion and ritual; class, social categories, and social mobility; culturalism, nationalism, and patriotism. Offered: jointly with JSIS A 370.

ANTH 371 Anthropology of Development (5) I&S Development refers to social, economic, cultural, political transformations viewed as progress. Studied from anthropological perspectives. Historical, social context for emergence of ideas of development. Role of development in promoting national cultures. Impact of development on individual citizenship, families, rural-urban relations, workers, business, environment. Prerequisite: one 200-level ANTH course. Offered: jointly with ENVIR 371.

ANTH 373 Labor, Identity, and Knowledge in Healthcare (5) I&S J. TAYLOR Presents anthropological perspectives on provision of healthcare as a complex social phenomena. Examines division of labor, and how social groups come to occupy particular positions. Considers how knowledge and skills are gained, how they are recognized and valued, and may become sources of identity. Prerequisite: one 200-level ANTH course.

ANTH 374 Narrative, Literature, and Medical Anthropology (5) I&S J. TAYLOR Introduces anthropological perspectives on the workings of narrative in illness, healing, and medicine. Considers writings in medical anthropology alongside other genres of writing about similar topics. Readings include memoirs and fiction as well as scholarly articles.

ANTH 375 Comparative Systems of Healing (5) I&S Introduction to the anthropological study of healing. Examines local approaches to healing, considering their similarities and differences, and addresses their place within global systems. Includes anthropological theories of healing.

ANTH 376 Anthropology of Disability (5) I&S Introduces anthropological perspectives on disability. Considers disability as produced through the interaction of bodily impairments with social structures, political economies, cultural norms and values, individual and group identities, institutional orders, medical practices, assistive technologies, and other factors. Considers ethnographic studies of disability in international as well as U.S. settings.

ANTH 380 Subject, Person, Place: Introduction to Social Theory (3) I&S Introduces contemporary critical thinkers in anthropology. Includes works on governmentality and discipline; politics and bare life; race and recognition; gender and embodiment; and capitalism and subjectivity. Develops an understanding of how contemporary theory frames anthropology and skills in critical spoken and written analysis.

ANTH 399 Junior Honors Seminar (5) I&S Teaches skills required to write senior Honors thesis, including evaluation of academic and scientific writing, formulation of problem, collection of bibliographic and other resources, evaluation of research proposals, and research proposal preparation. Final product is a formal thesis prospectus.

ANTH 403 Qualitative Research Methods in Sociocultural Anthropology (5) I&S H. BARKER Introduces qualitative research methods of anthropology, and data generated. Methods covered include interviewing, focus groups, participant-observation, discourse analysis, and use of visual materials. Addresses ethics as relevant to every phase of research. Explores methods through focus on a specific thematic topic, which varies from year to year. Offered: W.

ANTH 404 South America (5) I&S Survey of anthropological research among the traditional peoples of South America. Historical background and contemporary life of cultural groups of the Amazonian Basin. Transformation of traditional lifestyles through the process of European conquest and the aftermath of colonialism. Detailed study of selected societies. Prerequisite: either one 200-level ANTH course or LING 203.

ANTH 406 China's Environment (5) I&S S. HARRELL Analysis of contemporary environmental problems in China, including population, food, water supply, pollution, biodiversity, and environmental activism. Combines natural science and social science perspectives. Prerequisite: either ANTH 210, ENVIR 201, JSIS 200, JSIS 201, or JSIS 202. Offered: jointly with JSIS A 406.

ANTH 407 Global Futures in East Asia (5) I&S A. ANAGOST Explores interlinked modernity projects in China, Japan, Korea, and Taiwan and how the education of youth figures in projects of national development and international economic competition. Recommended: prior courses in socio-cultural anthropology and East Asian studies. Offered: jointly with JSIS A 407; AWSpS.

ANTH 410 Growing Stuff: Ecology, Economy, and Culture of Resource-Production Ecosystems (5) I&S S. HARRELL Examines the connections between ecological, economic, and cultural aspects of local ecosystems that produce natural resources, through three case studies involving reading, writing, class discussion, and three required Saturday or weekend field trips. Case studies may include forest products, seafood, dairy products, biofuels, orchard crops, or others. Recommended: ENVIR 350; either ANTH 210 or ESRM 201. Offered: jointly with ENVIR 410/ESRM 405.

ANTH 411 The Culture and Politics of Food: Study Abroad in Italy (8-12) I&S Study Abroad program at the UW Rome Center focusing on the organization, politics, economy, and culture of the local food system at increasing scales of analysis: the city of Rome, the region of Lazio, the nation of Italy, the European Union, and the world.

ANTH 412 South Asian Social Structure (5) I&S Examines caste, class, and community in modern India. Transitions from colonial typology to analysis of social change, diversity, stability, and caste hierarchy in rural society. Current debates on class and community in Indian society, rural and urban, explored through themes of identity, structure, and mobility. Prerequisite: one 200-level ANTH course. Offered: jointly with JSIS A 412.

ANTH 413 Anthropology of the Modern Middle East and North Africa (5) I&S Presents an anthropological perspective on social/cultural aspects of contemporary Middle East and North Africa. Explores how anthropologists examine key issues in region including identity, politics, economics, religion, and conflict. Considers how ethnographic representations challenge assumptions about people's politics of region and elucidate contemporary manifestations of local, national, regional, and global power.

ANTH 414 Applied and Public Anthropology (5) I&S H. BARKER, R. CHAPMAN Considers the practical application of anthropology's methods and theories to the challenges and research needs of communities and organizations. Concentrates on a specific topic each quarter. Includes a required service-learning component that helps students connect classroom learning beyond the University.

ANTH 415 Anthropology and International Health (5) I&S R. CHAPMAN, J. TAYLOR Explores international health from medical anthropological perspective, focusing on serious health problems facing resource-poor societies around the globe and in the United States. Develops awareness on political, socio-economic, ecological, and cultural complexity of most health problems and anthropology's consequent role in the field of international health. Prerequisite: ANTH 215.

ANTH 416 Comparative Social Movements: Mexico and the United States (5) I&S, DIV D. PENA Historical, ethnographic, and theoretical perspectives in the study of Mexican-origin communities in social movements in Mexico and the United States with a focus on workers, immigrants, peasants, women, indigenous peoples, and students as forces of collective mobilization and social, cultural, and political change. Offered: jointly with CHSTU 416.

ANTH 418 Indian Heritage of Mexico and Central America (5) I&S, DIV Indian civilizations of Mexico and Guatemala, their origins and ecological foundations. Contemporary communities of Mexico and Guatemala, focusing on creative adaptation of pre-Columbian traditions to modern national realities. Prerequisite: either one 200-level ANTH course or LING 203.

ANTH 419 Collective Memory and Violence (5) I&S Present perspectives on cultural aspects of collective memory and relationship to violence. Explores how memories shape meaning of identity and community and influence contemporary conflict. Considers representations of the past in relation to collective violence, suffering, and trauma, including genocide. Considers relationship between memory and potential for justice and peace.

ANTH 420 The Social Life of Psychiatry (5) I&S Anthropological perspective on social and cultural aspects of contemporary psychiatry. Explores psychiatry as a social practice, an arena for competing cultural assumptions about mental illness and treatment, and a source of diagnostic categories and interpretive methods that influence larger society. Considers how psychiatry influences and is influenced by the cultural history of Europe and the United States.

ANTH 421 Belief, Ritual, and the Structure of Religion (5) I&S Systematic survey of concepts, models, and theories that characterize the anthropological study of religion. Consideration of the human universal basis of religion and of diverse ways in which religions are constructed and related to social experience. Prerequisite: either ANTH 321 or JSIS C 201; JSIS C 202.

ANTH 422 Peoples and Cultures of Central and Inner Asia (5) I&S Introduces Central and Inner Asia with a multidisciplinary, comparative survey of the cultures and societies of contemporary China's Inner Asia (Mongolia, Xinjiang-Eastern Turkestan, Tibet, and Manchuria), the contemporary Muslim Central Asian republics (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan), and the adjacent areas of Afghanistan and Iran. Offered: jointly with JSIS D 472/NEAR E 472.

ANTH 423 Traffic Across Cultural Boundaries (5) I&S Focuses on the movement of cultural patterns and processes across boundaries, examining the "contact zones" in colonial encounters, moving to borrowing and blendings along ethnic and national borders. Examines border crossing of immigration and diasporas. Ethnographic examples from the Americas and Africa. Prerequisite: one 200-level ANTH course.

ANTH 424 Hunter-Gatherer Societies (4) I&S Comparative examination of human foraging societies, emphasizing ethnographic cases and socioecological analysis. Foraging and human evolution; rationality of foraging societies; population and reproductive strategies; variability in social organization and land use; power relations between the sexes; ritual and belief; contemporary status of hunter-gatherer populations. Prerequisite: either one 200-level ANTH course or LING 203.

ANTH 425 Anthropology of the Post-Soviet States (5) I&S L. BILANIUK Analysis of Soviet and post-Soviet culture and identity. Historical transformations in Soviet approaches to ethnicity and nationality; contemporary processes of nation building and interethnic conflict. Examination of culture through the intersection of social ritual, government policies, language, economic practices, and daily life. Regional focus varies. Offered: jointly with JSIS A 427.

ANTH 427 Anthropology in Urban Settings (3) I&S Cross-cultural examination of theoretical issues in anthropology as studied in urban places. Focuses on ethnic identity and the formation of urban ethnic groups; migration and its rural and urban consequences; family and kinship organization as an adaptation to urban complexity; the nature of urban voluntary associations; law and politics; and the developments in anthropological method. Prerequisite: either one 200-level ANTH course or LING 203.

ANTH 428 Anthropological Perspectives on Ethnicity (5) I&S, DIV Anthropological approaches to ethnicity and ethnic group relations with reference to other models including race, caste, class, regional groupings, nations, religion, and stratification. Data drawn from precolonial, colonial, and postcolonial periods. Prerequisite: either one 200-level ANTH course or LING 203.

ANTH 429 Expressive Culture (5) VLPA S. WELLAND Anthropological view of one expressive aspect of culture: plastic and graphic arts, myth and folktale, music, dance, humor and tragedy, or play and games. Prerequisite: either one 200-level ANTH course or LING 203.

ANTH 430 The Anthropology of Music (3) VLPA/I&S Analysis of aspects of anthropological thought influential in ethnomusicology. Critical evaluation of dominant theoretical schools and modes of explanation, e.g., evolutionist, diffusionist, historical particularist, structuralist, functionalist, symbolist, and semiotic, through detailed examination of seminal texts. Offered: jointly with MUSIC 480.

ANTH 432 Sociolinguistics I (5) VLPA/I&S, DIV Evans, Wassink Interrelationships between social and linguistic factors influencing variation in speech production and perception, morphology, syntax, lexicon. Considers contribution of ethnic, regional and socioeconomic group memberships to dialect differentiation and progression of language change. Nonstandard language, diglossia, pidgins, creoles, gender differences, bi- and multilingualism, ethnography of speaking, pragmatics, and language attitudes. Prerequisite: either LING 200 or LING 400; recommended: prior or concurrent registration in LING 450. Offered: jointly with LING 432.

ANTH 433 Sociolinguistics II (5) VLPA/I&S Wassink Examines field methods linguists use in socially oriented studies of language variation and change. Includes language attitudes, study of urban dialects, syntactic variation, sampling and interview design. Discussion of issues related to recording, ethics, and analysis of large bodies of data. Prerequisite: LING 432. Offered: jointly with LING 433.

ANTH 435 Economic Anthropology (5) I&S Chief features of nonmonetary and simple monetary economics. Impact of central or metropolitan market economy and industrial technology as peripheral systems, especially of small-scale and limited monetary circulation. Development and application in anthropology of economic concepts, including Marxian. Prerequisite: either one 200-level ANTH course or LING 203.

ANTH 437 Political Anthropology and Social Change (5) I&S Study of politics from different anthropological perspectives, especially processual approaches to political change. Focused examination of cultural aspects of modern state formation in local and regional contexts. Themes: colonialism and nationalism, regime and transitions, local politics and global processes, social construction of bureaucracy. Prerequisite: one 200-level ANTH course.

ANTH 439 Pidgin and Creole Languages (5) VLPA/I&S Wassink Explores aspects of the linguistic structure, history, and social context of pidgin and creole languages. Creolization as one possible outcome of language contact. Examines theories of creole genesis, similarities and differences between creole and non-creole languages. Prerequisite: either ANTH 203, LING 200, LING 201, LING 203, or LING 400. Offered: jointly with LING 430.

ANTH 442 Global Asia (5) I&S S. WELLAND Explores how Asia has been constructed through transnational interactions such as imperialism, anti-colonialism, tourism, diaspora, and global capitalism. Topics include the cultural construction of similarity and difference, politics of representation, and political economy of global circulations of people and things. Prerequisite: one 200-level ANTH course. Offered: jointly with GWSS 446/JSIS A 452; W.

ANTH 443 Anthropology of Modern Japan (5) I&S Examines the problem of modernity in Japan since the late nineteenth century, with emphasis on contemporary Japan. Critically addresses previous anthropological work concerning patterns of Japanese "culture." Particular focus on the influence of modern forms of power, media, and exchange in the construction of present-day Japan. Offered: jointly with JSIS A 449.

ANTH 444 Politics of Representation in Modern China (5) I&S A. ANAGNOST Focuses on issues of representation and power in twentieth century China. Combines substantive information on modern Chinese society and culture with recent debates in social theory and the politics of representation. Major themes include Chinese nationalism, body politics, popular culture, and everyday practice. Offered: jointly with JSIS A 403.

ANTH 445 Literature and Society in Southeast Asia (5, max. 10) VLPA/I&S C. LOWE Focus on either Vietnam or Thailand. Provides students with opportunity to explore how those living in Southeast Asia have reflected on the radical social changes their societies have undergone through novels, short stories, and poetry. Prerequisite: either one 200-level ANTH course or LING 203. Offered: jointly with JSIS A 447.

ANTH 446 Class and Culture in East Asia (5) I&S, DIV Examines the nexus between culture and systems of social stratification/class in East Asia, with an emphasis on Taiwan, Korea, Japan, and China. Topics include class formation, mechanisms of social mobility and reproduction, markers of status and hierarchy, resistance, and the formation of class identity. Offered: jointly with JSIS D 443.

ANTH 448 Modern Korean Society (5) I&S Sorensen Social organization and values of twentieth-century Korea. Changes in family and kinship, gender relations, rural soci-

ety, urban life, education, and industrial organization since 1900. Differences between North and South Korea since 1945. Recommended: HSTAS 212/JSIS A 212. Offered: jointly with JSIS A 448.

ANTH 449 Social Transformation of Modern East Asia (5) I&S Sorensen Comparative study of social change in China, Japan, Korea, and Vietnam since 1945. Concentration on small-scale social units in rural and urban areas under both communist and capitalist political systems. Recommended: two history or anthropology of East Asia courses. Offered: jointly with JSIS A 405.

ANTH 450 Language and Gender (5) VLPA/I&S, DIV L. BILANIUK Survey of the theoretical trends, methods, and research findings on the relationship between language and gender. Focus on power relations in gendered language use. Extensive study of research based on conversational analysis. Prerequisite: LING 200; either LING 201, LING 203, or ANTH 203. Offered: jointly with GWSS 450/LING 458.

ANTH 452 Explorations in Biopower (5) I&S S. AMRUTE, A. ANAGNOST, C. LOWE Explores Foucault's concept of biopower - power organized around life - from the perspectives of its theoretical mediations and its anthropological interventions. Looks at specific descriptions of what biopower is and ethnographic extensions of the concept to particular settings and experiences taking place within the modern state.

ANTH 453 Culture, Controversy, and Change: The Case of Female Circumcision (3) I&S B. DUNCAN With female circumcision and its surrounding debates as "a tool to think with," develops a number of skills: identifying stakeholders and rhetoric in loaded debates, assessing opposing arguments, critically evaluating scientific evidence, and situating controversial issues in their proper political, historical, social, and cultural contexts.

ANTH 454 Women, Words, Music, and Change (5) VLPA/I&S, DIV Comparative analysis of use of myths, tales, music, and other forms of expressive culture to account for, reinforce, and change women's status and roles. Recommended: GWSS 353. Offered: jointly with GWSS 454.

ANTH 455 Areal Linguistics (3, max. 6) VLPA/I&S Issues involved in classification of languages. Systems of classification based on structure, word order, areal features. Ways in which languages may be classified for different purposes. Processes such as borrowing, vocabulary specialization, lexical change, and language death and revival. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400. Offered: jointly with LING 455.

ANTH 456 Contemporary Ethnography (5) I&S Discusses several contemporary ethnographies. Focuses on what constitutes ethnography and how ethnography is done, as well as the relationship between ethnographic description, methodology, and theory. Covers a range of geographical areas, theoretical perspectives, and literary styles.. Prerequisite: either a 100- 200-level ANTH course or LING 203.

ANTH 457 Ecological Anthropology (5) I&S Survey of anthropological research on interaction between human societies and their environments. Logic of different subsistence systems; intensification and transformation of subsistence strategies; population regulation; ecological aspects of human nutrition, disease, spatial organization, ethnicity, social stratification, conflict, and cooperation; historical roots of current ecological crisis.

ANTH 458 Ethnobiology: Plants, Animals, and People (5) I&S E. HUINN Culturally mediated relationships between human and natural environment studied in a comparative and evolutionary framework. How do peoples in diverse cultures recognize and name plants and animals and understand their relationship with nature? How is this traditional ecological knowledge applied in people's daily lives? Prerequisite: either BIO A 201, ARCHY 205, or one 200-level ANTH course.

ANTH 459 Culture, Ecology, and Politics (5) I&S D. PENA Critical studies of class, gender and race differences in environmental politics. The political-economic dimensions of ecological change. Contemporary environmental movements including the varieties of bioregionalism, deep ecology, ecofeminism, ecosocialism, environmental justice, and social ecology. Offered: jointly with ENVIR 459.

ANTH 460 History of Anthropology (5) I&S Sources and development of leading concepts, issues, and approaches in anthropology. Findings of anthropology in relation to scientific and humanistic implications and to practical application. Main contributors to field; their work and influence. Past, present, and future perspectives, including anthropology of modern life.

ANTH 461 Historical Ecology (5) I&S/NW J. FITZHUGH, S. HARRELL Explores a global range of case studies in the historical dimension of the environment, human adaptation, and cultural change. Investigates the co-evolution of environment and culture in archaeological and historical contexts. Develops a better understanding of modern human-environmental dynamics as historically situated. In

ANTH 463 Critiques of Contemporary Capitalism (5) I&S Karl Marx inaugurated radical reworkings of both social theory and political action. Begins with some of his seminal writings, then considers the Frankfurt School, British labor theory, and postcolonial theory. Uses these readings to understand economy and subjectivity produced through the aporias of late capitalism. .

ANTH 464 Language Politics and Cultural Identity (3) VLPA/I&S L. BILANIUK Theories and case studies of the power of language and how it is manipulated. Multilingualism, diglossia. Role of language and linguistics in nationalism. Standardization, educational policy, language and ethnicity. World languages, language death and revival. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400. Offered: jointly with LING 464.

ANTH 465 Critical Anthropology of Mass Culture (5) I&S Critical overview of theories of mass culture and their relationship to current anthropological practice. Analyses of the historical interconnections among capitalism and commodity fetishism, modernity and representation, and media and consumption.

ANTH 466 Anthropology Honors Thesis ([1-9]-, max. 18) I&S Individual research under the direction of a thesis adviser, culminating in a senior honors thesis. Open only to upper-class students in departmental honors program.

ANTH 467 Anthropology of Education (5) I&S Uses a wide range of social theory and philosophy to investigate mechanisms which reproduce inequality and asymmetry in American education.

ANTH 468 Anthropology of Care (5) I&S J. TAYLOR Introduces the anthropology of care, with an emphasis on ethnographic studies of care practices. Considers how care practices generate patterns of relationality and visions of the human. Explores where caring happens, who is involved in care, what counts (or does not count) as deserving of care, and how politics shapes care.

ANTH 469 Special Studies in Anthropology (3-5, max. 15) I&S Delineation and analysis of a specific problem or related problems in anthropology. Offered occasionally by visitors or resident faculty.

ANTH 470 Minority Peoples of China (5) I&S, DIV S. HARRELL Interaction between China and the peoples of its periphery, including inner Asia, Tibet, northern mainland Southeast Asia, and aboriginal peoples of Taiwan. Emphasis on ethnicity, ethnic group consciousness, and role of the Chinese state. Prerequisite: one 200-level ANTH course; LING 203; either ANTH 370/JSIS A 370 or HSTAS 454. Offered: jointly with JSIS A 470.

ANTH 471 Colonialism and Culture (5) I&S Explores the cultural, political, and historical implications of the power to colonize. Readings include ethnographic, historical, and

literary works on colonialism, nationalist responses, and postcolonial positions.

ANTH 472 Case Studies in Medical Anthropology and Global Health (5) I&S Uses multidisciplinary case studies to analyze quantitative parameters of diseases; contrast the description and analytic approaches of health sciences, anthropology, and other social sciences; integrate diverse disciplinary perspectives into cohesive information; organize class presentations; and apply critical thinking in approaches to complex health issues. Offered: Sp.

ANTH 473 Anthropology of Science and Technology (5) I&S/NW C. LOWE Introduces the study of science and technology as social and cultural phenomena. Considers both theoretical and methodological questions. Readings include key texts from interdisciplinary field of science studies as well as selected ethnographic texts. Examples taken from U.S. society and other local contexts. Prerequisite: one 200-level ANTH course.

ANTH 474 Social Difference and Medical Knowledge (5) I&S J. TAYLOR Explores relations between medical and social categories: how social differences become medicalized; how medical conditions become associated with stigmatized social groups; and how categories become sources of identity and bases for political action. Considers classifications (race, gender, sexuality, disability) and how each has shaped and/or been shaped by medical science/practice.

ANTH 475 Perspectives in Medical Anthropology (5) I&S J. TAYLOR Introduction to medical anthropology. Explores the relationships among culture, society, and medicine. Examples from Western medicine as well as from other medical systems, incorporating both interpretive and critical approaches. Offered: jointly with HSERV 475.

ANTH 476 Culture, Medicine, and the Body (5) I&S Explores the relationship between the body and society, with emphasis on the role of medicine as a mediator between them. Case study material, primarily from contemporary bio-medicine, as well as critical, postmodern, and feminist approaches to the body introduced within a general comparative and anthropological framework.

ANTH 477 Medicine in America: Conflicts and Contradictions (3) I&S Introduction to the pragmatic and theoretical dilemmas of current biomedical practice with emphasis on social and cultural context. Case studies in technological intervention, risk management, and other health-related issues used to explore connections among patients' experiences, medical practices, and the contemporary social context.

ANTH 478 Introduction to the Anthropology of Institutions (5) I&S L. RHODES Historical, theoretical, and ethnographic perspectives on the study of total institutions, with an emphasis on prisons and psychiatric facilities. Includes issues of subjection and subjectivity, institutional social dynamics, and social justice concerns.

ANTH 479 Advanced Topics in Medical Anthropology (3-5, max. 15) R. CHAPMAN, L. RHODES, J. TAYLOR Explores theoretical and ethnographic advanced topics in medical anthropology. Prerequisite: permission of instructor.

ANTH 483 Africa Living with HIV/AIDS (5) I&S R. CHAPMAN Examines the epidemiological, historical, political-economic, and social-cultural dimensions of Africa living with HIV/AIDS and the current challenges and debates in international HIV/AIDS policy and programming. Various approaches and analytical models help students grasp the complicated and multiple effects, responses, conditions, and debates surrounding the African HIV/AIDS pandemic.

ANTH 484 Ideologies and Technologies of Motherhood (5) I&S, DIV Examines how motherhood is culturally constituted, regulated, and managed within various ideological and technological milieus. Uses ethnographies from anthropology and case studies from feminist legal theory. Topics include slave mothers, surrogate mothers, lesbian

mothers, transracial mothers, co-mothers, teen mothers. Prerequisite: GWSS 200. Offered: jointly with GWSS 458.

ANTH 487 Cultures and Politics of Environmental Justice (5) I&S, DIV D. PENA Comparative survey of environmental justice movements in the world with focus on critical studies of environmental racism, risk, and sustainable development. Provides theoretical knowledge and research methods incorporating the study of equity and autonomy in environmental impact and risk assessment and other aspects of environmental policy politics. Offered: jointly with AES 487.

ANTH 488 Agroecology (5) I&S/NW D. PENA Cross-cultural survey of agroecological research methods, theoretical problems, policy issues, and ethical debates. Local knowledge and ethnoscientific bases of alternative agriculture. Comparative political ecology of agroecosystems with a focus on indicators of social equity and ecological sustainability.

ANTH 489 Anthropology Practicum (2-9, max. 15) Faculty-supervised internships, either on or off campus, in organizations utilizing anthropological skills in nonacademic settings. Settings may include museums, academic journals, social service or other governmental agencies, and private nonprofit service agencies.

ANTH 491 Honors Colloquium (2, max. 12) I&S Introduction to anthropological research. Students read original articles and papers and discuss them with authors. Research presenters include department faculty, visiting faculty, and advanced graduate students. Credit/no-credit only.

ANTH 495 Advanced Problems in Ethnology (3-5, max. 10) I&S Current problems in ethnology. Seminar format.

ANTH 497 Domesticating International Human Rights: Perspectives on U.S. Asylum and Refugee Law (5) I&S, DIV A. OSANLOO Examines the creation, production, and proliferation of law and legal categories relating to the status of refugees and asylum-seekers in the United States. Integrates anthropological perspectives of law's ability to create meaning in the examination of deeper implications of asylum and refugee law in American society. Offered: jointly with LSJ 425.

ANTH 498 Women's Rights and Politics in Islamic Society (5) I&S, DIV A. OSANLOO Human rights theory with women's legal rights and practice within context of the Islamic state. Introduction to debates regarding universality of human rights through examination of women's rights in Muslim context. Considers journalistic notions of homogeneity among Muslims, political nature of the Islamic state, and its mobilization of human rights. Offered: jointly with LSJ 421.

ANTH 499 Undergraduate Research (*, max. 12)

ANTH 500 Preceptorial Reading (6) For beginning graduate students who have not had adequate training in the problems, principles, and methods involved in the analysis and comparison of social and cultural systems. Not open to graduate students in the sociocultural anthropology program.

ANTH 503 Preceptorial Reading in Linguistic Anthropology (6) For beginning graduate students who have not had prior training in the problems, principles, and methods involved in linguistic anthropology. See also course description for ANTH 203. Not open to graduate students in the linguistics program.

ANTH 507 Current Issues in Sociocultural Anthropology (2) Biweekly presentations by participants and guest lecturers of current literature and ongoing research in topics pertaining to social, cultural, and linguistic anthropology. Prerequisite: first-year sociocultural graduate students in good standing or permission of sociocultural faculty. Credit/no-credit only.

ANTH 508 Current Issues in Sociocultural Anthropology (2) Biweekly presentations by participants and guest lecturers of current literature and ongoing research in topics

pertaining to social, cultural, and linguistic anthropology. Prerequisite: first-year sociocultural graduate students in good standing or permission of sociocultural faculty. Credit/no-credit only.

ANTH 509 Sociocultural Anthropology Problem Paper (4)

All first-year graduate students in sociocultural anthropology select a topic for independent research, conduct that research, and prepare a paper of about 25-50 pages on the topic chosen. Prerequisite: first-year sociocultural graduate students in good standing or permission of sociocultural faculty.

ANTH 510 Seminar on North American Indians (3) Advanced comparative treatment of selected aspects of the Indian cultures and societies of North America.

ANTH 514 Regional Seminar (3-5, max. 15) Comparative treatment of selected aspects of cultures and societies of a particular region or area.

ANTH 516 Rethinking Area Studies (5) C. LOWE "Area study" is critiqued for its sources of funding, relationship to governmentality, and for ignoring other forms of global linkage in its particular framing of cultural, social, and political connectivity. Designed for graduate students conducting research on, in, or across such an "area." Attempts to re-think regions.

ANTH 517 Seminar on South Asia (3) Advanced analysis of selected problems in South Asian ethnology and social structure. Prerequisite: ANTH 412.

ANTH 518 Advanced Qualitative Methods in Anthropology and Public Health (5)

ANTH 519 Advanced Qualitative Methods in Anthropology and Public Health (5) J. PFEIFFER Provides theoretical training in qualitative research and in depth training in qualitative data management, analysis, interpretation, and presentation. Focuses on how to frame qualitative research questions, design appropriate research strategies, and integrate qualitative and quantitative methods in research designs in public health. Offered: jointly with G H 538/HSERV 521; Sp.

ANTH 521 Seminar on the Anthropological Study of Religion (3, max. 9) Advanced seminar in the anthropological study of religion designed for students who have a background in the theory and applications of theory developed in the anthropological study of religion. Seminar topics vary each quarter. Prerequisite: ANTH 422 and graduate standing; permission of instructor for graduate students in Comparative Religion.

ANTH 522 Peoples and Cultures of Central and Inner Asia (5) Offered: jointly with JSIS D 572/NEAR E 572.

ANTH 523 Seminar on Religious and Political Violence (5) Robinson Employs ethnographic studies and anthropological theory to examine the relationships between culture and power in the analysis of religious and political violence. Topics include modernity; secularisms and fundamentalisms; ritual, sacrifice, and martyrdom; law, rights, and subject-making. Offered: jointly with JSIS B 523.

ANTH 525 Seminar in Culture Processes (3, max. 6) The concept of process and its application to the study of culture.

ANTH 526 Political Islam and Islamic Fundamentalism (3/5) Robinson Examines political Islam as a modern phenomenon produced at the intersections between localized and globalized political cultures and between political, religious, and social authority. Focuses on anthropological studies to examine how Islamic publics produce moral judgments about political practices. Offered: jointly with JSIS B 526.

ANTH 527 Ethnicities, Nations, and Cultural Identities (3) Exploration of how cultural differences have been represented in ethnic and national narratives and how these narratives have shaped identities and social relations.

ANTH 530 Dialectology (3) The principles of dialect deviation as related to linguistic structure and usage. Prerequisite:

site: LING 452, LING 462, LING 508, or permission of instructor. Offered: jointly with LING 530.

ANTH 532 Sociolinguistics I (5) Evans, Wassink Examines social variation in the phonology, morphology, syntax, and lexicon of languages and dialects. Includes nonstandard language, diglossia, pidgins and creoles, gender differences, bi- and multilingualism, ethnography of speaking, and language attitudes. Prerequisite: either LING 200 or LING 400; recommended: prior or concurrent registration in LING 450. Offered: jointly with LING 532; S.

ANTH 533 Law, Liberalism, and Modernity (5) Examines relationships between law, culture, and power through post-structuralist theories that consider subjectivity, agency, and identity. Explores connections between modern liberal law and the body, possessive individualisms, and discourses of rights. Topics include rights-talk, globalization, biopolitics, subject-making, modern nation-states, the rule of law, neo-liberalism, and legal cultures.

ANTH 535 Research Issues in Demography and Population Studies (1-2, max. 7) Interdisciplinary seminar on current research issues in demography and population studies. Critical analysis and discussion of readings drawn from anthropological, economic, geographic, and sociological approaches. Credit/no-credit only. Offered: AWSp.

ANTH 536 Seminar in Visual Anthropology (3-5) Significance of anthropological cinema and photography placed in historical perspective. Screening of films to determine the role of the anthropologist as filmmaker, as well as the role of the filmmaker as anthropologist.

ANTH 537 Political Anthropology and Law (3, max. 6) Seminar on special topics in politics and law and their interrelationships.

ANTH 539 Social Movements in Contemporary India (5) P. RAMAMURTHY Covers issues of social change, economic development, and identity politics in contemporary India studied through environmental and women's movements. Includes critiques of development and conflicts over forests, dams, women's rights, religious community, ethnicity, and citizenship. Offered: jointly with GWSS 539/JSIS A 531.

ANTH 540 Anthropology of Place (5) M. KAHN, D. PENA Explores a variety of ways that "place" has been studied and theorized. Attention paid to places as they are sensed, inscribed, practiced, narrated, scripted, created, and reclaimed. "Place" also discussed in relation to issues of the environment, travel, diaspora, race, class, and gender.

ANTH 541 Cultural Aspects of International Development (3) Emergence of development as an aspect of late colonialism and the decolonization process. Ways in which development came to visualize social change in sectoral terms like rural land use, cities, and education, while objectifying people in target groups. Relationships between development and modernity, and development and globalization.

ANTH 543 Seminar in Anthropology and Political Theory (5) Examines the role of political theory in contemporary anthropology. Designed to work through particular thinkers or constellations of thought that inform anthropological thinking today. Content dependent upon instructor, but may include such topics as Marx, Weber, and Durkheim; Foucault, the Anthropology of Reason; and Frankfurt School.

ANTH 549 Dance Performance Ethnography (3) McMains Theoretical and practical experience in dance and performance ethnography, ethnology, and oral history. Introduces theories and methods of ethnographic fieldwork, ethnographic writing, and ethnologic analysis. Focuses on dance methods and theories. Also discusses methods and theories applicable to other physical practices such as music, theatre, sports, and performance art. Offered: jointly with DANCE 550; W.

ANTH 550 Field Techniques in Ethnography (5) Techniques of collecting, ordering, and utilizing ethnographic data in

the field. Problems of rapport, elicitation, observation, interpretation, and ethics. Credit/no-credit only.

ANTH 551 Research Design (5) Focuses on the basic components, format, and writing style of grant proposals. Works through various stages of proposal writing, including titles, abstracts, introduction, theoretical orientations, significance, methodology, data analysis, etc. Discusses funding sources, human subjects reviews, and preparing budgets. Prerequisite: permission of instructor.

ANTH 552 Practicum in Ethnographic Research (3) Techniques of data recording, analysis, and writing for the field ethnographer. Not recommended for non-anthropology graduate students. Prerequisite: ANTH 550; ANTH 551.

ANTH 556 The Evolution of the Family (3) Biological evolution of species-specific behaviors and forms of sociality linked to human mating, reproduction, and parenting. Cultural evolution of human systems of kinship and marriage as fitness-maximizing adaptations to a wide range of habitats. Prerequisite: upper-division course in evolutionary theory, population genetics, behavioral ecology, primatology, or animal behavior.

ANTH 559 Seminar in Language and Culture (3, max. 9) Theoretical and methodological problems in language and culture.

ANTH 560 Discourse and Culture (5) Exploration of discourse and narrative as culturally constitutive activities. Critical examination of the social implications of cultural variation in discourse. Techniques of discourse analysis in anthropological research.

ANTH 561 Seminar in Methods and Theories (3, max. 9)

ANTH 562 Clinically Applied Anthropology (3) Anthropology as it relates to interdisciplinary delivery of culturally relevant healthcare. Cultural variation in illness beliefs and behavior, types of healing practices, illness prevention, social support networks. Prerequisite: graduate standing, permission of instructor. Offered: jointly with NURS 562.

ANTH 565 Theory of Sociocultural Anthropology (5) First core-course sequence for the beginning graduate student in sociocultural anthropology in which the development of theory is analyzed and emphasis is placed on the relation between theory and a growing body of ethnographic data. Prerequisite: graduate standing in anthropology or permission of instructor.

ANTH 566 Theory of Sociocultural Anthropology (5) Second core-course sequence for the beginning graduate student in sociocultural anthropology in which the development of theory is analyzed and emphasis is placed on the relation between theory and a growing body of ethnographic data. Prerequisite: ANTH 565.

ANTH 567 Theory of Sociocultural Anthropology (5) Third core-course sequence for the beginning graduate student in sociocultural anthropology in which the development of theory is analyzed and emphasis is placed on the relation between theory and a growing body of ethnographic data. Prerequisite: ANTH 566.

ANTH 569 Special Topics in Sociocultural Anthropology (3-5, max. 15) Delineation and analysis of a specific topic or set of related topics in sociocultural anthropology.

ANTH 570 Environmental Anthropology (5) Current issues in the study of human environment interaction from a cross-cultural perspective: ecological adaptation and maladaptation; ethnoecology and indigenous knowledge; anthropogenic environmental change; political ecology of "development;" interrelations of cultural and biological diversity; conflicts over indigenous land use and property rights, environmental justice, resource conservation, and sustainability.

ANTH 572 Environmental Anthropology Research Methodology Colloquium (2, max. 10) Environmental anthropology research methodology and practice. Presentations by faculty and advanced students, hands-on exercises, and extensive discussion. Students at various stages in the

program learn practical details of current methods. Limited to environmental anthropology PhD students. Credit/no-credit only.

ANTH 573 Current Issues in Environmental Anthropology (2, max. 10) Presentation and discussion of current research and scholarly literature in environmental anthropology and related fields. Prerequisite: graduate standing in any field of anthropology or permission of instructor. Credit/no-credit only.

ANTH 574 Culture, Society, and Genomics (3) *B. MCGRATH* Examines social and cultural issues of human genome sequencing and control of genetic expression. Attitudes and behaviors toward health, illness, and disability are studied using historical, contemporary, and cross-cultural case study material. Offered: jointly with NURS 582/PHG 521; Sp.

ANTH 575 Cultural Construction of Illness: Seminar in Medical Anthropology (5) Historical and comparative examination of depression, neurasthenia, somatization, hypochondriasis, and hysteria. Anthropology of psychosomatics and psychiatry, including cultural analysis of selected biomedical, indigenous folk medical, and popular common-sense conceptualizations of illness.

ANTH 578 Special Topics in the Anthropology of Institutions (5) Explores theoretical issues.

ANTH 580 Presenting Research Effectively (2) Designed to help advanced graduate students develop the ability to present research projects effectively in a variety of formats relevant to the academic job-search process (c.v., job letter, interview, etc). Faculty and alumni speakers share information, advice, and guidance regarding the job-search and the various paths toward meaningful employment. Credit/no-credit only.

ANTH 581 Dissertation Writing (3) Students experiment with different styles of anthropological writing. They apply writing techniques and styles to their own material. Students peer review for one another. Credit/no-credit only.

ANTH 583 Africa Living with HIV/AIDS (5) Examines the epidemiological, historical, political-economic, and social-cultural dimensions of Africa living with HIV/AIDS and the current challenges and debates in international HIV/AIDS policy and programming. Various approaches and analytical models help students grasp the complicated and multiple effects, responses, conditions, and debates surrounding the African HIV/AIDS pandemic.

ANTH 584 Ways of Speaking (5) Theory and literature of the ethnography of communication, with special emphasis on the descriptive-comparative approach to culturally patterned styles of communicative conduct. Offered: jointly with COM 584.

ANTH 590 Seminar in Museum Theory and Administration (5) Examination of principles of administrative theory and museum operations. Administrative structures and policies, management theory, board issues, organizational conflicts, planning issues, collection concerns, financial constructs, professional standards, and museum/community relations from an organizational and management perspective. Recommended: MUSEUM 580. Offered: jointly with MUSEUM 590.

ANTH 599 Effective Teaching of Anthropology (1) Class required of all graduate students who accept teaching assistantships: instruction in teaching methods and issues, e.g., professional ethics, preparing and delivering lectures, leading discussion groups, test writing and grading, diversity in the classroom. Credit/no-credit only.

ANTH 600 Independent Study or Research (*-)

ANTH 700 Master's Thesis (*-) Credit/no-credit only.

ANTH 800 Doctoral Dissertation (*-) Credit/no-credit only.

Archaeology

ARCHY 101 Exploring Archaeology (5) I&S Introduces perspectives from archaeology on the long term history

of the diversity and the dynamics of human life. Examines how archaeologists gather and use data and how that information is relevant to contemporary society. Concepts and methods introduced through readings focus around a theme that varies such as environmental issues, warfare, and migration.

ARCHY 105 The Human Past (5) I&S Explores human cultural and biological evolution: how ancestors 2,500,000 years ago were like us but still different, Neanderthals and their extinction, social/economic revolutions from foraging to farming to states and empires, setbacks, failures, relationships with social and natural environments, and the role of technology. Examines the astonishing variety of adaptations humans have made.

ARCHY 109 Archaeology in Film (5) I&S *B. MARWICK* Deals with depictions of archaeology by and for non-archaeologists and implication of those depictions at the intersection of archaeology, the human past, and popular culture.

ARCHY 205 Principles of Archaeology (5) I&S *J. FITZHUGH* Techniques, methods, and goals of archaeological research. Excavation and dating of archaeological materials. General problems encountered in explaining archaeological phenomena.

ARCHY 212 THE ARCHEAOLGY OF EGYPT (5) I&S

ARCHY 269 Special Topics in Archaeology (3-6, max. 12) I&S Investigation of special topics in archaeology focusing on developing basic analytical, practical, and numerical skills.

ARCHY 270 Field Course in Archaeology (12) I&S Introduction to field acquisition of archaeological data through survey and excavation. On-going field projects; recovery and recording techniques. Prerequisite: ARCHY 205.

ARCHY 272 Short Field Course in Archaeology (5) I&S/NW Learn how archaeologists detect human occupation on the landscape by surveying, excavating, and crating evidence of the past. Students learn from start to finish the process of archaeological field investigation. Location may change from year to year. Recommended: ARCHY 205.

ARCHY 299 Archaeological Laboratory Techniques (1-3, max. 12) I&S Laboratory procedures geared to one specific archaeological research project. Archaeological collection, its processing and curation, how archaeological materials are processed, and how significance is determined. No more than 5 credits may be used toward an anthropology major. Prerequisite: either ARCHY 105 or ARCHY 205.

ARCHY 303 Archaeology of Africa and Eurasia (5) I&S Explores African and Eurasian prehistory from beginnings of human culture to rise of states and empires. Examines first tools made by humans, spread of humans out of Africa, origins of agriculture, and rise of state society. Covers Africa, Near East, Egypt, China, India, Europe. Prerequisite: ARCHY 205.

ARCHY 304 Archaeology of the Americas (5) I&S Explores the history of earliest Americans, beginning with crossing of land bridge between Asia and North America and eventual spread over the Americas. Highlights prehistory and best examples of western hemisphere's states and empires. Covers Mexico, Yucatan, Peru, southwestern and eastern United States, Washington. Prerequisite: ARCHY 205.

ARCHY 309 Archaeology of Mainland Southeast Asia (5) I&S *B. MARWICK* Covers the archaeology of mainland Southeast Asia from the first colonization by hominins to the appearance of written texts, especially in Thailand, Cambodia, Laos, Vietnam, and Myanmar. Emphasizes methods of acquiring archaeological data and addressing current controversies about mainland Southeast Asia prehistory. Prerequisite: ARCHY 205.

ARCHY 319 Archaeology of Australia (5) I&S *B. MARWICK* Archaeology of Australia with an emphasis on understanding of the evidence and interpretation of both singular events and long-term processes in prehistory. Prerequisite: ARCHY 205.

ARCHY 320 Archaeology of the Northwest Coast (5) I&S Origins, development, and variation of Pacific Northwest cultures, focusing particularly on Washington. Adaptations to maritime and interior environments. Artifacts from a variety of archaeological sites. Technological, functional, and historical significance of Northwest artifacts. Prerequisite: ARCHY 205.

ARCHY 325 Archaeology of Island Southeast Asia and the Pacific (5) I&S *P. LAPE* History of the human occupation of the South Pacific Islands, especially Indonesia, Philippines, Micronesia, Melanesia, and Polynesia. Focus on current debates about human migrations, long distance maritime trade, political structures, culture contact, and colonialism. Emphasis on the analysis of the primary archaeological and documentary data. Prerequisite: ARCHY 205.

ARCHY 369 Special Problems in Archaeology (3-6, max. 12) I&S Delineation and analysis of a specific problem or related problems in archaeology focusing on developing research and scholarly communication skills.

ARCHY 372 Archaeological Field Recording Techniques (5) I&S *M. LLOBERA* Teaches hands-on archaeological field techniques. Prerequisite: ARCHY 205; ARCHY 373, which must be taken concurrently.

ARCHY 373 Principles of Archaeological Field Recording (3) I&S *M. LLOBERA* Provides students the theoretical, technical, and mathematical basis for using different recording and mapping devices (e.g. Total stations, DGPS, GIS) used in archaeology. Prerequisite: ARCHY 205; ARCHY 372, which must be taken concurrently.

ARCHY 377 Archaeology of the Arctic (5) I&S *J. FITZHUGH* Archaeological history of the circumpolar arctic and sub-arctic from Pleistocene to the nineteenth century. Variability in human adaptation and social change in extreme cold environments such as Eurasian tundra, North Pacific rim, Beringia, and North American high arctic. Prerequisite: ARCHY 205.

ARCHY 378 Prehistory of the Arid West (5) I&S *D. GRAYSON* Archaeology of arid western North America, with particular emphasis on the earliest peoples of this region (and on the peopling of the New World in general), and on the prehistoric hunter-gathers of the Great Basin and Southwest. Prerequisite: ARCHY 205.

ARCHY 403 The Archaeology of Landscapes (5) I&S/NW *M. LLOBERA* Study of landscapes in archaeology. Methods for landscape research: historic maps, diaries, aerial photographs, geophysical and satellite imagery, etc. Archaeological landscape surveys: principles and limitations. Review of various theoretical approaches. Examination of key case studies, issues on landscape heritage, and indigenous landscapes. Prerequisite: ARCHY 205.

ARCHY 465 Public Archaeology (5) I&S *P. LAPE* Examines archaeology as practiced, regulated, represented, and paid for in the world outside of academia. Reviews the development of cultural resource management laws in the context of other social changes, investigates archaeology job opportunities outside of academia, and discusses how the public learns about and funds archaeology. Prerequisite: ARCHY 205.

ARCHY 466 Archaeology Honors Thesis ([1-9]-, max. 18) I&S Individual research under the direction of a thesis adviser, culminating in a senior honors thesis. Open only to upper-class students in departmental honors program.

ARCHY 467 Research Ethics in Archaeology: Conservation, Accountability, and Stewardship (5) I&S *M. WYLIE* Advanced survey of ethics issues that arise in archaeology including: accountability to descendent communities; professional codes of conduct; response to looting and commercial exploitation of the record; and the implications of a conservation ethic and principles of stewardship for archaeological practice.

ARCHY 469 Special Studies in Archaeology (3-6, max. 18) I&S Consideration in detail of specific archaeological topics, either methodological or substantive in content, of

current interest. Offered occasionally by resident, new, or visiting faculty. For advanced undergraduates and graduate students. Prerequisite: ARCHY 205.

ARCHY 470 The Archaeology of Extinction (5) I&S D. GRAYSON Uses archaeological and paleoecological data to examine the argument that prehistoric peoples caused vertebrate extinction, from the late Ice Age extinction of ground sloths and saber-toothed cats in North America to the extinction of moas in New Zealand some 500 years ago.

ARCHY 480 Advanced Archaeological Analysis: Ceramics (6) I&S J. FEATHERS Surveys history of ceramic studies in archaeology and introduces analytical methods involving ceramic function, style, unit construction and sampling, use wear, and trade and exchange. Laboratory provides hands-on experience with prehistoric ceramics, and applies various techniques for studying composition, form, manufacturing methods, and firing strategies. Prerequisite: ARCHY 205.

ARCHY 481 Zooarchaeology (6) I&S D. GRAYSON Seminar on techniques and methods employed in analysis of faunal remains from a wide range of Pleistocene and Holocene settings, including archaeological sites, coupled with a laboratory focusing on identification of faunal remains from these settings. Prerequisite: ARCHY 205.

ARCHY 482 Geoarchaeology (3) I&S B. MARWICK Seminar on the identification, analysis, and interpretation of sediments and soils associated with archaeological remains. Covers geomorphology, geochemistry and geophysics in archaeology. Prerequisite: ARCHY 205; recommended: ARCHY 486, which may be taken concurrently.

ARCHY 483 Analyses of Stone Artifacts (6) I&S B. MARWICK Current approaches to lithic analysis, including types of information obtainable (technological, functional, social, ideological) and constraints affecting the formation and analysis of lithic assemblages. Lectures interspersed with application of methods under discussion to individual artifacts and to assemblages. Prerequisite: ARCHY 205.

ARCHY 484 Archaeological GIS (5) I&S M. LLOBERA Teaches students the basics of GIS through a series of hands-on tutorials using archaeological datasets, and provides them with a critical view of the application of this tool within the field of archaeology. Prerequisite: ARCHY 205.

ARCHY 486 Geoarchaeology Laboratory (3) I&S B. MARWICK Laboratory course covering a variety of geoarchaeological techniques, with experiments designed to illustrate major concepts. Prerequisite: ARCHY 205; ARCHY 482, which may be taken concurrently.

ARCHY 489 Archaeology Practicum (2-9, max. 15) I&S Faculty-supervised internships either on or off campus in organizations utilizing archaeological skills in academic or non-academic settings. Includes cultural resource management companies, government agencies, private non-profit organizations, tribal governments, and museums.

ARCHY 490 Museum Curation Practicum: Archaeology (1-5, max. 15) Application of museological training in curation of archaeological collections including ethnographic, geological, or zoological collection materials in the Burke Museum. Supervised work ranges from fundamental collection documentation and research to preventive conservation, storage, and other special curation projects.

ARCHY 495 Quantitative Archaeological Analytic Techniques (5) I&S M. LLOBERA Introduction to quantitative approaches to archaeological problems; data screening, numeric methods of classification and identification, graphical and computer-based seriation techniques, and the analysis of spatial patterning in artifact distributions. Prerequisite: ARCHY 205.

ARCHY 499 Undergraduate Research (*, max. 12)

ARCHY 508 Histories of Archaeological Theory and Practice (5) M. WYLIE Advanced history of archaeological theories and traditions of research practice. Topics include the formation of scientific and humanistic research traditions

in anthropological archaeology; comparative global histories of archaeology; object biographies and histories of craft practice in emerging research traditions; and critical histories of inequality and marginality in archaeology.

ARCHY 509 Archaeology and Explanation (5) B. MARWICK Analytical and historical examination in archaeology and philosophy of science. Prerequisite: permission of instructor.

ARCHY 520 Principles of Archaeological Theory (5) J. FITZHUGH Review of principles of archaeological theory. Student presentation of research on archaeological theory and seminar discussion or presentations. Open only to first-year graduate students in anthropology.

ARCHY 525 Archaeology of Island Southeast Asia and the Pacific (5) P. LAPE History of the human occupation of the South Pacific Islands, especially Indonesia, Philippines, Micronesia, Melanesia, and Polynesia. Focus on current debates about human migrations, long distance maritime trade, political structure, culture contact, and colonialism. Emphasis on the analysis of the primary archaeological and documentary data.

ARCHY 530 PREHISTORY OF THE NORTHWEST COAST (5)

ARCHY 560 Seminar in Archaeological Methods (5, max. 20) Basis, limitations, and applications of a particular archaeological analytical method, or closely related set of methods. Prerequisite: permission of instructor.

ARCHY 561 Dating Methods in Archaeology (6) J. FEATHERS Theory and method of dating in archaeology. How archaeologists determine time, in both relative and absolute senses. Methodology of stratigraphy, seriation, radiocarbon dating, dendrochronology, obsidian hydration dating and other methods. Special emphasis on, and laboratory experience in, luminescence dating.

ARCHY 570 Seminar in Archaeological Theory (3-6, max. 18) Detailed consideration of a particular archaeological theory or closely related set of theories, including their methodological and epistemological bases.

ARCHY 574 Meta-archaeology: Philosophy and Archaeology (4) M. WYLIE Examines philosophical issues raised in and by archaeology, including theories of explanation and model building, analyses of evidential reasoning and hermeneutic interpretation, debates about ideals of objectivity and about science and values. Recommended: ARCHY 570. Offered: jointly with PHIL 574.

ARCHY 575 Archaeological Field Research Design (6) Nature of the archaeological record, and methods and techniques of field research, to illustrate range of data sources and modern techniques of general applicability. Practical experience in mapping, map interpretation, sampling design, remote sensing, photogrammetry, and research proposal writing. Prerequisite: permission of instructor.

ARCHY 576 Designing Grant Proposals (5) D. GRAYSON Design and writing of grant proposals for archaeological research at both dissertation and senior investigator levels, with particular emphasis on National Science Foundation structure and requirements. Prerequisite: upper-level graduate standing and permission of instructor.

ARCHY 599 Teaching Archaeology (2-6, max. 12) Provides instruction in archaeological pedagogy. Includes syllabus development, text selection, lesson planning and delivery, lab section planning, assessment and grading strategies, technological support, staff management, and troubleshooting.

ARCHY 600 Independent Study or Research (*-) Prerequisite: permission of instructor.

ARCHY 601 Internship (3-10, max. 10) Credit/no-credit only.

Biocultural Anthropology

BIO A 100 Evolution and Human Behavior (3) NW Introduction to evolution by natural selection, examining the light it can throw on human biology and behavior in such areas

as the nature of sex differences, sexual conflict, and conflict between parents and children. Does not fulfill major requirements. Offered: jointly with BIOL 108.

BIO A 101 Human Biological Diversity (5) NW P. KRAMER Exploration of human biological variation, including skin color, body form, blood groups, genetics, and reproductive strategies. Introduction to the theory of evolution through natural selection. Offered: A.

BIO A 201 Principles of Biological Anthropology (5) NW Evolution and adaptation of the human species. Evidence from fossil record and living populations of monkeys, apes, and humans. Interrelationships between human physical and cultural variation and environment; role of natural selection in shaping our evolutionary past, present, and future. Offered: AWSpS.

BIO A 269 Special Problems in Biocultural Anthropology (3-6, max. 12) I&S Explores a specific problem or set of problems in biocultural anthropology with a focus on understanding how the problem is framed and communicated using different theoretical and methodological frameworks.

BIO A 350 Men's Health across the Lifespan (5) I&S K. O'CONNOR Explores demographic, biological, epidemiological, psychological, sexual, sociological, cultural, and economic perspectives on the health of males.

BIO A 351 Principles of Evolutionary Medicine (5) NW B. DUNCAN, D. EISENBERG Introduces evolutionary theory and explores evolutionary causes of health and disease. Considers how natural selection and the legacies of our human, primate, and deeper ancestries have shaped our biology. Topics include mental disorders, aging, cancer, diet, obesity, diabetes, infectious diseases, racism, and health differences between human groups.

BIO A 355 Evolutionary Medicine (3) NW B. DUNCAN, D. EISENBERG Explores evolutionary causes of health and disease. Considers how natural selection and the legacies of our human, primate, mammalian and bacterial ancestries have shaped our biology. Topics include mental disorders, aging, cancer, diet, obesity, diabetes, infectious diseases, racism, and health differences between human groups. Prerequisite: either BIO A 201 or BIOL 180. Offered: jointly with BIOL 385.

BIO A 369 Special Issues in Biocultural Anthropology (2-6, max. 12) I&S Exploration and analysis of a specific issue in biocultural anthropology with a focus on critical analysis on methodological approaches and theoretical frameworks.

BIO A 370 Introduction to Primates (5) NW Origins, major evolutionary trends, and modern taxonomic relationships of the nonhuman primates. Their distribution and habitat in relation to behavioral and morphological adaptations and their status as endangered species. Prerequisite: BIO A 201.

BIO A 372 Uses and Abuses of Evolutionary Views of Human Behavior (5) I&S/NW Interaction of human behavior and biology as it has been interpreted within an evolutionary framework. Discusses various challenges to Darwinian theory, particularly Lamarckism and creationism. Topics include biological determinism as exemplified by racism, myths of human origins, the clash between biological and cultural determinism, and modern genetics and behavior.

BIO A 382 Human Population Biology (3) NW Explores human fertility and mortality, and their relationships to the size and structure of populations through time. Emphasizes the biological and cultural determinants of these life course events in evolutionary perspective. Introduces the quantitative tools needed to understand these phenomena, including formal demography, epidemiology, and population genetics. Prerequisite: BIO A 201.

BIO A 387 Ecological Perspectives on Environmental Stress, Adaptation, and Health (5) NW How human populations respond to environmental stressors in biological-behavioral terms and the relationship of this adaptational process to health. Nutritional, climatic, and sociocultural stress and associated patterns of birth, disease, and death

throughout human history in hunting, gathering, farming, pre-industrial, and industrial societies. Prerequisite: BIO A 201.

BIO A 388 Human Fossils and Evolution (5-) NW P. KRAMER First of a two-part series. Evolution of human anatomy and behavior as adaptations to changing environments. Human fossils: their geological context, age, ecological setting used to reconstruct the evolution of our species during the last six million years of earth history. Prerequisite: either BIO A 201 or BIOL 180.

BIO A 389 Human Fossils and Evolution (-5) NW P. KRAMER Second of two-part series. Evolution of human anatomy and behavior as adaptations to changing environments. Human fossils: their geological context, age, ecological setting used to reconstruct the evolution of our species during the last six million years of earth history. Prerequisite: BIO A 388. Offered: S.

BIO A 423 Social Networks and Health (5) I&S S. GOODREAU Examines the many ways that social interactions positively and negatively influence our health, and vice versa.. Considers why such influences are important to understand, how one measures them, what recent research has shown, and explores how they relate to other health determinants, both biological and cultural.

BIO A 450 Biodemography Seminar (5) I&S/NW K. O'CONNOR Introduction to theory, methods, and literature of biodemography. Examines biological mechanisms underlying patterns of aging, mortality, fertility, and population growth and decline. Includes readings from anthropology, sociology, demography, evolutionary biology, molecular biology, and epidemiology. Covers prehistoric, historic, and modern human populations, and non-human model systems. Offered: W.

BIO A 455 Reproductive Ecology Laboratory Seminar (5) NW K. O'CONNOR Introduction to the theory and methods of laboratory-based research in reproductive ecology. Covers lab methods for reproductive hormone assays, and their application in anthropological, biodemographic, and epidemiological research. Prerequisite: BIO A 201.

BIO A 465 Nutritional Anthropology (3) I&S/NW Examines the interrelationships between biomedical, sociocultural, and ecological factors, and their influence on the ability of humans to respond to variability in nutritional resources. Topics covered include diet and human evolution, and nutrition-related biobehavioral influences on human growth, development, and disease resistance. Prerequisite: BIO A 201. Offered: jointly with NUTR 465.

BIO A 466 Biocultural Anthropology Honors Thesis ([1-9]-, max. 18) NW Individual research under the direction of a thesis adviser, culminating in a senior honors thesis. Open only to upper-class students in departmental honors program.

BIO A 469 Special Topics in Biocultural Anthropology (3-5, max. 15) NW Delineation and analysis of a specific problem or a more general area in biocultural anthropology. Offered occasionally by visiting or resident faculty.

BIO A 470 Evolution of Human Social Behavior (5) I&S Key concepts, research strategies, and debates concerning the processes and outcomes of human behavioral evolution. Emphasizes the complementarity of various methods and theories for understanding human biocultural evolution, including behavioral ecology, dual transmission theory, phylogenetic analysis, and evolutionary psychology. Prerequisite: BIO A 201.

BIO A 471 Evolutionary Perspectives on Parenting and Childcare (5) NW Examines the use of evolutionary principles to understand variation in parenting and childcare practices in modern, historic, and prehistory human populations. Contextualizes human parenting and childcare adaptations in a broadly comparative and theoretical perspective.

BIO A 473 Biological Adaptability of Human Populations (5) NW B. DUNCAN, D. EISENBERG Mechanisms enabling

humans to maintain homeostasis in extreme environments: high altitude, heat, cold, nutritional deficiency, radiation. Adaptive process operating at levels of physiology, metabolism, and population, including the strategies of fertility and birth spacing. Prerequisite: BIO A 201.

BIO A 476 Sociocultural Ecology and Health (3) NW Sociocultural ecology of health/disease, focusing on humans as bioculturally integrated beings and on populations as biocultural units of adaptation. Examples of research on disease, both infectious and chronic, and patterns of morbidity and mortality, infant, maternal, old age, with particular attention to situations of sociocultural changes. Prerequisite: BIO A 201.

BIO A 477 Evolutionary Perspectives on Sex and Gender Roles (3) I&S/NW Critical examination of theories explaining the evolution of sex differences and associated gender roles. Consideration of gender differences in mate preferences, parental investment, subsistence, aggressiveness, and risk-taking. Stresses interactions between biology and culture. Prerequisite: BIO A 201.

BIO A 482 Human Population Genetics (5) NW, QSR S. GOODREAU, D. HOLMAN Micro-evolutionary changes in human populations. Effects of mutation, selection, inbreeding, gene flow, and genetic drift as causes of evolutionary change. Prerequisite: BIO A 201.

BIO A 483 Human Genetics, Disease, and Culture (5) NW D. EISENBERG Considers relationships among genetic aspects of human disease, cultural behavior, and natural habitat for a wide variety of conditions. Also considers issues of biological versus environmental determinism, adaptive aspects of genetic disease, and the role of cultural selection. Prerequisite: BIO A 201.

BIO A 484 Human Life Cycle (5) NW Human growth and physical/social development: fetal life to old age. Cultural, ecological, and evolutionary aspects of the life cycle. Population differences in age and sex related to morbidity and mortality. Prerequisite: BIO A 201.

BIO A 485 Research in Growth and Development (2, max. 8) NW Focus on topics relating to primate growth and development. Prerequisite: either BIO A 484, BIO A 495, or BIO A 496, any of which may be taken concurrently.

BIO A 486 Primate Socioecology (3) NW Focus on the variety of social systems exhibited by nonhuman primates and adaptive significance of these societies; social systems in terms of the present ecology and evolutionary past of the species; the function of communicatory gestures and vocalizations, tradition, kinship, and social roles in maintaining and structuring groups over generations; the relationship among mating systems, foraging strategies, ranging patterns, and ecological separation/resource partitioning and their contribution to species-typical social organization. Prerequisite: either BIO A 370 or PSYCH 418.

BIO A 487 Human and Comparative Osteology (5) NW Taylor Introduction to the vertebrate skeleton. The skeleton is described in detail and various methods of determining age and sex, as well as osteometry and modern statistical methods for handling such data, are presented.

BIO A 488 Primate Evolution (5) NW Major trends in nonhominid primate evolution through the Cenozoic. Discussion of the specimens, geological context, and age of the fossil taxa and their relationship to modern taxa. Practical experience in analyzing fossil material. Prerequisite: BIO A 201.

BIO A 491 Issues in Human Paleontology (5) NW P. KRAMER Addresses the relevance of the hominin fossil record in understanding the evolution of our species. Prerequisite: either BIO A 388.

BIO A 495 Growth and Development: Infancy (5) NW Genetic and environmental influences on growth and development from prenatal life through infancy. Includes exploration of methods for assessing development and comparisons of development in non-human primates with human development. Prerequisite: BIO A 370.

BIO A 496 Growth and Development: Adolescence and Reproductive Maturity (5) NW Genetic and environmental influences on growth and development during adolescence. Emphasis on the interaction of biological and social factors in attainment of reproductive maturity. Compares conditions of non-human primates with human conditions. Prerequisite: BIO A 370.

BIO A 499 Undergraduate Research (*, max. 12)

BIO A 502 Preceptorial Reading (6) For beginning graduate students who have not had adequate training in the study of primate principles and methods involved in the study of evolution, human genetics, and the evolution of modern populations. Not open to graduate students in the biocultural anthropology program. Offered: AWS.

BIO A 520 Human Behavioral Ecology (3-5) Principles and methods of evolutionary behavioral ecology, and critical examination of their application to human behavior in such areas as resource utilization, mating, parenting, life history, cooperation, and competition.

BIO A 525 Biocultural Research Methods and Study Design (5) B. DUNCAN Survey of basic conceptual issues in the design of empirical research, with special attention to problems that arise during anthropological fieldwork. Topics include defining data needs, sampling strategies, problems with co-funding, proposal writing, human subjects approval, and basic ethical issues in human biocultural research.

BIO A 526 Quantitative Methods and Modeling for Biocultural Anthropology (5) S. GOODREAU, D. HOLMAN Surveys the concepts, tools, and methods for developing quantitative models based on underlying biocultural processes. Introduces methods of testing models from observations collected in anthropological field studies. Oriented toward longitudinal research of fertility, mortality, disease dynamics, population genetics, and other biocultural processes.

BIO A 550 Skeletal Biology and Prehistoric Demography (5) K. O'CONNOR Composition and structure of calcified tissue. Analytical techniques and their contribution to interpretation of the archaeological record.

BIO A 568 Human Reproductive Ecology (3) D. HOLMAN A consideration of the determinants of fertility variation within and among traditional human societies. Biocultural and ecological perspectives on pubertal timing, nuptiality, duration of birth intervals, and reproductive senescence.

BIO A 569 Behavioral Ecology and Demography (5) Demographic analysis relevant to anthropological research on small populations. Use of data collected through local surveys, genealogical methods, and from other sources. Focuses on use of demography to analyze social and biological processes with adaptive and/or cultural-historical significance. Emphasizes theoretical approaches.

BIO A 584 Topics in Ecology and Adaptation (3, max. 9) Seminar dealing with various aspects of ecology and adaptation. Topics vary each quarter.

BIO A 588 Topics in Primate Evolution (3) Emphasis on fossil taxa and their importance in understanding the morphologies and distributions of members of modern taxa. Prerequisite: BIO A 488 and permission of instructor.

BIO A 590 Biological Anthropology Seminar (2, max. 18) Includes presentations by participants and guest lecturers of current literature and ongoing research in topics pertaining to human and nonhuman primate evolution, biology, anatomy, genetics variation, and behavior. Credit/no-credit only.

BIO A 591 Issues in Hominin Paleontology (5) P. KRAMER Addresses the relevance of the hominin fossil record in understanding the evolution of our species.

BIO A 600 Independent Study or Research (*-)

Applied and Computational Mathematical Sciences

C36 Padelford

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

UNDERGRADUATE PROGRAM

Adviser

C36 Padelford, Box 354350

(206) 543-6830

advising@math.washington.edu

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

- *Biological and Life Sciences* focuses on basic techniques of mathematical modeling and computing that are employed in the life sciences.
- *Discrete Mathematics and Algorithms* gives students a broad background in mathematics and computation with special emphasis on discrete mathematics and its application to optimization and algorithm design.
- *Engineering and Physical Sciences*: This option is an excellent choice for students with an interest in the physical world and classical areas of applied mathematics.
- *Mathematical Economics*: Students in this option obtain a firm foundation in applied and computational mathematics as well as a basic grounding in economic theory.
- *Operations Research* provides a firm foundation in the mathematical tools of operations research, particularly optimization and stochastic modeling.
- *Scientific Computing and Numerical Algorithms* focuses on the design, mathematical analysis, and efficient implementation of numerical algorithms for such problems.
- *Social and Behavioral Sciences* provides a foundation in commonly used statistical and computational techniques followed by flexibility in pursuing different sets of advanced courses.
- *Statistics*: This option is designed to introduce students to theory, methodology, and applications of statistics.

Bachelor of Science

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

Program Admission Requirements

Applications are accepted at the beginning of each quarter. Admission is competitive. Admission decisions are based on grades in core courses and a student's overall academic record. Completion of minimum requirements does not guarantee admission. Minimum requirements: a GPA of at least 2.50 in the following courses, with a minimum grade of 2.0 in each course: CSE 142; MATH 124, MATH 125, MATH 126; one from MATH 300, MATH 307, MATH 308, AMATH 351, AMATH 352.

Major Requirements

90 credits as follows:

1. A minimum GPA of 2.50 for all courses counted toward the major; minimum grade of 2.0 in each course taken toward the major.
2. Core: 43 credits to include MATH 124, MATH 125, MATH 126; MATH 308; MATH 307 or MATH 351; MATH 390/STAT 390; CSE 142, CSE 143; AMATH 352; AMATH 381/ MATH 381, AMATH 383
3. Completion of one of the following options:
 - a. *Biological and Life Sciences Option*. 47 credits to include option core (27 credits): PHYS 121, PHYS 122, PHYS 123; or BIOL 101 and BIOL 102 or BIOL 180 and BIOL 200; MATH 324, AMATH 353, AMATH 422, AMATH 423; and option electives (20 credits): outside area (12 credits or double major/double degree; see adviser for options) and 8 credits of approved courses at the 300 level or above, chosen from the four participating departments.
 - b. *Discrete Mathematics and Algorithms Option*. 47 credits to include option core and option electives. Option core: 33 credits for non-Computer Science and Engineering majors - PHYS 121, PHYS 122, PHYS 123, MATH 300, MATH 394/STAT 394, CSE 373, CSE 417, and two of CSE 374, CSE 410, CSE 413, CSE 415; 9 credits for Computer Science/Computer Science and Engineering double major/double degree - MATH 394/STAT 394, CSE 421, CSE 431. Option electives: 14 credits for non-Computer Science and Engineering majors, 23 credits for Computer Science/Computer Science and Engineering double majors, to include 9 credits from MATH 407, MATH 408, MATH 409, MATH 461, MATH 462, or one of AMATH 481, AMATH 482, or AMATH 483. Remaining 15 credits from approved courses at the 300 level or above from the four participating departments.
 - c. *Engineering and Physical Sciences Option*. 47 credits to include option core (30 credits): PHYS 121, PHYS 122, PHYS 123, MATH 324, AMATH 401, AMATH 402, AMATH 403; and option electives (17 credits): outside area (11 credits or double major/double degree; see adviser for options) and 6 credits of approved courses at the 300 level or above, chosen from the four participating departments.
 - d. *Mathematical Economics Option*. 47 credits to include option core and electives. Option core (27 credits): PHYS 121, PHYS 122, PHYS 123 or ECON 200, ECON 201, ECON 300, MATH 300, MATH 327, MATH 407; and at least one of the following: MATH 408, STAT 423. Option electives: Either (1) or (2), below. (1) 20 credits including at least 15 credits from ECON 301, ECON 400, ECON 401, ECON 404, ECON 421, ECON 422, ECON 424, ECON 426, ECON 435, ECON 472, ECON 482, ECON 483, ECON 485, ECON 486; at least 5 additional credits at the 300 level or above from the four participating departments or from the department of Economics (taken from ECON courses listed above). (2) Complete a double major with a Bachelor of Science degree in Economics.
 - e. *Operations Research Option*. 47 credits to include option core and electives. Option core (30 credits): PHYS 121, PHYS 122, PHYS 123, MATH 300, MATH

394/STAT 394, MATH 395/STAT 395; and at least two of the following: MATH 407, MATH 408, MATH 409. Option electives: Either (1) or (2), below. (1) 17 credits, including at least 6 credits from MATH 491/STAT 491, MATH 492/STAT 492, STAT 421, STAT 423; at least 8 credits from OPMGT 301, OPMGT 402, OPMGT 443, OPMGT 450, OPMGT 490, QMETH 450, QMETH 490, IND E 321, IND E 337, IND E 410, IND E 412, IND E 424, IND E 426, IND E 430, IND E 433, (with at least one course at the 400 level); at least 3 additional credits at the 300 level or above from the four participating departments or from the departments of Management Science and Industrial Engineering (taken from IND E courses listed above). (2) Complete a double degree in Management Science in the Foster School of Business or in Industrial Engineering in the College of Engineering.

- f. *Scientific Computing and Numerical Algorithms Option*. 47 credits to include option core (27 credits): PHYS 121, PHYS 122, PHYS 123, MATH 300, MATH 327, two of MATH 464, MATH 465 AMATH 481, AMATH 482, or AMATH 483; and option electives (20 credits), to include 11 credits from the following: AMATH 301; AMATH 353 or MATH 309; CSE 373 or CSE 326; CSE 410; AMATH 401, AMATH 402, AMATH 403; MATH 407, MATH 408, MATH 409; MATH 427, MATH 428; remaining 9 credits from approved courses at the 300 level or above from the four participating departments.
- g. *Social and Behavioral Sciences Option*. 47 credits to include option core (31 credits): PHYS 121, PHYS 122, PHYS 123, STAT 340, STAT 341, STAT 342, STAT 423; and option electives (16 credits): outside area (10 credits or double major/double degree; see adviser for options) and 6 credits of approved courses at the 300 level or above, chosen from the four participating departments.
- h. *Statistics Option*. 47 credits to include program core (37 credits): PHYS 121, PHYS 122, PHYS 123, STAT 302, STAT 340, STAT 341, STAT 342, STAT 421, STAT 423; option electives (10 credits): approved courses at the 300 level or above, chosen from the four participating departments.

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

Continuation Policy

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

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: The ACMS degree emphasizes the development of advanced skills in discrete and continuous mathematical modeling, computing and scientific computation, mathematical reasoning and analytic skills, and statistical reasoning and analytic skills. Students develop an expertise at an advanced level in an applications area. This set of skills provides the basis for careers in a wide array of quantitative disciplines including engineering; the physical, life, and social sciences; as well as business and management sciences. In addition, the ACMS program has developed partnerships with a number of departments on campus to facilitate the pursuit of double majors.
- *Instructional and Research Facilities*: The program has access to the combined instructional and research facilities of the four participating departments, as well as the Mathematics and Statistics library and the Math Study Center.

- **Honors Options Available:** College Honors (Completion of both Interdisciplinary Honors and Departmental Honors requirements). Departmental Honors (see adviser for requirements). For Interdisciplinary Honors, see University Honors Program.
- **Research, Internships, and Service Learning:** The program is provided with internship opportunities periodically, which are then passed on to students.
- **Department Scholarships:** None offered.
- **Student Organizations/Associations:** MAA Student Chapter, Actuarial Club, SIAM

Applied Mathematics

202 Lewis Hall

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

UNDERGRADUATE PROGRAM

Adviser

202 Lewis Hall, Box 353925

(206) 543-5493

The Department of Applied Mathematics offers the following undergraduate programs:

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

Minor

Minor Requirements: 27 or more credits as follows:

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

GRADUATE PROGRAM

Graduate Program Coordinator

Lewis Hall, Box 353925

(206) 543-5493

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

Master of Science, Applied Mathematics

The Master of Science degree is offered both on campus and online. Requirements are basically the same for both degrees. See adviser for possible exceptions.

Admission Requirements

1. Baccalaureate degree from a regionally accredited college or university in the U.S. or its equivalent from a

foreign institution, either in mathematics with a strong background in applications such as physical, engineering, biological, or social sciences with a strong background in applications-oriented mathematics. Proficiency in coursework that includes: calculus, differential equations, linear algebra, and numerical analysis or scientific computing. Recommended: advanced calculus and real analysis.

2. Minimum 3.00 GPA
3. Graduate Record Examination (GRE) General test scores.
4. Proficiency in English: Applicants whose native language is not English must demonstrate English language proficiency. See Memo 8, Graduate School English Language Proficiency Requirements, for ways to demonstrate proficiency.

Degree Requirements

Minimum 36 credits, to include:

1. **Core Courses (20 credits):** AMATH 567, AMATH 568, and AMATH 569. (Substitution of any of these courses with AMATH 501, AMATH 502 and AMATH 503, respectively, is permitted.) Either AMATH 581 or AMATH 584.
2. **Applied Mathematics Courses:** Minimum 24 credits from the applied mathematics curriculum. Core courses are counted toward this requirement.
3. Minimum 9 numerically graded courses, including core courses listed above, with a minimum 3.20 cumulative GPA. One of these courses may be substituted with 4 credits of AMATH 500 or AMATH 600.
4. **Final Examination:** Oral presentation by the candidate in the presence of his or her graduate committee on a current topic of interest from the literature or on the results of original research. Students continuing in the AMATH PhD program satisfy the requirement by passing the PhD qualifying examination.
5. **Program Plan:** Filled out by the student, signed by the adviser, and approved by the graduate committee. For full-time students, no later than the end of the first quarter of registration. For part-time students, prior to the end of their first three quarters of registration.
6. **Satisfactory Progress:** Maintain a minimum 3.20 GPA. Full-time students (whether self-supporting or under full scholarship or assistantship support) should normally complete the requirements for an MS degree in one year.

Master of Science, Computational Finance and Risk Management

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

Admission Requirements

1. Proficiency in coursework that includes calculus through partial differentiation, matrix algebra, and one-dimensional optimization. Probability and statistics equivalent to an upper-level undergraduate course or entry-level graduate course. A programming language such as Java or C++, or a mathematics or statistics programming language such as Matlab or R/S-PLUS.
2. Baccalaureate degree from a regionally accredited college or university in the U.S. or its equivalent from a foreign institution, with a minimum 3.00 GPA (on a 4.0 scale).
3. Graduate Record Examination (GRE), GMAT, or waiver petition

4. Proficiency in English: Applicants whose native language is not English must demonstrate English language proficiency. See Memo 8, Graduate School English Language Proficiency Requirements, for ways to demonstrate proficiency.

Degree Requirements

Minimum 42-54 credits, to include:

1. **Core Courses (26 credits):** CFRM 463, CFRM 540, CFRM 541, CFRM 542, CFRM 543, CFRM 544, CFRM 556, CFRM 558
2. **CFRM program options:**
 - a. **General program:** Remaining credits to be satisfied by available CFRM elective courses
 - b. **Computing concentration:** Remaining credits selected from: CFRM 510, CFRM 548, CFRM 551, CFRM 555, CFRM 557, CFRM 557, AMATH 583
 - c. **Risk Management concentration:** Remaining credits selected from: CFRM 545, CFRM 546, CFRM 547, CFRM 548, CFRM 552, CFRM 554
3. **Final Examination:** A written exam, to be completed after the third quarter of enrollment. Examination dates are determined by the department each quarter.
4. **Satisfactory Progress:** Maintain a minimum 3.20 GPA.

Doctor of Philosophy in Applied Mathematics

Admission Requirements

The Doctor of Philosophy (PhD) degree in applied mathematics is primarily a research degree, and is not conferred as a result of coursework completed. Granting of the degree is based on proficiency in applied mathematics, and the ability to carry out an independent investigation as demonstrated by completion of a doctoral dissertation. The dissertation must exhibit original mathematical contributions relevant to a significant area of application.

1. Completion of coursework equivalent to that described for the master's degree, with a minimum 3.40 GPA, and indication of the ability or potential to perform independent research
2. Graduate Record Examination
3. Three letters of recommendation sent directly to the department
4. Minimum score of 500 on the Test of English as a Foreign Language (TOEFL) for applicants not citizens of the United States unless they meet one of the following criteria: citizens of Australia, Canada, Ireland, New Zealand, or the United Kingdom; or applicants holding bachelor's or advanced degrees from accredited institutions in the United States or in one of the countries listed above.
5. Students are considered for admission to the PhD program after completing AMATH 567, AMATH 568, AMATH 584, and AMATH 585 with a minimum grade of 3.4 in each course, as well as passing the preliminary examination.

Degree Requirements

Minimum 90 credits, to include:

1. **Course Requirements:** AMATH 567, AMATH 568, AMATH 569; either AMATH 581 or AMATH 584, AMATH 585, AMATH 586; three of AMATH 570, AMATH 571, AMATH 572, AMATH 573, AMATH 574, AMATH 575; Two relevant courses not from the AMATH curriculum; AMATH 600 (4 credits, 2 each with separate faculty members).
2. **Minimum 13 Numerically Graded Courses:** The entire course of study, including any exceptions, must be approved by the Graduate Program Coordinator and the student's adviser or faculty mentors.

3. *Supervisory Committee*: Formed no later than the end of spring quarter of the first year.
4. *Qualifying Examination*: Three written two-hour examinations, covering a core of undergraduate material necessary for successful completion of the PhD program.
5. *General Examination*: Oral examination administered by the student's Supervisory Committee, usually taken before the end of the third year.
6. *Final Examination*: Oral presentation of completed research in a seminar open to the public.
7. *Satisfactory Performance and Progress*: Satisfactory progress in coursework is based on grades, which are expected to be 3.4 or better. Satisfactory progress on examination requirements consists of passing the different examinations in a timely manner. Department funding is contingent on satisfactory progress.

Financial Aid

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

Research Facilities

The Department of Applied Mathematics maintains five mid-scale computer servers (12-cores and 24 GB RAM each). These are available to faculty, staff, students, and visitors via physical or remote access. All faculty and student accounts use Dropbox for backup and cloud access. Any member of the department may enroll in the departmental Dropbox teams account to obtain an additional 200 GB for backup purposes.

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

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

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

Applied Mathematics

AMATH 301 Beginning Scientific Computing (4) NW Introduction to the use of computers to solve problems arising in the physical, biological, and engineering sciences. Application of mathematical judgment, programming architecture, and flow control in solving scientific problems. Introduction to MATLAB routines for numerical programming, computation, and visualization. Prerequisite: either MATH 125, Q SCI 292, or MATH 135. Offered: AWSpS.

AMATH 351 Introduction to Differential Equations and Applications (3) NW Introductory survey of ordinary differential equations; linear and nonlinear equations; Taylor series; and Laplace transforms. Emphasizes on formulation, solution, and interpretation of results. Examples drawn from physical and biological sciences and engineering. Prerequisite: MATH 125. Offered: AWSpS.

AMATH 352 Applied Linear Algebra and Numerical Analysis (3) NW Analysis and application of numerical methods and algorithms to problems in the applied sciences and

engineering. Applied linear algebra, including eigenvalue problems. Emphasis on use of conceptual methods in engineering, mathematics, and science. Extensive use of MATLAB package for programming and solution techniques. Prerequisite: either MATH 126 or Q SCI 293. Offered: AWSpS.

AMATH 353 Fourier Analysis and Partial Differential Equations (3) NW Heat equation, wave equation, and Laplace's equation. Separation of variables. Fourier series in context of solving heat equation. Fourier sine and cosine series; complete Fourier series. Fourier and Laplace transforms. Solution of partial differential equations on infinite domains. D' Alembert's solution for wave equation. Prerequisite: either AMATH 351 or MATH 307. Offered: Sp.

AMATH 383 Introduction to Continuous Mathematical Modeling (3) NW Introductory survey of applied mathematics with emphasis on modeling of physical and biological problems in terms of differential equations. Formulation, solution, and interpretation of the results. Prerequisite: either AMATH 351 or MATH 307. Offered: AWS.

AMATH 401 Vector Calculus and Complex Variables (4) NW Emphasizes acquisition of solution techniques; illustrates ideas with specific example problems arising in science and engineering. Includes applications of vector differential calculus, complex variables; line-surface integrals; integral theorems; and Taylor and Laurent series, and contour integration. Prerequisite: either MATH 126 or MATH 136. Offered: A.

AMATH 402 Introduction to Dynamical Systems and Chaos (4) NW Overview methods describing qualitative behavior of solutions on nonlinear differential equations. Phase space analysis of fixed pointed and periodic orbits. Bifurcation methods. Description of strange attractors and chaos. Introductions to maps. Applications: engineering, physics, chemistry, and biology. Prerequisite: either AMATH 351 or MATH 307. Offered: W.

AMATH 403 Methods for Partial Differential Equations (4) NW Applications of partial differential equations; linear and quasilinear first order equations, characteristics, shocks; classification of linear second order equations; basic solution techniques for parabolic, elliptic, and hyperbolic equations; Green's functions and integral transform methods. Prerequisite: AMATH 401; either AMATH 351 or MATH 307. Offered: Sp.

AMATH 422 Computational Modeling of Biological Systems (3) NW Examines fundamental models that arise in biology and their analysis through modern scientific computing. Covers discrete and continuous-time dynamics, in deterministic and stochastic settings, with application from molecular biology to neuroscience to population dynamics; statistical analysis of experimental data; and MATLAB programming from scratch. Prerequisite: either MATH 307 or AMATH 351. Offered: W.

AMATH 423 Mathematical Analysis in Biology and Medicine (3) NW Focuses on developing and analyzing mechanistic, dynamic models of biological systems and processes, to better understand their behavior and function. Applications drawn from many branches of biology and medicine. Provides experiences in applying differential equations, difference equations, and dynamical systems theory to biological problems. Prerequisite: either AMATH 351 or MATH 307, MATH/STAT 390. Offered: Sp.

AMATH 481 Scientific Computing (5) Project-oriented computational approach to solving problems arising in the physical/engineering sciences, finance/economics, medical, social, and biological sciences. Problems requiring use of advanced MATLAB routines and toolboxes. Covers graphical techniques for data presentation and communication of scientific results. Prerequisite: AMATH 301; either AMATH 351 or MATH 307; either AMATH 352 or MATH 308. Offered: A.

AMATH 482 Computational Methods for Data Analysis (5) Exploratory and objective data analysis methods ap-

plied to the physical, engineering, and biological sciences. Brief review of statistical methods and their computational implementation for studying time series analysis, spectral analysis, filtering methods, principal component analysis, orthogonal mode decomposition, and image processing and compression. Prerequisite: AMATH 301; either AMATH 352 or MATH 308. Offered: W.

AMATH 483 High-Performance Scientific Computing (5) Introduction to hardware, software, and programming for large-scale scientific computing. Overview of multicore, cluster, and supercomputer architectures; procedure and object oriented languages; parallel computing paradigms and languages; graphics and visualization of large data sets; validation and verification; and scientific software development. Prerequisite: either CSE 142 or AMATH 301. Offered: Sp.

AMATH 490 Special Topics (1-5, max. 15) Topics of current interest in applied mathematics not covered by other undergraduate courses.

AMATH 498 Senior Project or Thesis (1-6, max. 6) Intended for Honors students and other advanced undergraduates completing a special project or senior thesis in applied mathematics. Offered: AWSpS.

AMATH 499 Undergraduate Reading and Research (1-6, max. 6) Credit/no-credit only. Offered: AWSpS.

AMATH 500 Special Studies in Applied Mathematics (*, max. 24) Lectures and discussions of topics of current interest in applied mathematics. May not be offered every quarter; content may vary from one offering to another. Prerequisite: permission of instructor.

AMATH 501 Vector Calculus and Complex Variables (5) Emphasizes acquisition of solution techniques; illustrates ideas with specific example problems arising in science and engineering. Includes applications of vector differential calculus, complex variables; line-surface integrals; integral theorems; and Taylor and Laurent series, and contour integration. Prerequisite: either a course in vector calculus or permission of instructor.

AMATH 502 Introduction to Dynamical Systems and Chaos (5) Overview methods describing qualitative behavior of solutions on nonlinear differential equations. Phase space analysis of fixed pointed and periodic orbits. Bifurcation methods. Description of strange attractors and chaos. Introductions to maps. Applications: engineering, physics, chemistry, and biology. Prerequisite: either a course in differential equations or permission of instructor.

AMATH 503 Methods for Partial Differential Equations (5) Applications of partial differential equations; linear and quasilinear first order equations, characteristics, shocks; classification of linear second order equations; basic solution techniques for parabolic, elliptic, and hyperbolic equations; Green's functions and integral transform methods. Prerequisite: either AMATH 501 and a course in differential equations or permission of instructor.

AMATH 504 Mathematical Epidemiology (5) Focuses on the construction and analysis of mathematical models for infectious disease transmission and control. Emphasizes evaluation and comparison of vaccination programs. Applications are presented for a variety of diseases such as measles, rubella, smallpox, rabies, etc. Prerequisite: either a course in differential equations or permission of instructor. Offered: Sp, odd years.

AMATH 505 Introduction to Fluid Dynamics (4) Eulerian equations for mass-motion; Navier-Stokes equation for viscous fluids, Cartesian tensors, stress-strain relations; Kelvin's theorem, vortex dynamics; potential flows, flows with high-low Reynolds numbers; boundary layers, introduction to singular perturbation techniques; water waves; linear instability theory. Prerequisite: either a course in partial differential equations or permission of instructor. Offered: jointly with ATM S 505/OCEAN 511; A, odd years.

AMATH 506 Applied Probability and Statistics (4) Discrete and continuous random variables, independence and con-

ditional probability, central limit theorem, elementary statistical estimation and inference, linear regression. Emphasis on physical applications. Prerequisite: some advanced calculus and linear algebra. Offered: jointly with STAT 506.

AMATH 507 Calculus of Variations (5) Necessary and sufficient conditions for a weak and strong extremum. Legendre transformation, Hamiltonian systems. Constraints and Lagrange multipliers. Space-time problems with examples from elasticity, electromagnetics, and fluid mechanics. Sturm-Liouville problems. Approximate methods. Prerequisite: either AMATH 351 or MATH 307; MATH 324; MATH 327. Offered: W, odd years.

AMATH 509 Theory of Optimal Control (3) Trajectories from ordinary differential equations with control variables. Controllability, optimality, maximum principle. Relaxation and existence of solutions. Techniques of nonsmooth analysis. Prerequisite: real analysis on the level of MATH 426; background in optimization corresponding to MATH 515. Offered: jointly with MATH 509.

AMATH 512 Methods of Engineering Analysis (3) Applications of mathematics to problems in chemical engineering; vector calculus; properties and methods of solution of first and second order partial differential equations; similarity transforms, separation of variables, Laplace and Fourier transforms. Prerequisite: MATH 308, MATH 307 or AMATH 351, MATH 324, or permission of instructor. Offered: jointly with CHEM E 512; A.

AMATH 514 Networks and Combinatorial Optimization (3) Mathematical foundations of combinatorial and network optimization with an emphasis on structure and algorithms with proofs. Topics include combinatorial and geometric methods for optimization of network flows, matching, traveling salesman problem, cuts, and stable sets on graphs. Special emphasis on connections to linear and integer programming, duality theory, total unimodularity, and matroids. Prerequisite: either MATH 308 or AMATH 352 any additional 400-level mathematics course. Offered: jointly with MATH 514.

AMATH 515 Fundamentals of Optimization (5) Maximization and minimization of functions of finitely many variables subject to constraints. Basic problem types and examples of applications; linear, convex, smooth, and nonsmooth programming. Optimality conditions. Saddlepoints and dual problems. Penalties, decomposition. Overview of computational approaches. Prerequisite: linear algebra and advanced calculus. Offered: jointly with IND E 515/ MATH 515.

AMATH 516 Numerical Optimization (3) Methods of solving optimization problems in finitely many variables, with or without constraints. Steepest descent, quasi-Newton methods. Quadratic programming and complementarity. Exact penalty methods, multiplier methods. Sequential quadratic programming. Cutting planes and nonsmooth optimization. Prerequisite: MATH 515. Offered: jointly with MATH 516.

AMATH 521 Special Topics in Mathematical Biology (5, max. 15) Special topics in mathematical biology. Prerequisite: permission of instructor. Offered: Sp.

AMATH 522 Introduction to Mathematical Biology (5) Modeling biological systems with differential and difference equations. Examples from: ecology (population growth, disease dynamics); biochemistry and cell biology; and neurobiology (Hodgkin-Huxley and neural networks). Methods include linear stability analyses, phase-plane analyses, and perturbation theory. Prerequisite: either a course in differential equations or permission of instructor.

AMATH 523 Mathematical Analysis in Biology and Medicine (5) Focuses on developing and analyzing mechanistic, dynamic models of biological systems and processes, to better understand their behavior and function. Applications drawn from many branches of biology and medicine. Provides experiences in applying differential equations, difference equations, and dynamical systems theory to

biological problems. Prerequisite: either courses in differential equations and statistics and probability, or permission of instructor. Offered: W.

AMATH 524 Mathematical Biology: Spatiotemporal Models (5) Examines partial differential equations for biological dynamics in space and time. Draws examples from molecular and cell biology, ecology, epidemiology, and neurobiology. Topics include reaction-diffusion equations for biochemical reactions, calcium wave propagation in excitable medium, and models for invading biological populations. Prerequisite: either courses in partial differential equations and statistics and probability, or permission of instructor. Offered: Sp.

AMATH 532 Mathematics of Genome Analysis and Molecular Modeling (5) Covers genome analysis, including bioinformatics and molecular modeling in terms of molecular dynamics. Prerequisite: either AMATH 506 or permission of instructor. Offered: A.

AMATH 533 Neural Control of Movement: A Computational Perspective (3) Systematic overview of sensorimotor function on multiple levels of analysis, with emphasis on the phenomenology amenable to computational modeling. Topics include musculoskeletal mechanics, neural networks, optimal control and Bayesian inference, learning and adaptation, internal models, and neural coding and decoding. Prerequisite: vector calculus, linear algebra, MATLAB, or permission of instructor. Offered: jointly with CSE 529; W.

AMATH 534 Dynamics of Neurons and Networks (5) Covers mathematical analysis and simulation of neural systems - single cells, networks, and populations - via tools of dynamical systems, stochastic processes, and signal processing. Topics include single-neuron excitability and oscillations; network structure and synchrony; and stochastic and statistical dynamics of large cell populations. Prerequisite: either CSE 528 or permission of instructor.

AMATH 535 Mathematical Ecology (5) Considers models, methods, and issues in population ecology. Topics include the effects of density dependence, delays, demographic stochasticity, and age structure on population growth; population interactions (predation, competition, and mutualism); and application of optimal control theory to the management of renewable resources. Prerequisite: either a course in differential equations or permission of instructor. Offered: Sp.

AMATH 536 Spatial Models in Ecology and Epidemiology (5) Considers models for growth and dispersal of biological populations. Topics include population persistence, climate-induced range shifts, and rates of spread of invading organisms. Considers reaction-diffusion equations, integrodifference equation, branching random walks, and other relevant classes of models. Prerequisite: either a course in partial differential equations or permission of instructor. Offered: Sp.

AMATH 567 Applied Analysis (5) Reviews applications of metric and normed spaces, types of convergence, upper and lower bounds, and completion of a metric space; Banach spaces and Hilbert spaces, bounded linear operators, orthogonal sets and Fourier series, and the Riesz representation theorem; and the spectrum of a bounded linear operator and the Fredholm alternative. Introduces distributions. Prerequisite: either a course in real analysis or advanced calculus, or permission of instructor. Offered: A.

AMATH 568 Advanced Methods for Ordinary Differential Equations (5) Survey of practical solution techniques for ordinary differential equations. Linear systems of equations including nondiagonal case. Nonlinear systems; stability phase plane analysis. Asymptotic expansions. Regular and singular perturbations. Prerequisite: either a course in differential equations or permission of instructor. Offered: W.

AMATH 569 Advanced Methods for Partial Differential Equations (5) Analytical solution techniques for linear par-

tial differential equations. Discussion of how these arise in science and engineering. Transform and Green's function methods. Classification of second-order equations, characteristics. Conservation laws, shocks. Prerequisite: either a course in partial differential equations or permission of instructor. Offered: Sp.

AMATH 570 Asymptotic and Perturbation Methods (5) Asymptotics for integrals, perturbation, and multiple-scale analysis. Singular perturbations: matched asymptotic expansions, boundary layers, shock layers, uniformly valid solutions. Prerequisite: AMATH 567, AMATH 568, AMATH 569, or permission of instructor. Offered: A.

AMATH 572 Introduction to Applied Stochastic Analysis (5) Introduction to the theory of probability and stochastic processes based on differential equations with applications to science and engineering. Poisson processes and continuous-time Markov processes, Brownian motions and diffusion. Prerequisite: either courses in dynamical systems, statistics, and probability, or permission of instructor. Offered: Sp, even years.

AMATH 573 Coherent Structures, Pattern Formation and Solitons (5) Methods for nonlinear partial differential equations (PDEs) leading to coherent structures and patterns. Includes symmetries, conservation laws, stability Hamiltonian and variation methods of PDEs; interactions of structures such as waves or solitons; Lax pairs and inverse scattering; and Painlevé analysis. Prerequisite: either a course in partial differential equations or permission of instructor. Offered: A, odd years.

AMATH 574 Conservation Laws and Finite Volume Methods (5) Theory of linear and nonlinear hyperbolic conservation laws modeling wave propagation in gases, fluids, and solids. Shock and rarefaction waves. Finite volume methods for numerical approximation of solutions; Godunov's method and high-resolution TVD methods. Stability, convergence, and entropy conditions. Prerequisite: either AMATH 586 or permission of instructor. Offered: W.

AMATH 575 Dynamical Systems (5) Overview of ways in which complex dynamics arise in nonlinear dynamical systems. Topics include bifurcation theory, universality, Poincaré maps, routes to chaos, horseshoe maps, Hamiltonian chaos, fractal dimensions, Liapunov exponents, and the analysis of time series. Examples from biology, mechanics, and other fields. Prerequisite: either AMATH 502 or permission of instructor. Offered: Sp, odd years.

AMATH 579 Intelligent Control through Learning and Optimization (3) Design or near-optimal controllers for complex dynamical systems, using analytical techniques, machine learning, and optimization. Topics from deterministic and stochastic optimal control, reinforcement learning and dynamic programming, numerical optimization in the context of control, and robotics. Prerequisite: vector calculus; linear algebra; MATLAB. Offered: jointly with CSE 579.

AMATH 581 Scientific Computing (5) Project-oriented computational approach to solving problems arising in the physical/engineering sciences, finance/economics, medical, social, and biological sciences. Problems requiring use of advanced MATLAB routines and toolboxes. Covers graphical techniques for data presentation and communication of scientific results. Prerequisite: either a course in numerical analysis or permission of instructor.

AMATH 582 Computational Methods for Data Analysis (5) Exploratory and objective data analysis methods applied to the physical, engineering, and biological sciences. Brief review of statistical methods and their computational implementation for studying time series analysis, spectral analysis, filtering methods, principal component analysis, orthogonal mode decomposition, and image processing and compression. Prerequisite: either MATLAB and linear algebra or permission of instructor. Offered: W.

AMATH 583 High-Performance Scientific Computing (5) Introduction to hardware, software, and programming for large-scale scientific computing. Overview of multicore,

cluster, and supercomputer architectures; procedure and object oriented languages; parallel computing paradigms and languages; graphics and visualization of large data sets; validation and verification; and scientific software development. Prerequisite: linear algebra; programming experience. Offered: Sp.

AMATH 584 Applied Linear Algebra and Introductory Numerical Analysis (5) Numerical methods for solving linear systems of equations, linear least squares problems, matrix eigen value problems, nonlinear systems of equations, interpolation, quadrature, and initial value ordinary differential equations. Prerequisite: either a course in linear algebra or permission of instructor. Offered: jointly with MATH 584; A.

AMATH 585 Numerical Analysis of Boundary Value Problems (5) Numerical methods for steady-state differential equations. Two-point boundary value problems and elliptic equations. Iterative methods for sparse symmetric and non-symmetric linear systems; conjugate-gradients, preconditioners. Prerequisite: either AMATH 581, AMATH 584/MATH 584, or permission of instructor. Offered: jointly with MATH 585; W.

AMATH 586 Numerical Analysis of Time Dependent Problems (5) Numerical methods for time-dependent differential equations, including explicit and implicit methods for hyperbolic and parabolic equations. Stability, accuracy, and convergence theory. Spectral and pseudospectral methods. Prerequisite: either AMATH 581, AMATH 584/MATH 584, AMATH 585/MATH 585, or permission of instructor. Offered: jointly with ATM S 581/MATH 586; Sp.

AMATH 590 Special Topics (1-5, max. 30) Topics of current interest in applied mathematics. Offered: AWSpS.

AMATH 600 Independent Research or Study (*-) Credit/no-credit only.

AMATH 700 Master's Thesis (*-) Credit/no-credit only.

AMATH 800 Doctoral Dissertation (*-) Credit/no-credit only.

Computational Finance and Risk Management

CFRM 460 Mathematical Methods for Quantitative Finance (3) NW, QSR Covers selected mathematical methods needed to begin a master's program in quantitative finance. Topics include applications of calculus, linear algebra, and constrained optimization methods to fixed income, portfolio optimization, futures, options, and risk management.

CFRM 461 Probability and Statistics for Computational Finance (3) Covers basic concepts and methods of probability and statistical analysis and modeling for computational and quantitative finance. Coverage is carefully aligned with leading problems concerning prices and returns of individual assets and portfolios of assets. Key applications include financial risk management and portfolio performance analysis.

CFRM 462 Introduction to Computational Finance and Financial Econometrics (5) Zivot Covers probability models, data analysis, quantitative, and statistical methods using applications in finance, and introduction to and use of the R programming system for data analysis and statistical modeling. Offered: AS.

CFRM 463 R Programming for Quantitative Finance (1) Introduction to R Programming language for applications in quantitative finance. Intended for students with no prior exposure to R and prepares them with the computing skills needed to progress effectively in an MS degree program in computational finance.

CFRM 500 Special Studies in Computational Finance and Risk Management (1-6, max. 18) Lecture and discussions of topics of current interest in computational finance and risk management. Prerequisite: permission of instructor.

CFRM 510 Financial Data Access and Analysis with SQL, VBA, and Excel (4) Provides skills in retrieving and manipulating financial data and in creating computational solutions to quantitative finance problems using SQL, VBA, and Excel. Also teaches skills in leveraging the powerful financial data modeling and analysis capabilities of R in conjunction with SQL, VBA, and Excel. Offered: A.

CFRM 540 Capital Markets and Data for Computational Finance (1) Golbeck Introduces students to the language and terminology of finance, capital markets, and data through selected textbook and financial news readings. Also teaches students how to access, manipulate, and analyze complex financial data from various repositories available through the internet.

CFRM 541 Investment Science (4) Martin, Tung Introduces the mathematical, statistical, and financial foundations of investment science. Topics include: Mean-Variance Portfolio Theory, efficient frontiers, expected tail loss, futures and forwards, no arbitrage and risk-neutral pricing, and binomial tree derivative pricing. Prerequisite: coursework in introductory probability and statistics, and advanced calculus. Offered: A.

CFRM 542 Financial Data Modeling and Analysis in R (4) Introduces the R statistical programming language for computational finance application. Focuses on use of R packages for quantitative finance and R scripts development for statistical analysis and modeling methods in key quantitative finance areas including factor modeling, financial time series, and portfolio analytics. Prerequisite: CFMR 541. Offered: A.

CFRM 543 Portfolio Optimization and Asset Management (4) Covers long-only and long-short portfolio optimization with real-world constraints and costs using industrial strength optimization software; classical mean-variance and modern mean-versus downside risk optimization for dealing with fat-tailed skewed asset returns; optimization and risk analysis with factor models; and equity, mixed asset class, and fund-of-hedge portfolios. Prerequisite: CFMR 541 and CFMR 542, or permission of instructor. Offered: S.

CFRM 544 Options and Other Derivatives (4) Covers financial instrument options and derivatives. Explores how to price options and other derivatives and use them to hedge investment risk. Involves theory, statistical modeling, numerical methods, and computation using the R programming language. Prerequisite: CFMR 540; co-requisite: CFMR 541 or permission of instructor. Offered: A.

CFRM 545 Financial Risk Management I (4) Introduces the concepts and methodologies of financial risk management. Uses derivatives for hedging risk, emphasizing fixed income and exchange rate derivatives. Includes models, credit derivatives, mortgage backed securities, and asset backed securities. First in a sequence of three on financial risk management. Prerequisite: CFMR 541 or permission of instructor. Offered: W.

CFRM 546 Financial Risk Management II (4) Provides a comprehensive treatment of the theoretical concepts and modeling techniques of quantitative risk management focusing on practical tools to solve real-work problems. Covers methods for market, credit, and operational risk modeling. Prerequisite: CFMR 545 or permission of instructor. Offered: S.

CFRM 547 Credit Risk Management (4) Henniger Theory, applications & computational methods for credit risk measurement & management. Statistical and mathematical modeling of credit risk, emphasizing numerical methods & R programming. Methods include logistic regression, Monte Carlo simulation, & portfolio cash flow modeling. Covers default risk regression, analytics, & portfolio models of credit risk. Offered: A.

CFRM 548 Monte Carlo Methods in Finance (4) Marting Monte Carlo simulations in quantitative finance for portfolio assembly and financial risk management. Students learn theory and methods of tracking the behavior of un-

derlying securities in an option or portfolio and determine the derivative's value by taking the expected value of the discounted payoffs at maturity. Prerequisite: CFMR 540. Offered: A.

CFRM 551 Introduction to Trading Systems (4) Introduces electronic trading systems. Uses the R programming language to develop, evaluate, and optimize quantitative trading strategies. Students apply trading strategies through a live paper-trading account with an online broker using real time market data.

CFRM 552 Portfolio Performance Analysis and Benchmarking (4) Covers fundamental principles and commonly used methods in performance measurement, analysis, and benchmarking of portfolio evaluation. Prerequisite: CFMR 541, MBA level investments course, or equivalent. Offered: A.

CFRM 553 Financial Time Series Forecasting Methods (4) Covers financial time series forecasting methods and their use in making investment decisions for asset management purposes. Asset-class specific forecasting methods. Uses the R statistical modeling and data analysis system for implementing and evaluating such forecasting methods. Prerequisite: CFMR 541 or permission of instructor. Offered: W.

CFRM 554 Endowment and Institutional Investment Management (4) Focuses on the endowment management process and specific challenges facing institutional fund managers. Includes evaluating the role of an endowment, portfolio construction, risk management, manager selection, and alternative asset class investing. Utilizes concepts from finance and investments, macroeconomics, and mathematical optimization. Prerequisite: CFMR 541; recommended: CFMR 543 or equivalent. Offered: S.

CFRM 555 Optimization Methods in Finance (4) Murray Covers theory and efficient solution methods for optimization problems in finance. Includes financial solution methodologies using linear, non-linear, quadratic, and integer formulations; and dynamic and stochastic programming. Prerequisite: CFMR 540; linear algebra and matrix notation; statistics and probability; and experience with R language and MS Excel. Offered: A.

CFRM 556 Statistical Modeling for Computational Finance (4) Konis Advanced classical and modern statistical modeling methods for computational finance including: covariance matrix, correlation matrix, and principal components estimation and analysis; least-squares, robust, non-linear and nonparametric regression for asset return factor models; shrinkage methods; risk factors selection; and clustering and classification methods. Asset management applications and computer exercise with R. Offered: A.

CFRM 557 Financial Software Development and Integration with C++ (4) Practical introduction to C++ programming for financial applications. Focuses on developing basic object oriented programming skills in C++ to implement computational finance solutions. Also includes integrating C++ applications with R, MATLAB, SQL, and VBA.

CFRM 558 Fixed Income Analytics and Portfolio Management (4) Covers fixed income markets and securities, data sources, analytics and portfolio management methods, in particular the valuation, risks, and risk management of fixed income securities. Uses a hands-on data-oriented and computational focus. Offered: A.

CFRM 559 Stochastic Calculus for Quantitative Finance (4) Golbeck Provides a systematic examination of financial derivatives pricing using stochastic calculus. Examines popular stochastic differential equation models such as Geometric Brownian motion, Vasicek, Hull-White, Cox-Ingersoll-Ross, Black-Karasinski, Heath-Jarrow-Morton, and Brace-Gatarek-Musiela, as well as Poisson and Levy processes. Applications include equity, fixed-income, and credit derivatives. Offered: S.

CFRM 560 Actuarial Models and Estimation (4) Surveys non-life insurance mathematics. Topics include utility the-

ory, insurance, individual and collective risk models, ruin theory, risk measures, credibility theory, and generalized linear models. Includes writing computer programs to build and evaluate these models using real data. Offered: Sp.

CFRM 600 Independent Research or Study (1-6, max. 18)

CFRM 601 Internship (1-6, max. 30)

CFRM 700 Master's Thesis (1-6, max. 18)

Art

104 Art

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

UNDERGRADUATE PROGRAM

Adviser

104 Art, Box 353440

(206) 543-0646

uaskart@uw.edu

The School of Art offers the following undergraduate programs:

- The Bachelor of Arts degree with a major in art history, interdisciplinary visual arts, or painting and drawing.
- The Bachelor of Fine Arts degree with a major in painting and drawing, photomedia, or three-dimensional forum.
- The Bachelor of Design degree with majors in industrial design, interaction design, or visual communication design.
- A minor in interaction design.

Bachelor of Arts

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

Department Admission Requirements

The minimum GPA for application to the School of Art is 2.50.

- *Admission to the Interdisciplinary Visual Arts Major for Freshmen or Currently Enrolled Students:* After completing 5 credits of introductory level art (100/200 level), students meet with an Art adviser to declare the major.
- *Admission to the Interdisciplinary Visual Arts Major for Transfer Students:* Students complete the equivalent of 5 credits of introductory art (100/200 level) prior to transferring. Once admitted to the UW, they meet with an Art adviser to declare the major. Prior to transfer, students may address questions to uaskart@uw.edu.
- *Admission to the Painting and Drawing Major for Freshmen and Currently Enrolled Students:* After completing ART 190, students meet with an Art adviser to declare the major.
- *Admission to the Painting and Drawing Major for Transfer Students:* Once admitted to the UW, students meet with an Art adviser to enroll in ART 190. Students who transfer with college credits in painting and drawing may

wish to present a portfolio for advanced placement in the program. Prior to transfer, students may address questions to uaskart@uw.edu.

Major Requirements

Interdisciplinary Visual Arts (60 credits)

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

4. 15 credits ART H courses

Painting and Drawing (55 credits)

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

Bachelor of Fine Arts

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

Department Admission Requirements

The minimum GPA for admission to School of Art BFA programs is 3.00.

For currently enrolled students

- *Admission to Painting and Drawing:* Students complete ART 190, then meet with an Art adviser to declare the major.
- *Admission to Three-Dimensional Forum:* Students complete ART 124 and one of ART 201, ART 202, ART 233, ART 272, or ART 273, then meet with an Art adviser to declare the major.
- *Admission to Photomedia:* Admission is competitive. Students enroll in ART 140 spring quarter of their freshman year to prepare the portfolio required for the competitive selection process for ART 241 autumn quarter. Students selected to register for ART 241 spend autumn quarter working with the photomedia faculty, revising their portfolio which is then used to select students admitted to the photomedia major in winter quarter. See department website at art.washington.edu/ for timing and suggestions for successful completion of portfolio requirements.

For transfer students

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

college credits in the proposed area of study may wish to present a portfolio for advanced placement in the program. Prior to transfer, students may address questions to uaskart@uw.edu.

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

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

Major Requirements

Painting and Drawing (90 credits)

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

Photomedia (80 credits)

1. 55 credits: ART 140 or adviser-approved course; ART 240; ART 241; ART 340 (15 credits); ART 361; ART 440 (15 credits)

2. 10 credits: ART and DXARTS courses

3. 15 credits: ART H, ANTH 209, DXARTS 200

Three-Dimensional Forum (80 credits)

1. ART 272 (5 credits)
2. 25 credits from one of the following tracks:
 - a. *Ceramics:* ART 201; one from ART 202, ART 232, ART 233, or ART 273; ART 353 (15 credits) or ART 353 (10 credits) and either ART 332 or ART 333
 - b. *Glass:* ART 233; one from ART 201, ART 202, ART 232, or ART 273; ART 333 (15 credits) or ART 333 (10 credits) and either ART 332 or ART 353
 - c. *Sculpture:* ART 273; one from ART 201, ART 202, ART 232, or ART 233; ART 332 (15 credits) or ART 332 (10 credits) and ART 333 or ART 353
3. 15 credits of ART electives.
4. 15 credits ART H or ART 361
5. 20 credits of ART 453

Bachelor of Design

Department Admission Requirements

The minimum GPA for admission to School of Art Bachelor of Design programs is 3.00.

For currently enrolled students

- *Admission to Industrial Design, Interaction Design, and Visual Communication Design:* Students must complete DESIGN 166. Students receiving a minimum grade of 3.7 or higher in DESIGN 166 are admitted into the design program. Students who do not receive a minimum grade of 3.7 can apply to the design program via the

design workshop in June. For details on the design workshop, see the department website: art.washington.edu.

For transfer students

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

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

Major Requirements

93-98 credits, as follows:

Industrial Design (103 credits)

1. Successful completion of design admission selection process
2. 93 credits: DESIGN 166, DESIGN 207, DESIGN 208, DESIGN 209, DESIGN 210, DESIGN 211, DESIGN 212, DESIGN 316, DESIGN 317, DESIGN 318, DESIGN 319, DESIGN 322, DESIGN 323, DESIGN 443, DESIGN 444, DESIGN 445, DESIGN 446, DESIGN 447, DESIGN 488

3. 10 credits of art history

Interaction Design (93 credits)

1. Successful completion of design admission selection process
2. 83 credits: DESIGN 166, DESIGN 207, DESIGN 208, DESIGN 209, DESIGN 210, DESIGN 211, DESIGN 212, DESIGN 381, DESIGN 383, DESIGN 384, DESIGN 385, DESIGN 386, DESIGN 387, DESIGN 481, DESIGN 483, DESIGN 484, DESIGN 488

3. 10 credits of art history

Visual Communication Design (98 credits)

1. Successful completion of design admission selection process.
2. 98 credits: DESIGN 166, DESIGN 207, DESIGN 208, DESIGN 209, DESIGN 210, DESIGN 211, DESIGN 212, DESIGN 366, DESIGN 367, DESIGN 368, DESIGN 376, DESIGN 377, DESIGN 378, DESIGN 466, either DESIGN 467 or DESIGN 479, DESIGN 478, DESIGN 480, DESIGN 488

3. 10 credits of art history

Student Outcomes and Opportunities

- **Learning Objectives and Expected Outcomes:** Students receiving an undergraduate degree in art can expect to develop strong writing, analytical, critical-thinking, and problem-solving skills. Students learn to recognize the power of the visual image and understand its importance in a world increasingly dependent on the aesthetic and technical skill of trained artists and designers to create images that communicate information and ideas across cultures and generations.

In addition to becoming practicing artists, art graduates find careers in fields such as gallery and museum management, arts education, arts administration, photojournalism, film making, graphic and product design, interior design, teaching, advertising, art therapy, and visual and digital technology.

- **Instructional and Research Facilities:** None.

- **Honors Options Available:** Photography Honors (see Academic Advising and Student Services for requirements).
- **Research, Internships, and Service Learning:** The School of Art has several programs that help students develop professional practices and expand their knowledge outside the UW: internships for credit, Artist in Residence programs, K-12 Educational Partnerships, and the Studio Art Rome program.
- **Department Scholarships:** Scholarships are available annually to enrolled majors (see Academic Advising and Student Services for details)
- **Student Organizations/Associations:** Students majoring in the studio arts have the opportunity to participate in several student associations: Hephestium (metals), Zeeware (ceramics), Broadclothes (fiber), Printmakers Association (printmaking), a photo guild, and the Inter Arts Council. These organizations raise funds through the sale of members' work to support visiting artists and lectures and to sponsor student involvement in regional arts events.

GRADUATE PROGRAM

Graduate Program Coordinator

104 Art Building, Box 353440

(206) 543-0646

gradart@u.washington.edu

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

The master's degree program in Art History at the University of Washington affirms that the MA degree is an independent degree useful in its own right. Successful applicants to the program normally have a broad undergraduate background in art history.

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

Master of Fine Arts

Admission Requirements

Applicants for admission to the Master of Fine Arts program are required to have a Bachelor of Fine Arts degree or equivalent (determined by the quality of the applicant's work and equivalent experience, based upon the UW BFA requirements) with a minimum GPA of 3.00 in the undergraduate art major.

The Graduate Record Examination is not required. Admission is on a competitive basis. Annual deadline for applications is February 1, for consideration for admission the following autumn quarter.

Degree Requirements

For each program, 90 credits are required, as follows:

Ceramics

1. *Ceramics studio*: 20 credits of ART 553
2. *Interdisciplinary seminar*: 25 credits of ART 590
3. *Art history, theory, and criticism*: 10 credits of approved courses
4. *Studio electives*: 15 credits of approved electives

5. *Thesis*: 20 credits of ART 700. The thesis is a natural outgrowth of the student's work. It can consist of one major work or a body of work that involves one central theme. Ceramics graduates exhibit their thesis work in the annual MFA exhibition at the Henry Art Gallery along with a one person show at the Ceramics Gallery.

Painting and Drawing

1. *Drawing studio*: 6 credits of ART 591
2. *Painting studio*: 25 credits of ART 592
3. *Graduate seminar*: 30 credits of ART 594
4. *Art history, theory, and criticism*: 10 credits of approved courses
5. *Studio electives*: 9 credits of approved electives
6. *Thesis*: 10 credits of ART 700. The thesis is a natural outgrowth of the student's work. It can consist of one major work or a body of work that involves one central theme. Painting and drawing graduates exhibit their thesis work in the annual MFA exhibition at the Henry Art Gallery.

Photography

1. *Photography studio*: 20 credits of ART 515
2. *Interdisciplinary seminar*: 25 credits of ART 590
3. *Art history, theory, and criticism*: 15 credits of approved courses
4. *Studio electives*: 15 credits of approved electives
5. *Thesis*: 15 credits of ART 700. The thesis is a natural outgrowth of the student's work. It can consist of one major work or a body of work that involves one central theme. Photography graduates exhibit their thesis work in the annual MFA exhibition at the Henry Art Gallery.

Sculpture

1. *Sculpture studio*: 20 credits of ART 552
2. *Interdisciplinary seminar*: 25 credits of ART 590
3. *Art history, theory, and criticism*: 10 credits of approved courses
4. *Studio electives*: 15 credits of approved electives
5. *Thesis*: 20 credits of ART 700. The thesis is a natural outgrowth of the student's work. It can consist of one major work or a body of work that involves one central theme. Sculpture graduates exhibit their thesis work in the annual MFA exhibition at the Henry Art Gallery.

Visual Communication Design

1. *Design studio*: 25 credits of ART 580/ART 582
2. *Design seminar*: 20 credits of ART 581
3. *Art history, theory, and criticism*: 15 credits of approved courses
4. *Studio electives*: 20 credits of approved electives
5. *Thesis*: 10 credits of ART 700. The thesis is a natural outgrowth of the student's work. It can consist of one major work or a body of work that involves one central theme. Design graduates exhibit their thesis work in the annual MFA exhibition at the Henry Art Gallery.

Master of Arts

See Art History.

Doctor of Philosophy

See Art History.

Scholarships and Teaching Assistantships

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

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

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

Art

ART 101 Narratives in Art and Design (5) VLPA Introduces the practice of art and design through active participation in the space, activities, and resources of the Henry Art Gallery. Develops knowledge of the working methods and accomplishments of artists and designers and helps students translate conceptual ideas into creative solutions. Credit/no-credit only.

ART 124 Introduction to Three-Dimensional Art and Design (5) VLPA Introduces three-dimensional concepts and a critical, formal vocabulary through exploration of the dependent relationship of visual, physical, and experimental principles involved in created three-dimensional art. Emphasizes exposure to a variety of physical materials, processes, and diverse approaches to designing and solving assignments and investigations.

ART 126 Topics in Studio Art (5) VLPA Studio-based class introducing students, through particular studio practice of individual instructors, to methods of visual awareness, principles of organization, and approaches to visual and conceptual observation. Relationship between art history and contemporary art practice. Artistic medium in each class varies with instructor expertise.

ART 131 Alternative Approaches to Art and Design (5, max. 20) VLPA Presentation of process through which artists discover and translate ideas, feelings, and concerns into images or objects. Use of a wide variety of methods and approaches, from traditional to technological, to promote visual expression. Discussion and critiques leading toward better understanding the creative process.

ART 134 Concepts in Three-dimensional Art (5) VLPA Exploration, study, and application of thematic concepts not generally associated with traditional three-dimensional art forms. Investigation of themes such as installation, performance, public, and socio-political art.

ART 140 Basic Photography (5) VLPA Introduces theory, techniques, and processes of still photography in an artistic context. Emphasizes photography's creative potential.

ART 190 Introduction to Drawing (5) VLPA Builds basic drawing skills, develops understanding of primary concepts which relate to drawing and develops an understanding of the grammar or syntax of two-dimensional language. Students move beyond their current knowledge and abilities and link new skills, concepts, and understandings to creative expressing.

ART 191 Color Studies Studio (5) VLPA Lin Examination of color as a distinct visual phenomenon with investigations of its practical, theoretical, and illusionary aspects. Employs various media and materials in exercises and compositions that demonstrate properties of color structure, symbolism, and perception and the potential application to art and design.

ART 201 Introduction to Ceramics: Handbuilding (5) VLPA Introduces a variety of ceramic handbuilding and surface processes with an emphasis on problem solving and self-expression. Includes examination of contemporary sculpture in clay.

ART 202 Introduction to Ceramics: Wheel Throwing (5) VLPA Introduces wheel throwing and glazing as a means to

explore functional and conceptual considerations with clay in a contemporary context and art practice.

ART 226 Introduction to Weaving (5) VLPA Explores the structure of two- and three-dimensional textile forms. Students work with floor looms, computer-aided looms, as well as working directly with materials.

ART 227 Introduction to Surface (5) VLPA Basic techniques of dying, printing, and embellishing, with emphasis on their conceptual uses in art making.

ART 232 Introduction to Glass: Flame-Working (5) VLPA Introduces the materials of glass and its applications in the fine arts. Examines historical, technical, and contemporary practices involved in the practice and process of flame-working.

ART 233 Introduction to Glass: Kiln-Forming (5) VLPA Introduces the materials of glass and its applications in the fine arts. Examines historical, technical, and contemporary practices involved in the practice of kiln-firing.

ART 234 History of Public Art and Public Space (5) VLPA Young Survey of the melding of public art, architecture, and landscape architecture through the ages, starting with Stonehenge, the Pyramids, and Gothic cathedrals, and ending with contemporary earthworks, public art, and twenty-first century performance art.

ART 240 Intermediate Photomedia I (5) VLPA Includes studio projects examining the expressive and conceptual uses of alternative photographic materials and techniques. May include an introduction to photography, large format, and studio lighting. Prerequisite: ART 140.

ART 241 Intermediate Photomedia II (5) VLPA Introduces the creative use of photographic digital workflow in the processing, cataloging, and printing of camera generated digital imaging. Examines a variety of manipulations and transformation of both photographic and non-photographic imagery, involving multiple programs, procedures, and hardware (Macintosh platform). Prerequisite: ART 240.

ART 242 Intermediate Photomedia III (5) VLPA Covers topics in digital imaging, including specialized output, interactive presentations, the moving image, and web-based works. Emphasizes creative exploration of both software and hardware tools and the possibilities of integration with other art media. Prerequisite: ART 241.

ART 245 Concepts in Printmaking (5) VLPA Introduction to contemporary printing methods such as monotype, monoprint, stencil, and photocopy. Survey of historical and current approaches to the art of printmaking.

ART 246 Works on Paper/Monotype (5) VLPA Introduces contemporary imaging methods, expands traditional drawing methods, and encourages relationship of content to structure. Introduces relationship of printmaking and painting to drawing through monotype methods.

ART 259 Water-Soluble Media (5, max. 15) VLPA

ART 272 Introduction to Sculpture I (5) VLPA Taylor Introduces three dimensional concepts in the production of art and a critical, formal vocabulary in the pursuit of individual expression. Uses a variety of techniques and processes including mold making and casting in the creation of sculpture in the forms of multiples, series, narrative, progressions, and identity.

ART 273 Introduction to Sculpture II (5) VLPA Lynn Introduces understanding the specific concepts and skills needed to construct and create structure driven in wood, steel, plastic, glass, rubber, fabric, and found object. Explores issues of materiality, form, object, scale, and connection.

ART 280 Media, Time, and Technology Arts (5) VLPA Develops a "new genre" attitude toward exploration and research in contemporary visual arts, based on computer/human interface and electronic technology. Includes performance art, environmental art, sound art, light art, video art, interactive installation, kinetic art, conceptual art.

ART 290 Beginning Drawing: The Figure (5) VLPA Introduction to the human figure as historically traditional subject matter as well as an important component in self expression. Covers proportion, foreshortening, and composition. Prerequisite: ART 190.

ART 291 Beginning Drawing Topics (5) VLPA Revolving topics in the study of drawing at the beginning level.

ART 292 Beginning Painting (5, max. 10) VLPA Beginning oil painting. Prerequisite: ART 290.

ART 327 Intermediate Surface Design Studio (5, max. 10) VLPA Explores intermediate techniques used in the basic fiber media, surface design. Covers pattern development, expanded scale, visual clarity, and conceptual depth. Prerequisite: ART 227.

ART 328 Intermediate Weaving (5, max. 15) VLPA Explores more advanced techniques used in the basic fiber media, weaving and surface design. Technical focus of each class varies. Covers pattern development, expanded scale, visual clarity, and conceptual depth.

ART 329 Topics in Fiber Art (5, max. 15) VLPA Explores a range of special topics in fibers, including non-traditional materials and processes and interdisciplinary areas of interest within the field, while offering specific technical, hands-on training when appropriate. Emphasizes the development of the thematic content of the individual's work.

ART 330 History of Textiles (5) VLPA Overview of Western textiles from Coptic tapestry through industrialization. Discussion of textiles not only in aesthetic terms but also as cultural documents arising from, and reflecting, a broad range of societal pressures and concerns. Special topics in contemporary issues and non-Western textiles with emphasis on holdings in the University collection.

ART 332 Intermediate Sculpture (5, max. 15) VLPA Studio practice focusing on sculptural installation in architectural, urban, and natural settings; foundry, forging, and advanced fabrications; and movement, kinetics, and interaction. Prerequisite: ART 272; ART 273.

ART 333 New Materials and Processes in Glass (5, max. 15) VLPA Explores the process through which artists discover and translate ideas, feelings, and concerns into images or objects. Investigations include various glass forming methodologies and material properties. Topics rotate and may include mold-making, kiln casting, photo processes, mixed media, cold fabrication, enamels, cold-working, hot glass practices, and sculptural applications. Prerequisite: ART 233; ART 272.

ART 334 Public/Professional Art Issues (5, max. 15) VLPA Young Topics vary, centering on issues of public art and professional practices.

ART 335 Metal Casting (5, max. 15) VLPA Introduction to foundry techniques as applied to fine arts casting of ferrous and nonferrous material. Prerequisite: ART 272.

ART 338 Photography: Theory and Criticism (5) VLPA/I&S Art traditions of photography from its origins in the nineteenth century to the present. Emphasis on photographic traditions and photographers of the twentieth century, and investigations of and research into local collections.

ART 339 Photography (5) VLPA Introduces a range of theories, ideas, techniques, and processes of still photography in a fine art context. Emphasizes photography's creative potential.

ART 340 Advanced Photomedia (5, max. 15) VLPA Explores the concepts and techniques of contemporary photographic practice, including non-traditional approaches to photography and related media. Explores 3-dimensional installation practices, collaborative projects, and the moving image. Examines the use and role of photography and related media in contemporary culture. Introduces how an artist's work responds to these contemporary issues. Prerequisite: ART 242. Offered: AWSp.

ART 345 Intermediate Printmaking (5, max. 25) VLPA Development of mature and personal statement within con-

text of the print form through studio practice and group discussion and critique. Processes and media emphasis varies on a revolving basis.

ART 350 Printmaking Special Projects (5, max. 15) VLPA In depth study of a printmaking method such as sequential printing, multi-block printing, white-ground aquatint, or sugar-lift aquatint.

ART 351 Furniture Design and Making (5, max. 10) VLPA Introduction to furniture design and making. Covers history of furniture from 1850 to present and includes hands-on learning resulting in design and fabrication of three unique tables. No previous experience required.

ART 352 Furniture Design and Production (5, max. 10) VLPA Hands-on woodworking and furniture production. Includes development of technique and collaboration with fabrication shops and design professionals. Uses design drawing, model building, and full-scale construction prototypes as tools of communication. End-of-term exhibit places work on public view.

ART 353 Intermediate Ceramic Art (5, max. 20) VLPA Explores a variety of ceramic processes and conceptual development including: press and slip molds, glaze formulation, multiples and installation, tiles and bricks, intermediate wheel, time, space, and scale. Prerequisite: ART 201.

ART 355 Materials in Context for Interdisciplinary Practice (5) VLPA Focuses on exploring the meanings, uses, and visual/sculptural potentials of both traditional and innovative new materials, both natural and man-made.

ART 360 Topics in Studio Art and Practice (5, max. 25) VLPA Examines a variety of cutting edge, emerging, and interdisciplinary approaches in studio art and practice. Topics vary.

ART 361 Critical Issues in Contemporary Art (5, max. 15) VLPA Surveys critical ideas in contemporary art practice. Includes lectures by nationally recognized artists to introduce a wide range of artistic positions and practices. Engages students with the major issues informing contemporary art and new modes of practice.

ART 365 Social Practice (5) VLPA Introduces overlapping territories of art and social practice, the practice of Socially Engaged Art. Focuses on environmentalism, consumerism, economies, society and culture, activism, and the place for creative practice in our contemporary life.

ART 390 Intermediate Drawing (5, max. 10) VLPA Prerequisite: ART 290.

ART 391 Intermediate Drawing Topics (5) VLPA Revolving topics in the study of drawing at the intermediate level. Prerequisite: either ART 290 or ART 291.

ART 392 Intermediate Painting (5, max. 10) VLPA Prerequisite: either ART 292.

ART 393 Intermediate Painting Topics (5) VLPA Revolving topics in the study of painting at the intermediate level. Prerequisite: ART 392.

ART 395 The Creative Process: Strategies and Outcomes (5) VLPA Explores the nature of the creative process in the visual arts. Focuses on experiential learning through projects of ideation, experimentation, problem solving, editing, and creating narrative meanings.

ART 400 Interdisciplinary Visual Arts Senior Studio (5, max. 15) VLPA *Labitzke* Focuses on the development of exhibition quality artwork, culminating in a group show. Covers curatorial issues, installation, and presentation. Assignments are designed to strengthen oral presentation skills, artist's written statement, critiquing abilities, and ability to place work within a larger art historical framework.

ART 421 Video Art (5, max. 15) VLPA

ART 427 Special Topics in Surface Design (5, max. 15) VLPA Advanced art making in the field of surface design. Topics include improvisational silk screening, artists'

books, and explorations of non-traditional approaches in surface design.

ART 428 Senior Thesis in Fiber Arts (5, max. 20) VLPA Specialized investigation involving surface design and/or fabric structures.

ART 440 Senior Thesis in Photomedia (5, max. 20) VLPA Development of a coherent artistic theme or topic evolved over three consecutive quarters resulting in a finished thesis portfolio. Prerequisite: ART 340.

ART 450 Individual Projects in Printmaking (5, max. 15) VLPA Individual media study within the context of group discussion and critique.

ART 453 3D4M Senior Studio (5, max. 20) Includes individual studio work, seminars, source presentations, field trips, professional practices, and culminates with the BFA thesis exhibition. Prerequisite: ART 332; ART 353; recommended: Minimum 15 credits of ART 332, ART 333, and ART 353.

ART 457 Artist Handmade Books (5) VLPA The creative and structural development of an artist's book. Focuses on issues of sequential imagery, conceptual development, and the relationship between work and image.

ART 458 Alternative Approaches to Drawing (5) VLPA Advanced works-on-paper class. Focuses on drawing issues such as formal process, working methods, conceptual development, and practical working applications.

ART 490 Advanced Drawing (5, max. 15) VLPA Study at an advanced level involving history, practice, and theory of drawing as an art form. Prerequisite: either ART 265 or ART 390.

ART 491 Advanced Drawing Topics (5) VLPA Revolving topics in the study of drawing at the advanced level. Prerequisite: either ART 390 or ART 391. Not open for credit to students having taken ART 490.

ART 492 Advanced Painting: The Figure (5, max. 10) VLPA Drawing and painting from the model. Prerequisite: ART 390; ART 393.

ART 493 Advanced Painting Topics (5) VLPA Revolving topics in the study of painting at the advanced level. Prerequisite: either ART 390 or ART 391; either ART 392 or ART 393.

ART 494 Senior Seminar in Painting and Drawing (5, max. 15) VLPA Development of individuality in painting through creative exercises. Prerequisite: ART 492.

ART 496 Art Internship (1-5, max. 10) Internships in conjunction with Art faculty and partners in the large visual arts community. Credit/no-credit only.

ART 497 Study Abroad-Studio Individual Projects (3-10, max. 20) VLPA

ART 498 Individual Projects - Art (2-5, max. 15) Independent projects in studio art.

ART 512 Graduate Seminar (3, max. 9)

ART 515 Graduate Studio Photomedia (3-15, max. 60) Photomedia graduate studio and seminar, including readings, discussions, and studio critiques.

ART 540 Fiber Arts (3-15, max. 60) MyPlan Course Details: ART 540 (student access only)

ART 550 Printmaking (3-15, max. 60)

ART 553 3D4M Grad Studio (3-15, max. 60)

ART 590 Interdisciplinary Graduate Seminar in Contemporary Practices (5, max. 25) Constructive forum for developing dialogue and critique in practicum-based setting. Professional development highlights the student's experience.

ART 591 Graduate Studio: Drawing (5, max. 15) Supervised studio for advanced-level students from various media-based disciplines designed to develop an interest in and familiarity with aspects of drawing. Utilization of various media. Discussion of historical and contemporary issues concerning drawing.

ART 592 Graduate Studio: Painting (3-15, max. 60) Offered: AWSp.

ART 594 Graduate Seminar in Painting and Drawing (5, max. 15) Designed as a forum for the presentation and criticism of student work as well as for discussion of contemporary directions in visual art. Credit/no-credit only.

ART 595 Master of Fine Arts Research Project (2-5, max. 10) An independent research project related to and informed by the MFA student's studio work. Final project form may be a lecture, slide presentation, or paper.

ART 600 Independent Study or Research (*-)

ART 700 Master's Thesis (*-)

Art History

ART H 201 Survey of Western Art-Ancient (5) VLPA Major achievements in painting, sculpture, architecture, and the decorative arts in Europe, the Near East, and North Africa, from prehistoric times to the beginnings of Christianity.

ART H 202 Survey of Western Art-Medieval and Renaissance (5) VLPA Emphasizes the arts of the Byzantine Empire and Western Christendom from Late Antiquity to the High Renaissance.

ART H 203 Survey of Western Art-Modern (5) VLPA Western art from 1520 to the present.

ART H 205 Survey of Tribal Art (5) VLPA/I&S Arts of Sub-Saharan Africa and Oceania from prehistoric times to the present and to the pre-Columbian arts of the Americas.

ART H 206 Survey of Native-North American Art (5) VLPA/I&S Survey of the indigenous arts of North America north of Mexico from ancient through contemporary times. Focuses on the historical and cultural contexts of the arts and the stylistic differences between tribal and individual artists' styles.

ART H 212 Chinese Art and Visual Culture (5) VLPA/I&S Surveys the highlights of Chinese visual arts from the Neolithic to the present. Studies jade, bronze, lacquer, silk, Buddhist sculpture, ceramics, calligraphy, painting, architecture, film, and installation art forms at a moment in Chinese history when work in those media was especially innovative and important.

ART H 214 Art of India: Mohenjo-Daro to the Mughals (5) VLPA/I&S Surveys the material culture and artistic production of South Asia, which includes the present-day nation states of India, Pakistan, Bangladesh, Nepal, and Sri Lanka, from antiquity until the early modern period.

ART H 215 The Arts of Japan: A Visual and Cultural History (5) VLPA Survey of Japanese art from prehistory to the present. Focuses on selected works of paintings, sculpture, calligraphy, architecture, gardens, and manga while considering themes such as art forms, techniques, patronage, religious beliefs and practice, relationship to other Asian traditions, modernity and tradition, and ideas of representation in ancient Japan.

ART H 230 The African-American Tradition: A Transatlantic View of Art and Culture (5) VLPA/I&S Assesses the diversity of art by individuals of African descent in Brazil, the Caribbean, and the United States. Examines questions of form, meaning, and symbolic and ritual behavior. Considers formal and conceptual relationships between art forms and their African sources; assesses their role in the construction of new African-American identities.

ART H 233 Survey of Native Art of the Pacific Northwest Coast (5) VLPA/I&S Surveys indigenous art of the Pacific Northwest Coast from the Columbia River in the south to Southeast Alaska in the north and from ancient through contemporary times. Focuses on the historical and cultural contexts of the art and the stylistic differences between tribal and individual artists' styles.

ART H 250 Rome (5) VLPA/I&S Focuses on Rome as an historical, intellectual, and artistic world center. Literary and historic documents, visual arts, architecture, film, and op-

era used to explore the changing paradigms of the Eternal City. In English. Offered: jointly with HSTEU 250/ITAL 250.

ART H 260 Fashion, Nation, and Culture (5) VLPA/I&S *Gay-lard* Introduction to Italian culture focusing on fashion and manners from the late Middle Ages to today. Explores common assumptions about nation, gender, clothes, make-up, and manners, through literary and visual analysis. In English. Offered: jointly with ITAL 260/JSIS A 260; W.

ART H 261 Italian Cities (5) VLPA Introduces Italian culture by focusing on the past and present of five of the nation's most important cities: Rome, Florence, Venice, Milan, and Naples. Taught in English. Offered: jointly with ITAL 261.

ART H 290 History of Architecture (5) VLPA/I&S Introduction to the history of architecture across a broad range of cultural contexts.

ART H 306 Indian Art of South Asia (5) VLPA Development of Indian art from its origins to the medieval period. Spread of Indian religions and related art forms in Tibet and South-east Asia are briefly introduced.

ART H 309 Topics in Art History (5, max. 25) VLPA Topics vary.

ART H 310 Chinese Art and Archaeology Neolithic to Han Dynasty (5) VLPA/I&S Introduces Chinese art and archaeology from the Neolithic to the Han Dynasty. Focuses on the history of developing technology and the archaeological basis for understanding the development of art and visual culture in early China.

ART H 311 Arts of Imperial China (5) VLPA/I&S Introduces the role of painting in the history of Imperial China from the fourth to the seventeenth century. Topics for reading and discussion include political forces, regional geography, social structure, gender, traditional philosophies, and religious and spiritual influences.

ART H 312 Art and Empire in India, 1750-1900 (5) VLPA Surveys the transformation in the visual arts between the Mughal and British empires in India. Topics of learning and discussion include changes and new developments in artistic production, patronage, viewing publics and protocols, technology, roles of art institutions, and exchanges between media.

ART H 313 East Asian Art (5, max. 15) VLPA/I&S Examines East Asian art and visual culture from ancient times to present day. Emphasizes how artistic styles were tied to different social and cultural contexts, and how arts were transformed and exchanged within the larger cultural geographical circle of East Asia.

ART H 314 Modern and Contemporary Art in India (5) VLPA Surveys the visual arts of India from the late colonial through the postcolonial period. Topics include impact of colonialism, anti-colonial nationalist claims for art, shifting status of oil paintings, emergence of a national style, new art movements in urban centers, and art in the service of forge postcolonial identities and alliances.

ART H 315 Buddhist Art and Material Culture of East Asia (5, max. 15) VLPA Buddhist painting and sculpture of China, Korea, and Japan. Explores religious meaning, artistic development, and historical significance. Examples from the sixth to the seventeenth centuries, along with paintings and contemporary carvings.

ART H 317 Chado-Japanese Esthetics (4) VLPA History, theory, and practice of chado, or Way of Tea, a Zen-inspired art that has had notable effects on Japanese society. Lectures on esthetics and cultural history supplemented by participation in chado, with the goal of developing sufficient understanding and skill to continue chado as a discipline.

ART H 318 Japanese Prints 1600-Present (5) VLPA *Bogel* Introduction to Japanese printmaking practices, style, and themes. Examines concerns related to gender, issues of representation, explicit sexual imagery, cultural and artistic practice, and the function of prints.

ART H 331 Native Art of the Pacific Northwest Coast (5) VLPA/I&S Survey of the indigenous arts of the Pacific

Northwest Coast from the Columbia River in the south to Southeast Alaska in the north. Overview of ancient through contemporary times, focusing on the historical and cultural contexts of the arts and the stylistic differences between tribal and individual artists' styles. Offered: jointly with ANTH 331.

ART H 337 African Art and Society (5) VLPA/I&S Explores the ideas and notions expressed visually in sculpture, painting, ceramics, textiles, and architecture and describes their relationships to man and culture in Africa.

ART H 340 Pre-Classical Art and Archaeology (3) VLPA *K. TOPPER* Survey of the art and the other material remains of the civilizations in the Aegean from the Neolithic Age to the end of the Bronze Age, with special emphasis on Minoan Crete and the Mycenaean kingdoms of mainland Greece, illustrated by slides. The history, techniques, and results of significant excavations are examined. Offered: jointly with CL AR 340.

ART H 341 Greek Art and Archaeology (3) VLPA *S. LEVIN-RICHARDSON, K. TOPPER* Survey of the material remains and the developing styles in sculpture, vase painting, architecture, and the minor arts from the geometric to the Hellenistic periods, illustrated by slides. Principal sites and monuments, as well as techniques and methods of excavation, are examined in an attempt to reconstruct the material culture of antiquity. Offered: jointly with CL AR 341.

ART H 342 Roman Art and Archaeology (3) VLPA *K. TOPPER* Roman architecture and art, with emphasis on the innovations of the Romans; illustrated by slides. Offered: jointly with CL AR 342.

ART H 343 Hellenistic Art and Archaeology (3) VLPA *K. TOPPER* Survey of the art of Greece and the eastern Mediterranean from the time of Alexander the Great to the Roman conquest. Principal sites with their sculpture, painting, mosaics, and minor arts examined in lectures illustrated with slides. Offered: jointly with CL AR 343.

ART H 351 Early Medieval and Byzantine Art (5) VLPA/I&S Christian art and architecture of the Roman and Byzantine empires and of western Europe through the eighth century.

ART H 352 High and Late Medieval Art (5) VLPA/I&S Art and architecture of western Christendom from the time of Charlemagne to the Renaissance.

ART H 361 Italian Renaissance Art (5) VLPA Sculpture, painting, and architecture from 1300 to 1600.

ART H 366 Northern Renaissance Art (5) VLPA An overview of Netherlandish, French, and German art in the context of cultural developments circa 1400-1570.

ART H 373 Southern Baroque Art (5) VLPA Art of Italy and Spain, circa 1590 to circa 1710.

ART H 374 Northern Baroque Art (5) VLPA The art of northern Europe, circa 1590 to circa 1710.

ART H 380 Nineteenth- and Twentieth-Century Art (5) VLPA Arts and architecture of Europe and America from Romanticism to the present.

ART H 381 Art Since World War II (5) VLPA/I&S Art of Europe and the United States in the decades since World War II: painting, sculpture, and architecture, multiplication of new forms (video, performance pieces, land and installation pieces), changing context of patronage, publicity, and marketing.

ART H 382 Theory and Practice of Art Criticism (5) VLPA Explores the origins, development, decline, and aftermath of modernist visual art criticism in the United States. Emphasizes study of widely circulated critical essays and reviews. Assesses and evaluates categories of critical writing in contemporary art publications and art-historical texts.

ART H 384 American Art (5) VLPA/I&S Achievements and issues in painting, architecture, sculpture, and other arts in the United States from the colonial era to the present.

ART H 397 Art in Rome: Augustus to Mussolini (10) VLPA Survey of art in Rome; studies from original monuments.

Offered in Italy as part of the art history seminar in Rome. Focuses on representative works from the most important periods of Italian art: Ancient, Medieval, Renaissance, Baroque, Modern. Site visits, field trips, individual research projects.

ART H 399 Study Abroad: Art History Individual Projects (3-10, max. 20) VLPA For participants in study abroad programs.

ART H 400 ART History and Criticism (2-5, max. 15) VLPA Courses on special topics, frequently by visiting faculty, which cannot be offered on a continuing basis. Consult art history office for subjects offered.

ART H 411 Chinese Painting Experiences, 900-1800 (3) VLPA/I&S Examines issues of style, theme, and function in Chinese painting from the tenth to the nineteenth century. Discusses painting practice, patronage, regional diversity, the relationship of word and image, amateurism vs. professionalism, and the introduction of foreign elements.

ART H 412 Art History and the Study of Chinese Bronzes (5) VLPA/I&S An investigation of Chinese Bronzes to illuminate some general ideas about the discipline and practice of art history. Focuses on a case study examining the work of a twentieth-century practitioner of art history and comparing it with that of a famous scholar from a neighboring discipline.

ART H 413 Selected Topics in Chinese Art (3, max. 9) VLPA Specific theme or area of Chinese art, such as the art of Bronze Age China or Chinese painting under Communist rule. Recommended: some background in Chinese art, history, language, or literature.

ART H 414 Topics in South Asian Art (5, max. 15) VLPA/I&S Explores topics on the art and visual culture of South Asia with a particular focus on India.

ART H 419 Japanese Architecture (3) VLPA Survey of Japanese architecture from its origins to modern times. Although Shinto architecture, tea houses, gardens, and modern developments are discussed, the primary focus is on the development of Japanese Buddhist architecture. Recommended: some background in Japanese art, history, language, or literature. Offered: jointly with ARCH 453.

ART H 420 Art of the Japanese Print (3) VLPA Foundations of Ukiyo-e in Japanese genre from the twelfth through mid-seventeenth centuries; woodblock technique from the Heian period through the early Edo period. Emphasis on the changing styles and subject matter in Ukiyo-e Hanga from Moronobu through Kuniyoshi. Recommended: some background in Japanese art, history, language, or literature.

ART H 421 Topics in Art and Visual Cultures: Japan (5, max. 15) VLPA/I&S Special topics in the study of Japanese art and visual culture.

ART H 432 Oceanic Art (3) VLPA/I&S Explores the arts of the Pacific Islands and Australia. Pays special attention to the arts of aboriginal Australia, traditional and contemporary creativity in Papua New Guinea, and the diversity of island Melanesian art forms. Recommended: previous coursework in tribal art.

ART H 433 Northern Northwest Coast Native-American Art: Methodologies in Stylistic Analysis (5) VLPA Stylistic and historical analysis of northern Northwest Coast art (Haida, Tlingit, Tsimshian, Northern Wakashan). Intensive analysis of formline rules; stylistic variation through time and between tribal and individual artists' styles. Recommended: some background in Native American art, history, languages, or literature.

ART H 434 Native-American Art and Ceremony of the Southern and Central Northwest Coast (3) VLPA/I&S Examination of the role of the visual arts in the ceremonial life of the Native-American people of the central and southern Northwest Coast. Emphasis on the traditional social and religious aspects of ceremonialism, contrasts between tribal traditions, and continuing twentieth-century tradi-

tions. Recommended: some background in Native American art, history, languages, or literature.

ART H 435 Thematic Studies in Native-American Art (5, max. 15) VLPA/I&S *Wright* Approach to Native-American art through themes and issues. Focus varies from year to year (e.g. Shamanism in Native-American art, gender identity in Native-American art, social and political aspects of Native-American art, issues in contemporary Native-American art). Recommended: some background in Native American art, history, languages, or literature.

ART H 436 History of the Arts of Africa I (3) VLPA/I&S Approaches the arts of North Africa, the Sahara, and Sudan from pre-historic times to the present. Emphasizes the role of Islam throughout this vast region and the role of local cultures in shaping the varieties of African Islam. Recommended: some background in African art, history, languages, or literature.

ART H 437 History of the Arts of Africa II (3) VLPA/I&S Explores the history of the arts and creativity of western Africa from Cape Verde to Cape Lopez with consideration given to the European presence, the peoples of "Guinea," and the shaping of intercultural spaces and artistry. Recommended: some background in African art, history, languages, or literature.

ART H 438 History of the Arts of Africa III (3) VLPA/I&S Surveys the arts from the equatorial forest to the Cape of Good Hope with an extended examination of Congolese (Bantu and Abatwa) artistry, the personal arts of East Africa herders, and the art and architecture of Swahili civilization. Recommended: some background in African art, history, languages, or literature.

ART H 442 Greek Painting (3) VLPA *K. TOPPER* Study of painted decoration on Greek vases, with emphasis on stylistic developments and cultural and historical influences. Painting on other media also examined as evidence allows. Offered: jointly with CL AR 442.

ART H 443 Roman Painting (3) VLPA *S. LEVIN-RICHARDSON, K. TOPPER* Study of surviving painting from the Roman world, with emphasis on wall paintings from Pompeii and Herculaneum. Principal topics for discussion: the four styles of Pompeian painting the dependence of Roman painters on Greek prototypes, and the significance of various kinds of painting as domestic decoration. Offered: jointly with CL AR 443.

ART H 444 Greek and Roman Sculpture (3) VLPA *K. TOPPER* History and development of Greek sculpture and sculptors, their Roman copyists, and Roman portraits and sarcophagi. Emphasis on Greek sculpture of the fifth century BC. Offered: jointly with CL AR 444.

ART H 446 Greek Architecture (3) VLPA *K. TOPPER* Detailed study of Greek architecture from its beginnings, with special emphasis on the Periclean building program in fifth-century Athens. Offered: jointly with CL AR 446.

ART H 447 The Archaeology of Early Italy (3) VLPA *S. LEVIN-RICHARDSON, K. TOPPER* Study of the principal archaeological sites of early Italy, including Etruria, Sicily, southern Italy, and archaic Rome up to the Republican period. Attention given to the material remains and their relationship to the Etruscan, ancient Sicilian, and early Roman civilizations. Offered: jointly with CL AR 447.

ART H 448 The Archaeology of Italy (3) VLPA *S. LEVIN-RICHARDSON, K. TOPPER* Study of the principal archaeological sites in Italy with special emphasis on ancient Rome. Sites include the Alban hills, Ostia, Pompeii, Herculaneum, Tarracina, Paestum, Tivoli, and Praeneste. Attention given to the relationship between material remains and their purpose in ancient life. Illustrated by slides. Offered: jointly with CL AR 448.

ART H 451 Topics in Early Christian and Byzantine Art and Architecture (3, max. 9) VLPA Specific theme or area of early Christian and Byzantine art and architecture, such as early Christian and Byzantine mosaics or the art of Constantinople.

ART H 452 Art, Religion, and Politics in the Early Christian Period, 300-700 AD (3) VLPA/I&S *Kartsonis* Evolution of the art of the early Christian period (300-700 AD) in the context of contemporary religious, political, and cultural developments. Recommended: some background in Byzantine art or history. Offered: jointly with JSIS C 452.

ART H 453 Art, Religion, and Politics in Byzantium, 700-1453 AD (3) VLPA/I&S *Kartsonis* Evolution of the art of Byzantium (700-1453 AD) in the context of contemporary religious, political, and cultural developments. Recommended: some background in Byzantine art or history. Offered: jointly with JSIS D 453.

ART H 455 Special Studies in Gothic Art and Architecture (3)

ART H 460 Topics in Northern European Art (3-5, max. 9) VLPA *Goettler* Approaches to the art of northern Europe through particular themes, genres, contexts, or other issues. Focus varies from year to year.

ART H 461 Early Renaissance Painting in Italy (3) VLPA Painting of the fourteenth and fifteenth centuries in central and northern Italy. Recommended: some background in Italian Renaissance art or history.

ART H 462 High Renaissance Painting in Italy (3) VLPA Painting in central and northern Italy, from about 1480 to about 1530: Leonardo, Raphael, the early Michelangelo, Sarto, Correggio, Bellini, Giorgione, and the early Titian. Recommended: some background in Italian Renaissance art or history.

ART H 464 Late Renaissance Painting in Italy (3) VLPA Painting in central and northern Italy, from about 1515 to about 1580: Pontorno, Rosso, Parmigianino, Beccafumi, the later Michelangelo, Vasari, Bronzino, Salviati, the later Titian, Tintoretto, and Veronese. Recommended: some background in Italian Renaissance art or history.

ART H 466 High Renaissance Painting in Venice (3) VLPA Painting in Venice, circa 1480 to circa 1580: Bellini, Carpaccio, Giorgione, Titian, Lotto, del Piombo, Tintoretto, and Veronese. Recommended: some background in Italian Renaissance art or history.

ART H 471 Rome in the Seventeenth Century (5) VLPA Painting, sculpture, and architecture; concentration on Caravaggio, Bernini, Poussin, and Borromini. Recommended: some background in the art or history of the period.

ART H 473 Topics in Baroque Art (5, max. 15) VLPA Approaches to the study of Baroque art through particular themes, genres, contexts, new research, and emerging issues. Focus varies from year to year.

ART H 479 Representations of the Other in 19th Century Art (5) VLPA Explores how cultural identities were formed and reinforced in nineteenth-century European, British, and American Art. Includes investigations of physical and racial stereotyping, historical notions of the "primitive," fantasies of race, gender, imperialism, nationalism, and ethnicity.

ART H 480 Art Museums: History, Theory, Practice (5) VLPA Explores the history of art museums in America and Europe from the nineteenth century to the present. Topics include connoisseurship and conservation, theories of design and display, architectural challenges, auction houses, dealers, curators, directors, impact of education departments, museums' changing relationship to public audiences, visual arts, and the law.

ART H 483 Post-Impressionism to 1918 (5) VLPA Post-Impressionism and the great revolution of early twentieth-century art, with emphasis on painting. From the first revisions of Impressionism around 1880 to Fauvism, Cubism, Futurism, the Blaue Reiter, and Dadaism. Recommended: some background in the art or history of the period.

ART H 484 Topics in Modern Art (5, max. 15) VLPA Approach to art of the nineteenth and twentieth centuries through particular themes, genres, contexts, or other issues.

sues. Focus varies from year to year. Recommended: some background in the art or history of the period.

ART H 485 Italian Futurism, Dada, Surrealism (5) VLPA *Failing* Survey of three European early modern art movements whose ultimate objective was the collapse of bourgeois culture. Central issues: the role of art and artists in catalyzing social change, strategies for destroying public faith in logic, integration of verbal and visual signs and nonaesthetic conceptions of art. Recommended: some background in the art or history of the period.

ART H 486 Abstract Expressionism: History and Myth (5) VLPA Thematic and chronological survey of abstract expressionism, including major genres of critical interpretation, revisionist scholarship, and the relationship of artistic production to a larger context of visual production. Recommended: some background in the art or history of the period.

ART H 488 American Architecture (3) American architecture from indigenous Native American traditions to the present. Recommended: some background in the art, architecture, or history of the period. Offered: jointly with ARCH 455.

ART H 490 Nineteenth-Century Architecture (3) VLPA From late eighteenth century French rationalists, Neoclassicists, to fin de siècle Vienna and Paris. Includes theorists such as Ruskin, Viollet-le-Duc, and Semper; major movements, such as the Arts and Crafts, and the French Ecole des Beaux-Arts method of design. Recommended: some background in the art, architecture, or history of the period. Offered: jointly with ARCH 456.

ART H 491 Twentieth-Century Architecture (3) VLPA Architecture in the twentieth century, mainly in Europe and the United States. Traces roots of Modernism in Europe in the 1920s, its demise (largely in the United States) in the 1960s, and recent trends such as Post-Modernism and Deconstructivism. Recommended: some background in the art, architecture, or history of the period. Offered: jointly with ARCH 457.

ART H 492 Alternative Art Forms Since 1960 (5) VLPA Survey of "post-studio" art forms developed in the 1960s by artists who did not equate artmaking with painting, sculpture, or other traditional forms. Topics include: happenings, Fluxus, land projects, artists' video, artists' books, performance, site works, and art made for distribution on CD-ROM and on the web.

ART H 493 Architecture Since 1945 (3) VLPA Theories and forms in architecture from the end of World War II to present. Includes new wave Japanese architects, recent Native American developments, and non-Western as well as Western trends. Recommended: some background in the art, architecture, or history of the period. Offered: jointly with ARCH 459.

ART H 494 Paris: Architecture and Urbanism (3/5) VLPA/I&S Spans the architectural history of Paris, from its Gallic, pre-Roman origins in the second century BCE through the work of twenty-first century architects. Focuses on changing patterns of the physical fabric of the city and its buildings, as seen within the context of the broader political, social, economic, and cultural history. Offered: jointly with ARCH 458/JSIS A 433.

ART H 495 Italian Fascism: Architecture and Power (5) VLPA/I&S Fascism in Italy as studied within the broader European context of nationalism, imperialism, and modernization, with particular emphasis on the arts - literature, film, architecture, and urbanism. Offered: jointly with ITAL 475.

ART H 497 Special Topics in Art in Rome (5, max. 10) VLPA Topics in art and architecture in Rome and environs, studied from original works. Offered in Italy as part of the art history seminar in Rome. Topics vary. Site visits, field trips, and individual research projects.

ART H 498 Individual Projects, Undergraduate Practicum (2-5, max. 10) Fieldwork or internships in art-related areas

in the community. Practical experience in areas such as arts administration, gallery and museum operations, collection cataloging, curatorial responsibilities, and art education. Credit/no-credit only.

ART H 499 Individual Projects (2-5, max. 10)

ART H 500 Methods of Art History (5) Introduction to the specialized bibliography of art historical research and to the wide variety of approaches to art historical problems of all periods and regions.

ART H 501 Seminar in the General Field of Art (5, max. 15)

ART H 504 Methods of Art History: Faculty Research (2) Discussion and analysis of methodological issues posed in faculty research. Credit/no-credit only. Offered: W.

ART H 509 Seminar in Special Topics in Art History (5, max. 15) Specific focus changes from quarter to quarter.

ART H 511 Seminar in Chinese Art (5, max. 15) Critical appraisal of the principal research methods, theories, and types of literature dealing with the art of China.

ART H 514 Seminar in South Asian Art (5, max. 30) VLPA/I&S Critical appraisal of the principle research methods, theories, and types of literature dealing with the art of South Asia.

ART H 515 Seminar in Japanese Art (5, max. 15) Critical appraisal of the principal research methods, theories, and types of literature dealing with the art of Japan.

ART H 520 Topics in Tribal Art (5, max. 20) Investigates a series of variable topics in tribal art.

ART H 521 Topics in Asian Art (5, max. 20) Investigates a series of topics in Asian art.

ART H 522 Topics in Ancient, Classical, and Medieval Art (5, max. 20) Investigates a series of variable topics in ancient, classical, and medieval art.

ART H 523 Topics in Italian and Northern Renaissance Art (5, max. 20) Investigates a series of variable topics in Italian and Northern Renaissance art.

ART H 524 Topics in Baroque and Eighteenth Century Western Art (5, max. 20) Investigates a series of variable topics in baroque and eighteenth century Western art.

ART H 525 Topics in Modern and Contemporary Art and Architecture (5, max. 20) Investigates a series of variable topics in modern and contemporary art and architecture.

ART H 531 Seminar in Tribal Art (5, max. 15) Methodological and cross-disciplinary problems in the visual arts of precolonial Africa, Oceania, and America. Specific content varies.

ART H 533 Seminar in North American Native Art (5, max. 15) Problems in North American Indian visual arts. Content varies.

ART H 541 Seminar in Greek and Roman Art (5) S. LEVIN-RICHARDSON, K. TOPPER In-depth study of selected topics and problems of the art of ancient Greece and Rome. Offered: jointly with CL AR 541.

ART H 551 Seminar in Early Christian, Byzantine, and/or Medieval Art and Architecture (5, max. 15) Problems in early Christian, Byzantine, and medieval art and architecture. Content varies. Prerequisite: permission of instructor.

ART H 561 Seminar in Italian Renaissance Art (5, max. 15) Problems and in-depth study of selected topics of the art of the Italian Renaissance.

ART H 566 Seminar in North European Art (5, max. 15) Deals with problems of style and iconography of the northern European masters of the fourteenth through seventeenth centuries.

ART H 577 Seminar in Baroque Art (5, max. 15) Iconographic and stylistic problems of the art of the Baroque period, with emphasis on the principal research methods, theories, and types of literature dealing with the art of the seventeenth and eighteenth centuries in Europe.

ART H 581 Seminar in Modern Art (5, max. 15) Art historical problems of the nineteenth and twentieth centuries.

ART H 590 Seminar in Criticism of Contemporary Art (5, max. 15) Contemporary art and appropriate critical methodology.

ART H 591 Seminar in Twentieth-Century Architecture (3/5) Specific focus changes from quarter to quarter. Prerequisite: graduate standing with background in art history, architecture, architectural history, or permission of instructor. Offered: jointly with ARCH 558.

ART H 592 Seminar in American Architecture (5) Clausen Topics vary. Offered: jointly with ARCH 555.

ART H 597 Graduate Internship (2-5, max. 5) Internship in the field of art history with a museum, gallery, or other faculty-approved art or architectural institution that can offer the student substantial research or curatorial experience. Credit/no-credit only.

ART H 598 Master's Practicum (*, max. 15) Credit/no-credit only.

ART H 599 Reading and Writing Projects (2) Art historical issues, methods, and materials. Required of all graduate majors registered in 400-level art history courses. Open also to graduate nonmajors.

ART H 600 Independent Study or Research (*-)

ART H 700 Master's Thesis (*-) Credit/no-credit only.

ART H 800 Doctoral Dissertation (*-) Credit/no-credit only.

Design

DESIGN 165 Introduction to Industrial Design (5) VLPA Provides a general introduction to industrial design. Develops students' knowledge through lectures, readings, and studio projects that focus on the history of the discipline and the processes of brainstorming, ideation, skill building, problem solving, and professional presentation used in the creation of design. Includes participation by guest designers.

DESIGN 166 Design Foundations (5) VLPA Examines the rudiments of visual structure and problem solving in two and three-dimensional design. Emphasizes design methodology and design processes with emphasis on the formal principles of composition and organization.

DESIGN 207 Design Drawing (5) VLPA Concentrates on developing skills used to communicate ideas that exist in the imagination. Focuses on study of design drawing history and development of basic skills necessary for ideation, exploration, communication, explanation. Prepares students to visualize and discuss ideas rapidly and professionally. For design majors only.

DESIGN 208 Survey of Design History (5) VLPA Surveys the ideas, events, and individuals that determined the design of information, objects, culture, and commerce across societies. Examines the social, political, economic, and cultural contexts that shape design and the ideologies and relationships of similar movements in art and architecture. Includes late nineteenth century through contemporary issues.

DESIGN 209 Fundamentals of Typography (5) VLPA Develops understanding of and sensibility to typographic details used to create effective communication. Focus moves from understanding letter forms that make up words to the complexities of developing phrases, sentences, and short paragraphs with multiple levels of hierarchical meaning. Prerequisite: DESIGN 207.

DESIGN 210 Collaboration and Improvisation (5) VLPA Introduces key factors in the theory and practice of creating and participating in collaborative projects. Focuses on creating and participating in effective teams, understanding strengths and roles within teams, working through team issues, developing techniques for interdisciplinary problem solving. Prerequisite: DESIGN 207.

DESIGN 211 3-D Foundation (5) VLPA Introduction to aesthetic fundamentals of 3-dimensional form. Explores the articulation of form and space in both abstract and applied scenarios. Prepares design students for subsequent work in interaction design, design studies, industrial design, and visual communication design. Prerequisite: DESIGN 210.

DESIGN 212 Introduction to Interaction Design (5) VLPA Introduces human-computer interaction, interface design, and interactive and time-based media for designers. Reviews foundational interaction design concepts such as human factors, perception, cognition, research techniques, and design methods for the design of interactions. Prerequisite: DESIGN 211.

DESIGN 265 Topics in Design (5, max. 20) VLPA Revolving topics class that addresses the thinking, skills, and creative motivations that drive the practice of design.

DESIGN 266 Design Concepts and Practice (5, max. 20) VLPA Revolving topics class that addresses foundational issues and contemporary practice in the field of design.

DESIGN 300 Design and Thinking (5, max. 10) VLPA Ozubko Develops an approach to conceptual problem solving while exploring their fundamental principles of visual communication. Cultivate critical, analytical, and verbal skills through liberal learning experiences and design methodologies. Offered: S.

DESIGN 316 Introduction to Industrial Design (5) VLPA Introduces the fundamentals of 3-D design with emphasis on analytical and intuitive approaches to problem solving, technical skills, and form development. Prerequisite: DESIGN 207; DESIGN 211.

DESIGN 317 Intermediate ID Studio 1 (5) VLPA Introduces theories, methods, and design development focused on design principles involving form, function, usability, and product development. Prerequisite: DESIGN 316.

DESIGN 318 Intermediate ID Studio 2 (5) VLPA Includes studio experiences that expand upon and combine intellectual and manual skills for the practice of industrial design. Emphasizes the ideation process with form development. Prerequisite: DESIGN 317.

DESIGN 319 Advanced Design Drawing (5) VLPA Advanced visualization and drawing using traditional and computer-aided approaches.

DESIGN 320 Industrial Design Special Projects (5, max. 15) VLPA Progressive industrial design methodology and criticism introduced through projects corresponding to major international design competitions, visiting critics and lecturers, corporate sponsored projects, or faculty design research. Independent or group work on projects to expand students' visual research, drawing, modelmaking, presentation, and literacy skills. Includes contemporary manufacturing and information technologies.

DESIGN 322 Presentation for Industrial Design I (5) VLPA Introduction to presentation skills, from quick sketching of design concepts to refined representation of the finished design in a two-dimensional format. Emphasis on accuracy and development of an individual style. Prerequisite: DESIGN 211; DESIGN 212.

DESIGN 323 PRESENTATION FOR INDUSTRIAL DESIGN (5) VLPA

DESIGN 365 Developing Solutions in Design (5, max. 20) VLPA Revolving topics class that concentrates on learning in specific areas where design can be used to resolve contemporary issues.

DESIGN 366 Editorial Visualizations (5) VLPA Expands focus on design process through a broad variety of image production techniques. Emphasizes concept development and the power of the image for storytelling. Design of stand-alone compositions is expanded into the development of a series of themed works. Prerequisite: DESIGN 209; DESIGN 210.

DESIGN 367 Design for Mobile Experiences (5) VLPA Investigation of strategies and graphic interpretations to devel-

op a critical perspective on design for mobile interaction. Emphasizes development of core methodologies, vocabulary, case studies, best practices, application prototypes. Prerequisite: DESIGN 366; DESIGN 376.

DESIGN 368 Case Studies in Corporate Identity (5) VLPA Research and analysis of visual identity systems for complex institutional and corporate entities. Focuses on issues that concern how design programs function across diverse application and media and how they engage various audiences. Prerequisite: DESIGN 377.

DESIGN 376 Typography (5) VLPA Explores how meaning, hierarchy, and legibility are affected by typographic contrast, organization, and composition. Prepares students to create dynamic compositions with type, understand how type is used as an image/conceptual visualization, understand the nuances/techniques involved in a professional typesetting, and develop vocabulary. Prerequisite: DESIGN 209; DESIGN 210.

DESIGN 377 Marks and Symbols (5) VLPA Investigates formal and conceptual problems associated with mark and symbol design. Students individually/collaboratively research and develop a series of marks and symbols for specific organizations. Helps develop the ability to recognize effective marks/symbols that identify/communicate an identity or idea, identify specific types of marks and symbols, and determine the most suitable types for a specific communication problem. Prerequisite: DESIGN 366, DESIGN 376.

DESIGN 378 Information Architecture and Web Design (5) VLPA Fundamental issues in web design, including site planning, information architecture, navigation, visual hierarchy, and interactivity. Emphasis on understanding the unique functional limitations of designing for the web while building an awareness of contemporary design practice. Design a simple site and produce a working prototype. Prerequisite: DESIGN 376.

DESIGN 381 Design Case Studies: Interaction Design Technology and Production (5) VLPA History, theory, and practice of ways design functions in society and culture. Emphasis on developing broad understanding of design production while working collaboratively and individually on a quarter-long research project concerned with producing a comprehensive conceptual map of the design discipline. Prerequisite: DESIGN 211; DESIGN 212.

DESIGN 383 Foundations of Interaction Design (5) VLPA Focus on human-to-product interaction and ways we perceive, understand, and experience the world in regard to objects, environments, or on-screen controls/information. Prerequisite: DESIGN 211; DESIGN 212.

DESIGN 384 Information Visualization for Interaction Designers (5) VLPA Surveys information visualization approaches, techniques, and concepts for the design of interaction information systems, interactive instructions, and animated information graphics. Prerequisite: DESIGN 381; DESIGN 383.

DESIGN 385 Design Innovation and Society (5) VLPA Surveys the role of interaction design and impact of new information technologies and interactive product/systems of everyday life, expert domains, the formation of values and knowledge, and the production of adaptation to innovations. Prerequisite: DESIGN 381; DESIGN 383.

DESIGN 386 Visual Storytelling (5) VLPA Investigates the form and role of visual narratives from design development in the interaction design process. Introduces planning and production of storyboards, photography, video, editing for storytelling, character development, and design concept visualization as they apply to design presentation, communication, and evaluation of interactive design sequences. Prerequisite: DESIGN 384; DESIGN 385.

DESIGN 387 Physical Interaction Design (5) VLPA Surveys approaches, concepts, and techniques for the design of interaction systems that are situated in physical environments. Prerequisite: DESIGN 384; DESIGN 385.

DESIGN 443 Materials and Manufacture in Industrial Engineering (5) VLPA Analyzes materials used in mass-produced products, focusing on how these materials impact product design and on finishing quality of products. Emphasizes materials research and manufacturing processes. Team-based research with multi-media report-out at end of quarter. Prerequisite: DESIGN 211; DESIGN 212.

DESIGN 444 Prototype Project Development (5) VLPA Learn to apply traditional hand tools and digital prototyping machines to the creative process of industrial design.

DESIGN 445 Advanced Industrial Design (5) VLPA Emphasizes solving problems through the manipulation of design theory, application of human factors, appropriate combination of materials and manufacturing techniques, and presentation of concepts. Prerequisite: DESIGN 318; DESIGN 323.

DESIGN 446 Advanced Industrial Design: Professional Practice (5) VLPA Collaboration project with the professional design industry. Students learn how industrial designers brainstorm, develop, and refine initial design concepts to final product solutions. Prerequisite: DESIGN 445.

DESIGN 447 Senior Projects in Industrial Design (5) VLPA Industrial design project of the student's own choosing, with consent of instructor, to refine problem solving and design ability in preparation for graduate exhibition. Prerequisite: DESIGN 446.

DESIGN 466 Publication Design (5) VLPA Stresses the research, development, organization, design, and presentation of a complex printed document, such as a journal, annual report, or large publication. Addresses all aspects of design, content, image creation, and production through a quarter-long project. Prerequisite: DESIGN 368; DESIGN 378.

DESIGN 467 Exhibition and Installation Design (5) VLPA Explores how to communicate powerful messages and stories in three-dimensional space, bringing together typography, imagery, and innovative use of materials and structures. Emphasizes sustainable processes and materials. Prerequisite: DESIGN 211; DESIGN 212.

DESIGN 477 Type Design (3-5) VLPA Exploration of contemporary type design.

DESIGN 478 Information Design (5) VLPA Exploration of strategies for enhancing and visually presenting complex statistics and data. Various information subjects are selected and formed into charts, diagrams, graphs, tables, directories and maps. Identify, through personal investigations, the principles which provide the most successful means for presentation of information. Prerequisite: DESIGN 368; DESIGN 378.

DESIGN 479 Interaction Design (5) VLPA Exploration of design issues unique to user-centered interaction in digital media. Explore a range of formal and conceptual issues including user interface, organization, narrative, motion, time, and sound. Prerequisite: DESIGN 478.

DESIGN 480 Senior Projects in Visual Communication Design (5) VLPA Presents an opportunity for advanced, individualized design research and study. Complete a unique capstone project based on individual design interests and prior experiences in the VCD program. Public exhibition of this project is required in the BFA Graduation Exhibition. Prerequisite: DESIGN 466; DESIGN 476.

DESIGN 481 Field Studies: Design Research Techniques (5) VLPA Students develop an understanding of significant theoretical models related to design through a series of readings, lectures, discussions, and assignments. Prerequisite: DESIGN 386; DESIGN 387.

DESIGN 483 Advanced Interaction Design (5) VLPA Explores the role of visual interface design and interaction flows in technology-driven work settings. Introduces techniques for knowledge elicitation and design of interactive systems in expert domains or special use contexts to de-

velop interface that are useful, understandable, and usable. Prerequisite: DESIGN 383.

DESIGN 484 Senior Projects in Interaction Design (5) VLPA Explores the design of interactive products and user experience in everyday settings. Students apply interaction design and research techniques in a multi-disciplinary studio for a quarter-long interaction design project requiring collaboration between students from a variety of backgrounds including design, engineering, and computer science. Prerequisite: DESIGN 383; DESIGN 483.

DESIGN 488 Portfolio Preparation (3) VLPA Focuses on developing the tools to create a successful transition between academia and professional practice as a working designer. Prerequisite: DESIGN 211; DESIGN 212.

DESIGN 495 Design Internship (1-5, max. 10) Internships for undergraduates in conjunction with design faculty and business partners in the design community. Credit/no-credit only.

DESIGN 499 Individual Projects-Design (2-5, max. 15) Independent projects in design.

DESIGN 581 Graduate Seminar in Design (5, max. 30) Addresses critical issues in design through research, writing, presentations, and discussion.

DESIGN 582 Design Graduate Studio (5, max. 40) Explores a range of ideas and influences in the context of applied design.

DESIGN 600 Independent Study or Research (*)

DESIGN 700 Master's Thesis (*)

Asian Languages and Literature

225 Gowen

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

UNDERGRADUATE PROGRAM

Adviser

223A Gowen, Box 353521

(206) 543-4996

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

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

Bachelor of Arts

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

Department Admission Requirements

1. Minimum 20 credits of college coursework (or department-approved equivalent) in the intended primary language of concentration. The most recent course

completed in the intended primary language of concentration must be taken at the UW, with a minimum 2.5.

2. Completion of one writing course (W-prefix) taught in English with a minimum 2.0 grade.
3. The department prefers that prospective majors present a cumulative 2.50 GPA. Students with a cumulative GPA below 2.50 may be considered for the major if they submit materials in addition to transcripts, clarifying any aspect of past coursework. Denied applicants may appeal.
4. Transfer students must be enrolled at the UW before applying to the major.

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

Major Requirements

Chinese

50-80 credits, as follows:

1. *Modern language courses (15-45 credits):* To include a minimum of 15 credits beyond the third-year level chosen from CHIN 411, CHIN 412, CHIN 413, CHIN 421, CHIN 422, CHIN 423, CHIN 470, CHIN 482, CHIN 496 (when the topic is advanced language instruction), and I BUS 490 (when the topic is business Chinese). Students who have been evaluated and placed beyond fourth-year Chinese may satisfy the modern language requirement by taking 15 additional credits of classical Chinese (see adviser for approved list of classical Chinese courses).
2. *Classical language courses (10 credits):* CHIN 451, CHIN 452
3. *Literature and Linguistics courses (15 credits):* CHIN 342 or CHIN 442; an additional 10 credits from ASIAN 201, ASIAN 204, ASIAN 207 (when China is the topic), ASIAN 211, ASIAN 263 (when China is the topic), CHIN 373, CHIN 374, CHIN 380, CHIN 381, CHIN 385, CHIN 443, CHIN 453, CHIN 461, CHIN 462, CHIN 463
4. *China-related humanities and social science courses (10 credits):* From ASIAN 200, ASIAN 211, ASIAN 401, and ASIAN 404 if not already used to satisfy other requirements. See adviser for approved list of additional courses. .

Japanese

75 credits as follows:

1. 45 credits in language, including 30 credits beyond the second year, selected according to the student's choice of literature or linguistics concentration; 20 credits of a literature or linguistics sequence; and 10 credits of area-related humanities and social sciences, as follows:

a. Literature Concentration

- i. *Language:* 45 credits, with a minimum of 30 credits beyond the second year. (Second year: JAPAN 211, JAPAN 212, JAPAN 213; third year: JAPAN 311, JAPAN 312, JAPAN 313; fourth year: 15 credits from JAPAN 431, JAPAN 432, JAPAN 433, JAPAN 445, JAPAN 471, JAPAN 472, and JAPAN 473.)

Students who, upon the determination of the faculty in Japanese, are permitted to begin their study of Japanese at the University at a level higher than JAPAN 211 substitute, in consultation with the undergraduate adviser, an equivalent number of credits in additional courses drawn from JAPAN 431, JAPAN 432, JAPAN 433, JAPAN 445, JAPAN 471, JAPAN 472, JAPAN 473, and with prior approval, other Japan-related humanities or social science courses.

- ii. *Literature sequence:* 20 credits, including JAPAN 321, JAPAN 322, JAPAN 323, and 5 credits from JAPAN 395, JAPAN 431, JAPAN 432, JAPAN 433, JAPAN 460, JAPAN 471, JAPAN 472, and JAPAN 473, if not used to satisfy the language requirement.

- iii. *Area-related humanities or social science courses:* 10 credits at the 300 level or above, at least 5 of which must be from outside the Department of Asian Languages and Literature; may be taken from JAPAN 342, JAPAN 343, JAPAN 395, JAPAN 440, JAPAN 442, JAPAN 443, and JAPAN 460; other Japanese literature courses not used to meet the literature requirement; and related courses from other departments.

b. Linguistics Concentration

- i. *Language:* 45 credits, with a minimum of 30 credits beyond the second year. (Second year: JAPAN 211, JAPAN 212, JAPAN 213; third year: JAPAN 311, JAPAN 312, JAPAN 313; fourth year: 15 credits from JAPAN 421, JAPAN 422, JAPAN 423, JAPAN 431, JAPAN 432, JAPAN 433, JAPAN 445, JAPAN 471, JAPAN 472, and JAPAN 473)

Students who, upon the determination of the faculty in Japanese, are permitted to begin their study of Japanese at the University at a level higher than JAPAN 211 substitute, in consultation with the undergraduate adviser, an equivalent number of credits in additional courses drawn from JAPAN 431, JAPAN 432, JAPAN 433, JAPAN 445, JAPAN 471, JAPAN 472, JAPAN 473, and with prior approval, other Japan-related humanities or social science courses.

- ii. *Linguistics sequence:* 20 credits, including at least 15 credits from JAPAN 342, JAPAN 343, JAPAN 395, JAPAN 440, JAPAN 442, JAPAN 443; 5 of the 20 credits may come from JAPAN 321, JAPAN 322, JAPAN 323, JAPAN 460, JAPAN 471, JAPAN 472, JAPAN 473, LING 400, or related courses from other departments.

- iii. *Area-related humanities or social science courses:* 10 credits at the 300 level or above, at least 5 of which must be from outside the Department of Asian Languages and Literature; may be taken from LING 400, JAPAN 321, JAPAN 322, JAPAN 323, JAPAN 395, JAPAN 460, JAPAN 471, JAPAN 472, and JAPAN 473; or related courses from other departments.

Korean

75 credits as follows:

1. 45 credits in the Korean language, 15 beyond second-year level
2. 30 credits in literature and area-related humanities or social science courses

South Asian Languages

69 credits as follows:

1. *Language:* 39 credits beyond first-year level in a single South Asian language (Hindi or Sanskrit)
 - a. *Basic Language:* For Hindi - HINDI 321, HINDI 322, HINDI 323, HINDI 401, HINDI 402, HINDI 403; for Sanskrit - SNKRT 401, SNKRT 402, SNKRT 403, SNKRT 411, SNKRT 412, SNKRT 413
 - b. *Advanced Language, Literature, and Linguistics:* 9 credits at 400 level, drawn from the following. For Hindi - HINDI 404, HINDI 421, HINDI 422, HINDI 423, HINDI 431, HINDI 451; for Sanskrit - SNKRT 491, SNKRT 492, INDN 401, INDN 402, INDN 410
2. *Literature in Translation (10 credits):* ASIAN 203, ASIAN 206

3. *South Asian History (5 credits):* One course from among HSTAS 202, HSTAS 401, HSTAS 402, HSTAS 403, HSTAS 404
4. *South Asian Humanities and Social Sciences (10 credits):* Chosen in consultation with adviser. A list of courses that satisfy this requirement is included on the expanded description of the major available from the adviser.
5. *Capstone Seminar (5 credits):* INDN 490

Minor

Minor Requirements

Chinese: 30 credits as follows:

1. *Language courses:* 15 credits at or above the third-year level chosen from CHIN 212, CHIN 213 (CHIN 212 and CHIN 213, heritage-track Chinese, considered equivalent to third-year level), CHIN 301, CHIN 302, CHIN 303, CHIN 411, CHIN 412, CHIN 413, CHIN 421, CHIN 422, CHIN 423, CHIN 451, CHIN 452, CHIN 453, CHIN 470, CHIN 482, and CHIN 496 (when the topic is advanced language instruction).
2. *Introduction to Chinese Linguistics (5 credits):* either CHIN 342 or CHIN 442
3. *China-related humanities courses (10 credits):* at least one of ASIAN 200, ASIAN 201, ASIAN 204, ASIAN 207 (when China is the topic), ASIAN 211, ASIAN 263 (when China is the topic), ASIAN 401, ASIAN 404, CHIN 373, CHIN 374, CHIN 380, CHIN 381, CHIN 385, CHIN 443, CHIN 461, CHIN 462, and CHIN 463; remaining credits from above or from an approved list of China-related electives

Hindi: 30 credits as follows:

1. 15 language credits at the second-year level (HINDI 321, HINDI 322, HINDI 323) or above
2. 15 credits in area-related humanities courses to include either ASIAN 203 or ASIAN 206 and any of the following: ART H 306; HSTAS 201, HSTAS 202, HSTAS 401, HSTAS 402, HSTAS 403, HSTAS 404; PHIL 386, PHIL 412; RELIG 352, RELIG 354

Japanese: 30 credits as follows:

1. 15 language credits at the third-year level (JAPAN 311, JAPAN 312, JAPAN 313) or above
2. 15 credits in additional language or literature/culture courses. Acceptable courses include, but are not limited to: JAPAN 321, JAPAN 322, JAPAN 323, JAPAN 342, JAPAN 343, JAPAN 431, JAPAN 432, JAPAN 433, JAPAN 440, JAPAN 442, JAPAN 443, JAPAN 460, JAPAN 471, JAPAN 472, JAPAN 473; ART H 316, ART H 317; ART 321; ECON 494; GEOG 313; HSTAS 422, HSTAS 423; MUSIC 495; POL S 435. Acceptable language courses include those offered by the technical Japanese program, the Jackson School of International Studies, the School of Law, and the Foster School of Business.
3. Minimum 2.0 grade required for each course applied to the minor

Korean: 30 credits as follows:

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

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

1. *Language:* 15 credits of language classes at the second-year level or above in a single Indic language: For Bengali, BENG 321, BENG 322, BENG 323; for Hindi,

HINDI 321, HINDI 322, HINDI 323; for Sanskrit, SNKRT 401, SNKRT 402, SNKRT 403; for Urdu, URDU 321, URDU 322, URDU 323.

2. *South Asia related humanities and social science courses (15 credits):* Literature (5 credits) -- ASIAN 203 or ASIAN 206; South Asia area studies (10 credits) -- chosen in consultation with adviser. A list of courses that satisfy this requirement may be found on the following website: asian.washington.edu/south-asian-program-description

At least half the credits for the minor must be taken at the UW.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:*
 - *Language:* A student of one of the languages achieves competency in speaking, listening, reading, and writing. Skills acquired for the minor include the ability to manage simple spoken communicative tasks and social situations; to understand sentence-length utterances on familiar topics in face-to-face situations; to read simple connected texts dealing with personal and social topics; to write short essays on familiar topics grounded in personal experience and immediate surroundings. Skills acquired for the major include the ability to manage spoken communicative tasks, including topics of common interest, description and narration, expression of personal viewpoints, and presentation and support of an argument; to understand the main idea and important details of connected spoken discourse, ranging from face-to-face situations to radio and TV broadcasting; to understand the main idea and important details of written texts in a range of styles and registers; to write routine social correspondence using the appropriate conventions, and to write connected essays of several paragraphs in an appropriate linguistic register.
 - *Linguistics:* A student with a minor achieves competency in understanding the basic structure of the language, including its grammatical forms, writing system, and phonology; recognizing the language's historical relationships with other languages in the geographical region; understanding the structured and hierarchical nature of linguistic systems. A student with a major additionally achieves competency in understanding basic linguistic concepts and terminology in such fields as syntax, morphology, and phonology, and applying them to the analysis of the linguistic structures of the language; understanding the historical development of the language, including its historical linguistic features and dialectal development; recognizing the relationship between linguistic structures and literary forms and devices.
 - *Literature:* A student with a minor achieves competency in identifying major works and forms within the literary tradition; understanding the place of selected literary texts within the ongoing tradition; understanding the historical and cultural contexts of major literary forms and works; understanding the roles of literary works and literary activity within the culture; utilizing basic research skills. A student with a major additionally achieves competency in reading selected literary texts in the original; employing linguistic and philological analysis as tools for understanding literary texts; performing formal analysis of literary texts; analyzing literary texts with reference to relevant literary traditions and intertextual dynamics; analyzing literary texts with reference to their historical background and broader cultural context; practicing critical reading of primary and secondary texts; employing research and writing skills to produce formal written analysis of literary texts.
- *Instructional and Research Facilities:* None

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

GRADUATE PROGRAM

Graduate Program Coordinator

225 Gowen, Box 353521

(206) 543-4996

The Department of Asian Languages and Literature offers programs of study leading to the Master of Arts and Doctor of Philosophy degrees with specializations in (1) the languages and literatures of China; (2) the language and literature of Japan; (3) the languages and literatures of South Asia, subsuming Sanskrit and Hindi; (4) the language and literature of Korea; Buddhist studies. All graduate students in the department must affiliate themselves with one of these programs. The department does not offer degrees or specializations in language pedagogy.

Master of Arts, Buddhist Studies

Admission Requirements

1. An undergraduate major in the language and literature of specialization (four years of language training if the language is Chinese or Japanese; fewer years of language acquisition may be acceptable in South Asian languages), or the background and training equivalent to such a major. Students without such a background may be qualified for admission, but must acquire the program prerequisites during the earliest stages of their graduate study.
2. A statement of academic goals
3. Three letters of recommendation addressed to the Graduate Program Coordinator

Degree Requirements

45-54 credits plus language requirements, as follows:

1. *Coursework requirement:*
 - a. *Non-thesis program:* 45 course credits, 18 of which must be at the 500 level and above. Buddhist studies seminars and text reading courses offered within the department must be included. Students are also required to complete language study through the fourth-year level in their major language and through the second-year level in a second Asian language.
 - b. *Thesis program:* 45 course credits plus 9 thesis credits. At least 18 of the 45 credits must be taken at the 500 level or above. Buddhist studies seminars and text reading courses offered within the department must be included. The language requirements in this program are the same as in the non-thesis program. In addition, the student must write an acceptable MA thesis according to the rules and policies of the Department of Asian Languages and Literature and pass an oral examination.
2. *Foreign language requirements:* Students must demonstrate competence in their major language, and must complete the course requirements in their second Asian language as outlined above. These two languages may include one classical language and one relevant modern language, or two classical languages. In either case, one of the languages must be Sanskrit. In addition, students must demonstrate through a written examination read-

ing knowledge of one foreign language relevant to their area of specialization, which must be other than English and the student's native language. It may be the student's second Asian language or a European or Asian research language.

Master of Arts, Chinese

Admission Requirements

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

Degree Requirements

38-40 credits, as follows:

1. Two options available: (1) thesis program, and (2) non-thesis program which requires two seminar or research papers in lieu of a thesis, and two 500-level departmental courses in addition to the requirements specified below.
2. *Coursework requirements:*
 - a. *Second-Year Classical Chinese, 15 credits:* CHIN 551, CHIN 552, CHIN 553
 - b. *Methods and Materials, 5 credits:* CHIN 559
 - c. *History of Chinese Literature, 5 credits:* Any one course of the following three-quarter sequence: CHIN 461, CHIN 462, CHIN 463
 - d. *The Chinese Language, 5 credits:* CHIN 442
 - e. At least one course from each of the following two groups, 8-10 credits:
 - i. *Group I -- Literature:* CHIN 461, CHIN 462, CHIN 463; CHIN 482; CHIN 554, CHIN 555, CHIN 556; CHIN 561, CHIN 562, CHIN 563; CHIN 573; CHIN 575; CHIN 580; CHIN 582; CHIN 583; CHIN 590; CHIN 591, CHIN 592, CHIN 593
 - ii. *Group II -- Linguistics and Philology:* CHIN 443; CHIN 531, CHIN 532, CHIN 533; CHIN 540; CHIN 541; CHIN 542; CHIN 544; CHIN 557; CHIN 558
3. *Foreign language requirement:* Fulfilled through a graduate reading examination. May be another Asian language or a European language, but not the student's native language, and must be relevant to the student's program of study.
4. *MA Examination:* Covers Chinese literature: second part focuses on language (linguistics and philology) and texts. Normally taken no later than autumn quarter of the third year.

Master of Arts, Japanese Language and Literature

Admission Requirements

1. Minimum undergraduate 3.00 GPA in the junior and senior years
2. Three letters of recommendation and a statement of purpose
3. Strong undergraduate preparation in any of the following: Japanese language and literature, with the equivalent of at least four years' work in the language; another

language and literature, Asian regional studies, comparative literature, linguistics, art history, English, philosophy, or history.

4. While a student lacking such preparation may be admitted, the student is expected to concentrate initially on compensating for deficiencies in background by taking coursework chosen in consultation with the academic adviser. In the case of inadequate training in Japanese, intensive courses in the language are available.

Degree Requirements

45-75 credits, as follows:

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

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

The student may present research in either of two ways: (1) by submitting a thesis, in which case the student takes at least 36 course credits and 9 thesis credits, or (2) by submitting two research papers written either independently or for courses or seminars, in which case all 45 minimum credits are in course credits.

2. *Foreign language requirement:* One additional language in addition to the language of specialization. Can be either European or Asian, but should not be English. Language chosen must be relevant to student's program of study, i.e., it provides access to a body of critical literature on the field, e.g., French or German or improves student's grasp of the structure or etymological sources of Japanese, e.g., Chinese or Korean. It may not be the student's native language.
3. *MA general examination:* Two written examinations, each of two hours' duration, one in pre-modern (pre-Meiji) literature, the other modern. These are intended to examine the student's general mastery of the respective areas.

Master of Arts, Japanese Language and Linguistics

Admission Requirements

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

Degree Requirements

45-75 credits, as follows:

1. *Coursework:* 45 credits above the 300 level earned through a combination of coursework and research. At

least 18 credits must be completed in numerically graded courses at the 400 and 500 level, and 18 credits at the 500 level and above.

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

The student may present research in either of two ways: (1) by submitting a thesis, in which case the student takes at least 36 course credits and 9 thesis credits (ASIAN 700), or (2) by submitting two research papers that have been written either independently or for courses or seminars, in which case all 45 minimum credits are in course credits.

2. *Foreign language requirement:* one additional language in addition to the language of specialization. Can be either European or Asian, but should not be English. Language must be relevant to the student's program of study, i.e., provides access to a body of critical literature on student's field (e.g., French or German) or improves student's grasp of the structure or etymological sources of Japanese, e.g., Chinese or Korean. It may not be the student's native language.
3. *Linguistics:* Near the end of the course of study, each student takes two written examinations in Japanese linguistics, whether in descriptive linguistics, theoretical linguistics, applied linguistics, or sociolinguistics. These are intended to examine the student's general mastery of the respective areas.

Master of Arts, Korean

Admission Requirements

1. A minimum undergraduate 3.00 GPA in the junior and senior years
2. Three letters of recommendation and a statement of purpose
3. Strong undergraduate preparation in any of the following: Korean language and literature, another language and literature, Asian regional studies, comparative literature, linguistics, English, philosophy, history, or an approved area in the humanities or social sciences
4. Three years of Korean language training. Students lacking such preparation are required to take the necessary courses during their first year of residence.

Degree Requirements

39 credits, as follows:

1. *Coursework:* KOREAN 415, KOREAN 416, KOREAN 417; ASIAN 498 or KOREAN 462; KOREAN 531; KOREAN 532; ASIAN 700. The student must also either (1) submit a thesis, or (2) submit two research papers in lieu of a thesis.
2. *Foreign language requirement:* The student must fulfill one additional language requirement in addition to the language of specialization. The language can be either European or an Asian one; however, it should not be English. The language chosen must be relevant to the student's program of study. It may not be the student's native language.
3. *MA examination:* The student must take a written examination in two parts, each part to be two hours in length. One part is in pre-modern Korean literature, the other modern. The student should take the MA examination no later than autumn quarter of the third year.

Master of Arts, South Asian Languages and Literature

Admission Requirements

1. Minimum undergraduate 3.00 GPA in the last 90 quarter or 60 semester credit hours
2. Three letters of recommendation and a statement of purpose
3. Preference is given to students with prior preparation in a South Asian language and literature, in South Asian regional studies, or in a humanistic discipline pertinent to the study of South Asian civilization. Students lacking such preparation may be admitted to the MA program; however, they must remedy any deficiencies by adding, as early as possible, such courses as the academic adviser considers necessary. South Asian languages in which specializations are offered at the University are Sanskrit and Hindi.

Degree Requirements

45-75 credits, as follows:

1. *Coursework:*
 - a. *Non-thesis program:* 45 course credits, 18 of which must be at the 500 level and above. Language study through the fourth-year level in the student's major language and through the second-year level in a second South Asian language. In addition, the student must present two seminar papers which are approved by the student's adviser and at least one other faculty member in the department.
 - b. *Thesis program:* 45 course credits plus 9 thesis credits. At least 18 of the 45 credits must be taken at the 500 level or above. The language requirements in this program are the same as in the non-thesis program. In addition, the student must write an acceptable MA thesis according to the rules and policies of the Department of Asian Languages and Literature and pass an oral examination.
2. *Foreign language requirements:* one additional language in addition to the language of specialization. Can be either European or Asian, but should not be English. The language chosen must be relevant to the student's program of study. It may not be the student's native language.

Doctor of Philosophy, Buddhist Studies

Admission Requirements

MA degree in Asian Languages and Literature at the UW and a satisfactory evaluation by South Asian Language program faculty. Students with sufficient background, usually the successful completion of a relevant MA degree at another institution, may be considered for admission into the PhD program.

Degree Requirements

90 credits, as follows:

For the PhD, students are expected to demonstrate the ability to do original research utilizing primary languages of Buddhist traditions in accordance with their chosen areas of concentration. Students are required to demonstrate competence in their major Asian languages and pass written examinations in two research languages other than English and the student's native language (that is, one written examination in addition to the examination completed at the MA level). Where appropriate, students are strongly encouraged to acquire competence in a modern research language in order to pursue research in the field: for example, in India, Nepal, Sri Lanka, Tibet, China, or Japan.

Students are also required to pass four written field examinations selected in accordance with the student's interests. Generally, at least two of these examinations are

directly related to some aspect of Buddhist studies and a third falls within the general purview of South Asian languages and literature. A fourth field examination can have as its subject an adjacent field or discipline. Once these field examinations have been satisfactorily completed, the student is eligible to take a two-hour comprehensive oral examination, administered by the student's Supervisory Committee. When that has been passed, students are accorded candidate's status and are ready to submit a dissertation proposal. The PhD is conferred once the completed dissertation has been defended successfully before the student's Supervisory Committee.

Doctor of Philosophy, Chinese

Admission Requirements

After successful completion of 45 credits (a minimum of three quarters) of graduate study in the department, a student wishing to enter the PhD program with specialization in Chinese language and literature submits a formal petition to the department stating post-MA academic plans and goals.

Ideally, the prospective candidate has completed an MA degree in the field of Chinese language and literature prior to entering the PhD program. If the student has an MA in another pertinent field, for example, in linguistics, comparative literature, philosophy, history, or Asian regional studies, it is not necessary to take an additional MA in Chinese language and literature. The student, however, is required to satisfy all course and examination requirements for the MA program in this department. Upon admission to the program, the student should be prepared to take courses in modern Chinese at the 500 level, and should have at least two years of Classical Chinese.

A student who intends to go directly from the BA to the PhD program must present an exceptionally strong background preparation in the disciplines of literary study or linguistics. The student is expected in the course of his or her work to satisfy all curriculum requirements for the MA, and must petition the department for special permission to bypass the MA.

Degree Requirements

90 credits, as follows:

1. *Course requirements:* Complete the course requirements for the MA in Chinese. Equivalent courses from other programs may be substituted subject to written approval by the regular instructor of the course in question. In addition, whichever quarters of the sequence CHIN 461, CHIN 462, CHIN 463 were not taken for the MA must be taken for the PhD. The student's post-MA coursework should be designed, in consultation with the adviser, to fill in gaps or strengthen weaknesses in the student's background, and to establish and develop four fields of special study that the student pursues in some depth in preparation for the general examination.
2. *Field requirements:* The student is expected to familiarize himself or herself with both the original texts and the secondary scholarship of the field, and to show some potential for carrying out original research in the area or field in question. Each student must pursue four such fields of special study, and is examined separately by an appropriate faculty member prior to the general oral examination. The field examinations must be written.

The four fields that a student elects to study must, in the aggregate, reflect both of the primary components of the department's graduate-level offerings, i.e., language (linguistics and philology) and literature. In at least one field, students are encouraged to incorporate to a significant extent some aspect of Chinese history and culture, exclusive of strictly literary or linguistic facets thereof. With permission of his or her adviser a student may offer one field from outside the department, for example, in general linguistics, literary criticism, a

non-Chinese literature, Chinese philosophy or religion, or a particular period of Chinese history. Such a field must be demonstrably related in a significant way to the student's overall course of study.

3. *Examinations:* The student is examined in each of the four fields separately by an appropriate faculty member. Prior to the general examination the student must demonstrate a reading knowledge of an additional Asian language and a pertinent European language. (The student may apply the foreign language reading examination required for the MA to this requirement.)

Doctor of Philosophy, Japanese

Admission Requirements

Aside from having to complete at least two quarters of graduate study in the department, the student petitioning for admission to pre-candidacy status in the PhD program either must hold the MA degree in Japanese language and literature or must have completed a minimum of 45 course credits and have satisfied the language requirement for the MA. The student should also be taking at least 500-level courses in modern Japanese and should have studied classical Japanese for a minimum of one year. Any insufficiencies in background (e.g., in the case of a student holding an MA in an area other than Japanese language and literature) should be made up before the student petitions for admission to pre-candidacy. The petition indicates that the student feels he or she is prepared to take a written examination on the student's general knowledge of the field and an additional oral diagnostic examination on his or her background and plans for future study. The petition should be submitted only after consultation with the academic adviser.

Degree Requirements

95 credits, as follows:

1. *Course requirements:* In addition to the minimum of 45 credits or its equivalent required for the master's program, the student must take at least 50 credits of coursework on the graduate level. The following courses and dissertation credits are required: JAPAN 501; JAPAN 505, JAPAN 506, JAPAN 507; JAPAN 531, JAPAN 532, JAPAN 533; JAPAN 571, JAPAN 572, JAPAN 573; JAPAN 590; ASIAN 800.
- Additional coursework in related fields may be required to meet the needs of each program. In order to acquire the widest possible background, students are encouraged to take related courses in history, linguistics, religion, and the social sciences. Familiarity with Chinese literature and allied fields as well as with comparative literature is strongly recommended. Each student develops an individualized program of studies in consultation with the academic adviser.
2. *Language examinations:* In addition to a second language (usually European) required for the MA, the student must demonstrate proficiency in a third language, usually Asian (Chinese is the usual choice for an Asian language, but the student should discuss other possibilities with the adviser). Proficiency must be demonstrated in the third language before the student may proceed to the general examination.

3. *Field examination:* Upon becoming a precandidate, the student has completed a generalized study of the area of Japanese language and literature, and should choose four specialized fields to study for the next one or two years under the guidance of the Supervisory Committee. The four fields must be sufficiently diverse, and at least one of them must be in language. As the supervisor for each field becomes satisfied that the student has attained sufficient mastery, the supervisor and the student decide on a time for the student to take a written examination.

4. *General examination:* When the four field examinations and the third language requirement have been satisfied, the academic adviser arranges with the Graduate School for the student to take the oral general examination for admission to candidacy for the doctoral degree.

5. *Dissertation and final examination:* After achieving candidate status, the student engages in research and the writing of the dissertation. When the reading committee has accepted the dissertation, the Dean of the Graduate School authorizes the Supervisory Committee to hold the final examination in defense of the dissertation, which completes the degree requirements for this program.

Doctor of Philosophy, Korean

Admission Requirements

A student petitions for admission to the PhD program with specialization in Korean literature after successful completion of at least two quarters of graduate study in the Department of Asian Languages and Literature. The student should either have the MA degree in Korean literature or the equivalent, or have satisfactorily completed all coursework required for the MA in Korean literature. The student should be prepared to take 500-level courses in Korean. The petition is submitted after consultation with the student's academic adviser.

Degree Requirements

90 credits, as follows:

1. *Coursework:*
 - a. *Korean language and literature:* In addition to the course requirement and examination for the MA in Korean literature, students in the PhD program must complete the following courses: KOREAN 531, KOREAN 532, ASIAN 800.
 - b. *Chinese language and literature:* Students interested in pre-modern Korean literature are required to take two years of Chinese, at least one year of classical Chinese, and a survey course on pre-modern Chinese literature. Students interested in modern Korean literature are required to take either: (1) three years of Chinese and a survey course in Chinese literature, or (2) three years of Japanese and a survey course in modern Japanese literature.
 - c. *Linguistics:* Students are encouraged to take linguistics courses that help them prepare for the field examination in a language-related area. Courses to choose from include the following: ASIAN 401, JAPAN 440.
 - d. *Interdepartmental:* Students are encouraged to take Korea-related courses in other disciplines such as history and anthropology. Familiarity with other literatures and cultures, and coursework in other departments such as Comparative Literature or other language and literature programs is also recommended.
2. *Field examinations:* With the guidance of an adviser, students develop a plan of study that concentrates on four areas of study, or "fields." A student may offer no more than one Korea-related field from outside the department; three of the fields must be prepared with department faculty. One of the fields may be in another Asian language or literature, depending on the student's interests. At least one of the fields must be related to language.
3. *Language examinations:* Prior to the general examination, students must demonstrate proficiency of an additional Asian language and a European language. (The student may apply the foreign language required for the MA to this requirement.)
4. *General examination, dissertation, final examination:* When the four field examinations have been successfully passed, and the second language requirement

met, the academic adviser arranges with the Graduate School for the student to take the oral general examination for admission to candidacy for the doctoral degree. This is usually a two-hour long oral examination, and covers principally, but not exclusively, the four fields that the student has prepared. Passing this examination, the student then writes a dissertation, under the direction of a dissertation adviser. An oral final examination in defense of the finished dissertation completes the degree requirements for this program.

Doctor of Philosophy, South Asian Languages and Literature

Admission Requirements

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

Degree Requirements

90 credits, as follows:

For the PhD, students are required to demonstrate competence in their major South Asian language and pass written examinations in two research languages other than English and the student's native language (that is, one written examination in addition to the examination completed at the MA level). One of these two research languages must be a European language.

Students are also required to pass four written field examinations, at least three of which must fall within the general purview of South Asian languages and literature. A fourth can have as its subject an adjacent field or discipline, if the candidate so chooses—an aspect of South Asian history or art history, for example. Once these field examinations have been satisfactorily completed, the student is eligible to take a two hour comprehensive oral examination, administered by his or her supervisory committee. When that has been passed, students are accorded candidate's status and are ready to submit a dissertation proposal. The PhD is conferred once the completed dissertation has been defended before the student's supervisory committee.

Financial Aid

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

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at [www.uw.edu/students/crsat/](http://uw.edu/students/crsat/)

Asian Languages and Literature

ASIAN 200 Introduction to Asian Languages and Literature (5) VLPA Shapiro Introduces approaches to the study of Asian languages and literature. Topics include theoretical, applied, historical, and comparative linguistics; literary and cultural study; philosophy; languages, and writing

systems of Asia; and indigenous Asian approaches to the study of language and literature. Offered: Sp.

ASIAN 201 Literature and Culture of China: Ancient and Classical (5) VLPA/I&S Introduction to ancient and classical Chinese literature in its cultural context. Texts in English translation.

ASIAN 202 Literature and Culture of Japan: Traditional Japan (5) VLPA/I&S Introduction to traditional Japanese literature in its cultural context. Texts in English translation.

ASIAN 203 Literature and Culture of Ancient and Classical India (5) VLPA/I&S Introduction to ancient and classical Indian literature in its cultural context. Texts in English translation.

ASIAN 204 Literature and Culture of China from Tradition to Modernity (5) VLPA/I&S Introduction to modern Chinese literature in its cultural context. Texts in English translation.

ASIAN 205 Literature and Culture of Japan from Tradition to Modernity (5) VLPA/I&S Introduction to Japanese literature of the nineteenth and twentieth centuries in its cultural context. May also include some Korean literature. Texts in English translation.

ASIAN 206 Literature and Culture of South Asia from Tradition to Modernity (5) VLPA/I&S Pauwels, Shapiro Introduction to medieval and modern South Asian literature in its cultural context. Texts in English translation.

ASIAN 207 Special Topics in Literature and Culture of Asia (5, max. 10) VLPA/I&S Introduction to the literature of one or more Asian traditions considered in its cultural context. Content varies depending on the specialization and interest of instructor. Texts in English translation.

ASIAN 211 Languages and Cultures of China (5) VLPA/I&S Provides a general survey of the languages and language-families in China, emphasizing the rich linguistic diversity found there today. Languages compared with English, from linguistic and cultural perspectives, to demonstrate not only characteristics but also mutual dependence throughout their development.

ASIAN 263 Great Works of Asian Literature (5) VLPA Selected major works of Asian literature. Taught on a rotational basis with the literary traditions of China, Japan, India covered in successive years. Content varies depending on specialization and interest of instructor. Primary emphasis on literary values of works and their tradition; attention also given to historical and social contexts and the thought and value systems of the culture involved.

ASIAN 401 Introduction to Asian Linguistics (5) VLPA Handel, K. Ohta, Shapiro Linguistic analysis, with emphasis on languages of East, Southeast, South, and Central Asia. Includes phonetics, phonemics, morphology, syntax, historical reconstruction, linguistic typology, comparative grammar. Survey of major languages and language families of Asia. Diverse Asian languages as subjects of linguistic analysis. Prior knowledge of linguistics not required. Recommended: two years of any Asian language.

ASIAN 404 Writing Systems (3) VLPA Boltz, Salomon Origin, nature, and development of writing systems. Alphabets, syllabaries, and logographic systems; relation of writing systems to spoken languages; decipherment of previously undeciphered scripts.

ASIAN 405 Advanced Problems in Asian Linguistics (3) VLPA Handel, K. Ohta, Shapiro Advanced problems in the analysis of the languages of East, Southeast, South, and Central Asia. Includes phonology, morphology, syntax, lexicography, historical reconstruction, linguistic typology, and comparative grammar. Prerequisite: ASIAN 401.

ASIAN 411 Buddhist Literature (5) VLPA/I&S Overview of major Buddhist literary traditions of India, China, and Tibet from antiquity to the end of the first millennium CE. Special focus on Indian Mahayana literature and the historical factors that accompanied its introduction and preservation in China and Tibet. Offered: W.

ASIAN 494 Ramayana in Comparative Perspective (5) VLPA Pauwels Examines and compares different versions (mainly South Asian) of the Ramayana, including the widely popular television version. Focuses on some famous and controversial passages, with special attention to gender issues. Incorporates background readings from the most recent research. Offered: jointly with JSIS A 461.

ASIAN 498 Special Topics (1-5, max. 15) VLPA Offered occasionally by permanent or visiting faculty members. Topics vary. Offered: AWSp.

ASIAN 503 Seminar in Asian Linguistics (1-5, max. 15) Handel, A. Ohta, K. Ohta Topics vary. Prerequisite: permission of instructor. Offered: AWSp.

ASIAN 510 Teaching Asian Languages (5) A. OHTA Methodology for teaching modern foreign languages, focusing on languages taught by teaching assistants in the department. Eclectic and practical overview for current and potential TAs. Consideration of broader issues involved in language program management. Strong hands-on component, including observation, teaching, materials development, and portfolio development for job seekers. Prerequisite: proficiency in an Asian language Credit/no-credit only. Offered: A.

ASIAN 580 Seminar in Hinduism Studies (5) Pauwels Introduction to the academic study of Hinduism for graduate students. Examines major problems currently addressed in the academic study of Hinduism and the methods used. Provides a historical perspective on past scholarship. Offered: jointly with JSIS C 580.

ASIAN 585 Seminar in Buddhism (5) Cox Systems and history of Buddhist thought. Original and secondary sources are used. Combines the methods of specialists in south, central, and east Asian Buddhism with those of historians of religion and philosophy. Prerequisite: permission of instructor. Offered: AWSp.

ASIAN 600 Independent Study or Research (*-) Offered: AWSp.

ASIAN 700 Master's Thesis (*-) Offered: AWSp.

ASIAN 800 Doctoral Dissertation (*-) Offered: AWSp.

Bengali

BENG 311 Elementary Bengali (5) Offers a balance of all four skills: speaking, reading, listening, and writing. Consists of lectures on grammar, drill sections, oral and written exercises, aural comprehension exercises, and readings in elementary-level texts. First in a sequence of three. Offered: A.

BENG 312 Elementary Bengali (5) Offers a balance of all four skills: speaking, reading, listening, and writing. Consists of lectures on grammar, drill sections, oral and written exercises, aural comprehension exercises, and readings in elementary-level texts. Second in a sequence of three. Prerequisite: BENG 311. Offered: W.

BENG 313 Elementary Bengali (5) Offers a balance of all four skills: speaking, reading, listening, and writing. Consists of lectures on grammar, drill sections, oral and written exercises, aural comprehension exercises, and readings in elementary-level texts. Third in a sequence of three. Prerequisite: BENG 312. Offered: Sp.

BENG 321 Intermediate Bengali (5) VLPA Develops proficiency in reading, writing, listening, and speaking standard colloquial Bengali at an intermediate level. Readings in fiction and non-fiction literature, vocabulary and grammar exercises, writing of essays and creative pieces, aural comprehension exercises, and topic-based conversation and role-play. First in a sequence of three. Prerequisite: BENG 313. Offered: A.

BENG 322 Intermediate Bengali (5) VLPA Develops proficiency in reading, writing, listening, and speaking standard colloquial Bengali at an intermediate level. Readings in fiction and non-fiction literature, vocabulary and grammar exercises, writing of essays and creative pieces, aural

comprehension exercises, and topic-based conversation and role-play. Second in a sequence of three. Prerequisite: BENG 321. Offered: W.

BENG 323 Intermediate Bengali (5) VLPA Develops proficiency in reading, writing, listening, and speaking standard colloquial Bengali at an intermediate level. Readings in fiction and non-fiction literature, vocabulary and grammar exercises, writing of essays and creative pieces, aural comprehension exercises, and topic-based conversation and role-play. Third in a sequence of three. Prerequisite: BENG 322. Offered: Sp.

BENG 401 Advanced Bengali (5) VLPA Further development of proficiency in reading, writing, listening, and speaking standard colloquial Bengali at an advanced level with the aim of preparing students to do research. Readings in fiction and non-fiction literature, vocabulary and grammar exercises, writing of essays and creative pieces, aural comprehension exercises, and topic-based conversation. First in a sequence of three. Prerequisite: BENG 323. Offered: A.

BENG 402 Advanced Bengali (5) VLPA Further development of proficiency in reading, writing, listening, and speaking standard colloquial Bengali at an advanced level with the aim of preparing students to do research. Readings in fiction and non-fiction literature, vocabulary and grammar exercises, writing of essays and creative pieces, aural comprehension exercises, and topic-based conversation. Second in a sequence of three. Prerequisite: BENG 401. Offered: W.

BENG 403 Advanced Bengali (5) VLPA Further development of proficiency in reading, writing, listening, and speaking standard colloquial Bengali at an advanced level with the aim of preparing students to do research. Readings in fiction and non-fiction literature, vocabulary and grammar exercises, writing of essays and creative pieces, aural comprehension exercises, and topic-based conversation. Third in a sequence of three. Prerequisite: BENG 402. Offered: Sp.

BENG 499 Independent Study (3-5, max. 15) Offered: AWSpS.

Chinese

CHIN 101 First-Year Chinese for Non-Heritage Learners (5) Introduction to the standard language. Emphasis on learning correct pronunciation and basic structure. Drill in oral use of the language. Open only to students who do not have any previous training in Chinese. Cannot be taken for credit in combination with CHIN 134. First in a sequence of three. Offered: A.

CHIN 102 First-Year Chinese for Non-Heritage Learners (5) Introduction to the standard language. Emphasis on learning correct pronunciation and basic structure. Drill in oral use of the language. Open only to students who do not have any previous training in Chinese. Cannot be taken for credit in combination with CHIN 134. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 101. Offered: W.

CHIN 103 First-Year Chinese for Non-Heritage Learners (5) Introduction to the standard language. Emphasis on learning correct pronunciation and basic structure. Drill in oral use of the language. Open only to students who do not have any previous training in Chinese. Cannot be taken for credit in combination with CHIN 134. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 102. Offered: Sp.

CHIN 111 First-Year Chinese for Heritage Learners (5) Intended for students who have some formal or home training in listening to and speaking Mandarin. Focuses on reading comprehension and writing characters in context. First in a sequence of three. Offered: A.

CHIN 112 First-Year Chinese for Heritage Learners (5) Intended for students who have some formal or home training in listening to and speaking Mandarin. Focuses on reading comprehension and writing characters in context.

Second in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 111. Offered: W.

CHIN 113 First-Year Chinese for Heritage Learners (5) VLPA Intended for students who have some formal or home training in listening to and speaking Mandarin. Focuses on reading comprehension and writing characters in context. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 112. Offered: Sp.

CHIN 134 First-Year Intensive Chinese for Non-Heritage Learners (15) Introduction to the standard language. Emphasis on learning correct pronunciation and basic structure. Drill in oral use of the language. Open only to students who do not have any previous training in Chinese. Cannot be taken for credit in combination with CHIN 101, CHIN 102, or CHIN 103. Offered: S.

CHIN 138 First-Year Intensive Chinese for Heritage Learners (15) Intended for students who have some formal or home training in listening to and speaking Chinese. Focuses on reading, comprehension, and writing characters in context. Cannot be taken for credit in combination with CHIN 111, CHIN 112, or CHIN 113. Offered: S.

CHIN 145 Foreign Study: First-Year Chinese (1-15, max. 20) Modern 100-level Chinese language studied abroad. Evaluation by department/faculty required.

CHIN 201 Second-Year Chinese for Non-Heritage Learners (5) VLPA Advanced grammar and vocabulary expansion stressed. Aural and oral practice and structural drills continued. Cannot be taken for credit in combination with CHIN 234. First in a sequence of three. Prerequisite: minimum grade of 2.0 in either CHIN 103 or CHIN 134. Offered: A.

CHIN 202 Second-Year Chinese for Non-Heritage Learners (5) VLPA Advanced grammar and vocabulary expansion stressed. Oral practice and structural drills continued. Cannot be taken for credit in combination with CHIN 234. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 201. Offered: W.

CHIN 203 Second-Year Chinese for Non-Heritage Learners (5) VLPA Advanced grammar and vocabulary expansion stressed. Oral practice and structural drills continued. Cannot be taken for credit in combination with CHIN 234. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 202. Offered: Sp.

CHIN 211 Second-Year Chinese for Heritage Learners (5) VLPA Stresses advanced grammar and vocabulary expansion. Emphasizes writing. Continues aural and oral practice. Cannot be taken for credit in combination with CHIN 234. First in a sequence of three. Prerequisite: minimum grade of 2.0 in either CHIN 113 or CHIN 138. Offered: A.

CHIN 212 Second-Year Chinese for Heritage Learners (5) VLPA Stresses advanced grammar and vocabulary expansion. Cannot be taken for credit in combination with CHIN 234. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 211. Offered: W.

CHIN 213 Second-Year Chinese for Heritage Learners (5) VLPA Stresses advanced grammar and vocabulary expansion. Emphasizes reading and writing. Continues aural and oral practice. Cannot be taken for credit in combination with CHIN 234. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 212. Offered: Sp.

CHIN 234 Second-Year Intensive Chinese for Non-Heritage Learners (15) VLPA Continuation of first-year non-heritage Chinese. Stresses advanced grammar and vocabulary expansion. Continues aural and oral practice and structural drills. Cannot be taken for credit in combination with CHIN 201, CHIN 202, or CHIN 203. Prerequisite: minimum grade of 2.0 in either CHIN 103 or CHIN 134. Offered: S.

CHIN 245 Foreign Study: Second-Year Chinese (1-15, max. 20) VLPA Modern 200-level Chinese language studied abroad in approved programs. Evaluation by department/faculty required.

CHIN 301 Third-Year Chinese for Non-Heritage Learners (5) VLPA Focuses on oral and aural proficiency. Covers

general topics, reading ability of simple unedited text, as well as writing skill in short essay form. First in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 203. Offered: A.

CHIN 302 Third-Year Chinese for Non-Heritage Learners (5) VLPA Focuses on oral and aural proficiency. Covers general topics, reading ability of simple unedited text, as well as writing skill in short essay form. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 301. Offered: W.

CHIN 303 Third-Year Chinese for Non-Heritage Learners (5) VLPA Focuses on oral and aural proficiency. Covers general topics, reading ability of simple unedited text, as well as writing skill in short essay form. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 302. Offered: Sp.

CHIN 342 The Chinese Language (5) VLPA *Handel* Nature and structure of the Chinese language, covering structural characteristics, genetic and typological affiliation, standard Mandarin and Chinese dialects, Chinese writing system, history of the Chinese language, and cultural aspects. Prerequisite: either CHIN 103, CHIN 113, CHIN 134, or CHIN 138; recommended: either CHIN 201, CHIN 211, or CHIN 234.

CHIN 345 Foreign Study: Third-Year Chinese (1-15, max. 20) VLPA Modern 300-level Chinese language studied abroad in approved programs. Evaluation by department/faculty required.

CHIN 373 Chinese Poetry (5) VLPA Introduction to Chinese poetry. A study of its origins, forms, major themes, and relevant conventions. All readings in English. No knowledge of Chinese required.

CHIN 374 Chinese Prose (5) VLPA *Knechtges* Survey of great works of Chinese prose, including philosophical writings, historical works, short narratives, essays, and rhyme-prose. All readings in English. No knowledge of Chinese required.

CHIN 380 Pre-Modern Chinese Narrative (5) VLPA Pre-modern Chinese fiction in English translation. Historical and cultural contexts of narrative traditions. Emphasis on the Ming and Qing periods; works and topics vary from year to year.

CHIN 381 Literature in Modern China (5) VLPA Twentieth-century Chinese literature in English translation. Introduces the historical and cultural context of modern Chinese writing, as well as various critical approaches to its study.

CHIN 385 Popular Culture in Twentieth-Century China (5) VLPA/I&S Introduction to Chinese popular culture from the turn-of-the-century to the present. Topics include cinema, popular music, and popular fiction; emphasis varies from year to year.

CHIN 395 Foreign Study: Intermediate Chinese Literature or Linguistics (1-15, max. 15) VLPA Intermediate Chinese literature or linguistics studied abroad in approved programs. Evaluation by department/faculty required.

CHIN 411 Fourth-Year Chinese (5) VLPA *Yue-Hashimoto* Reading of unedited texts including newspaper articles, literary selections, and academic essays. Oral discussion, listening comprehension, and composition. First in a sequence of three. Prerequisite: minimum grade of 2.0 in either CHIN 213 or CHIN 303. Offered: A.

CHIN 412 Fourth-Year Chinese (5) VLPA *Yue-Hashimoto* Reading of unedited texts including newspaper articles, literary selections, and academic essays. Oral discussion, listening comprehension, and composition. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 411. Offered: W.

CHIN 413 Fourth-Year Chinese (5) VLPA *Yue-Hashimoto* Reading of unedited texts including newspaper articles, literary selections, and academic essays. Oral discussion, listening comprehension, and composition. Third in a se-

quence of three. Prerequisite: minimum grade of 2.0 in CHIN 412. Offered: Sp.

CHIN 442 The Chinese Language (5) VLPA Covers the same topics as CHIN 342 (students attend CHIN 342 lectures), with additional readings and assignments. Provides necessary background for 500-level courses in Chinese linguistics and textual study. Intended for graduate students or advanced undergraduates. Required: Reading ability in Chinese.

CHIN 443 Structure of Chinese (5) VLPA *Yue-Hashimoto* Outline of the major grammatical structures of Chinese. Focus on learning and teaching problems. Prerequisite: CHIN 413.

CHIN 445 Foreign Study: Fourth-Year Chinese (1-15, max. 20) VLPA Modern 400-level Chinese language studied abroad in approved programs. Evaluation by department/faculty required.

CHIN 451 First-Year Classical Chinese (5) VLPA *Boltz* Exercises and selected readings in pre-Han texts. Focus on grammar, systematic sentence analysis, and distinctive functions of grammatical particles. First in a sequence of three. Prerequisite: either CHIN 203 or CHIN 213. Offered: A.

CHIN 452 First-Year Classical Chinese (5) VLPA *Boltz* Exercises and selected readings in pre-Han texts. Focus on grammar, systematic sentence analysis, and distinctive functions of grammatical particles. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 451. Offered: W.

CHIN 453 First-Year Classical Chinese (5) VLPA *Boltz* Exercises and selected readings in pre-Han texts. Focus on grammar, systematic sentence analysis, and distinctive functions of grammatical particles. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 452. Offered: Sp.

CHIN 461 History of Chinese Literature (5) VLPA *Knechtges* Chinese literature from earliest times to the end of the Six Dynasties. Offered: A.

CHIN 462 History of Chinese Literature (5) VLPA *Knechtges* Chinese literature from the Tang to the end of the Song. Prerequisite: CHIN 461. Offered: W.

CHIN 463 History of Chinese Literature (5) VLPA *Knechtges* Chinese literature from the Yuan to recent times. Offered: Sp.

CHIN 470 Advanced Readings in Modern Chinese (5) VLPA Reading and translation of scholarly articles and selections in the humanities and social sciences. Prerequisite: either CHIN 213 or CHIN 303.

CHIN 482 Advanced Readings in Modern Chinese (5) VLPA Modern texts in the original, mainly works published since the beginning of the twentieth century. Focus on literature, primarily short story and essay.

CHIN 495 Foreign Study: Advanced Chinese Literature or Linguistics (1-5, max. 15) VLPA Advanced Chinese literature or linguistics studied abroad in approved programs. Evaluation by department/faculty required.

CHIN 496 Special Studies in Chinese (5, max. 15) VLPA Topics vary.

CHIN 499 Undergraduate Research (3-5, max. 15) For Chinese language and literature majors. Offered: AWSpS.

CHIN 531 Studies in Chinese Phonology (5) *Handel* Sources and methods in the study of Chinese phonology; modern standard Chinese. Prerequisite: CHIN 442 or permission of instructor.

CHIN 532 Studies in Chinese Phonology (5) *Handel* Sources and methods in the study of Chinese phonology; medieval period. Prerequisite: CHIN 442 or permission of instructor.

CHIN 533 Studies in Chinese Phonology (5) *Handel* Sources and methods in the study of Chinese phonology;

advanced topics in Chinese historical phonology. Prerequisite: CHIN 442 or permission of instructor.

CHIN 540 Seminar on Chinese Linguistics (5, max. 15) *Handel, Yue-Hashimoto* Advanced topics in Chinese linguistics. Subject emphasis varies from year to year.

CHIN 541 Seminar in Chinese Grammar (3, max. 9) *Boltz, Yue-Hashimoto* Problems of theory and analysis of Chinese grammar, both synchronic and diachronic, modern and classical. Prerequisite: CHIN 443.

CHIN 542 Chinese Historical Phonology (5) *Handel* Introduction to Chinese historical phonology; emphasis on the Middle Chinese period. Prerequisite: CHIN 442 or permission of instructor.

CHIN 544 Chinese Dialectology (5, max. 15) *Yue-Hashimoto* Methodology and theory of studying Chinese dialects. Among areas covered are fieldwork methods, dialect classification, and dialectal grammar. Prerequisite: CHIN 542, ASIAN 401, and permission of instructor.

CHIN 551 Second-Year Classical Chinese (5) *Knechtges* Problems of grammar, rhetoric, and textual criticism. Early literary texts. Prerequisite: either CHIN 453 or permission of instructor. Offered: A.

CHIN 552 Second-Year Classical Chinese (5) *Knechtges* Problems of grammar, rhetoric, and textual criticism. Later literary texts. Prerequisite: either CHIN 453 or permission of instructor. Offered: W.

CHIN 553 Second-Year Classical Chinese (5) *Boltz* Continuation of CHIN 551, CHIN 552. Intermediate level readings in Han and pre-Han historical and philosophical texts. Prerequisite: CHIN 551 and CHIN 552. Offered: Sp.

CHIN 554 Readings in Chinese Prose (5) *Knechtges* Selected readings in the fu of the Han, Wei, Chin, and North-South Dynasties period.

CHIN 555 Readings in Chinese Prose (5) *Knechtges* Selected readings in parallel prose (*pianti wen*).

CHIN 556 Readings in Chinese Prose (5) *Knechtges* Selected readings in *guwen* prose of the Tang and Sung periods.

CHIN 557 Introduction to Chinese Philology and Textual Criticism (5) *Boltz* Principles and methods of textual criticism and philological analysis of ancient Chinese texts. Study of both manuscripts and transmitted texts. Emphasis on Han and pre-Han documents; specific texts vary. Prerequisite: two years of classical Chinese and ASIAN 401.

CHIN 558 Seminar in Chinese Lexicology and Grammatonymy (3) *Boltz* Study of the Chinese script, lexicographical history, and lexicological and etymological analysis. Prerequisite: two years of classical Chinese, ASIAN 401.

CHIN 559 Methods and Materials (5) *Knechtges* Introduction to the basic reference works and methods of research in Chinese language and literature. Includes a history of Sinology, survey of basic bibliographies, dictionaries, atlases, catalogs, journals, literary collections, concordances, and other sources. Prerequisite: CHIN 551, CHIN 552.

CHIN 560 Proseminar in Chinese (3-5, max. 15) *Boltz, Knechtges* Methods and materials in the study of Chinese texts. Problems in textual analysis and Chinese literary history. Prerequisite: CHIN 553 and one of CHIN 554, CHIN 555, and CHIN 556.

CHIN 561 Studies in Chinese Literature (5) *Knechtges* Literature before Qing. Prerequisite: permission of instructor.

CHIN 562 Studies in Chinese Literature (5) *Knechtges* Poetry of the Tang and Sung periods. Prerequisite: permission of instructor.

CHIN 563 Studies in Chinese Literature (5) *Knechtges* Literary theory and criticism. Prerequisite: permission of instructor.

CHIN 573 Seminar in Chinese Poetry (5, max. 15) Directed study of selected works of poetry. Subject emphasis varies each year. Prerequisite: permission of instructor.

CHIN 574 Seminar in Six Dynasties Literature (5, max. 15) *Knechtges* Directed study of selected works of Six Dynasties. Subject emphasis varies each year. Prerequisite: permission of instructor.

CHIN 575 Studies in Chinese Drama (5, max. 15) Readings and discussion of Chinese drama. Subject emphasis varies. Prerequisite: permission of instructor.

CHIN 577 Advanced Readings in Chinese Opera (4) Introduction to the dialogue and verses frequently used in Chinese opera. Comparisons between language spoken daily and languages used in Chinese opera. Prerequisite: CHIN 553 or permission of instructor.

CHIN 578 Advanced Readings in Classical Chinese (4) Study of texts from all periods. Prerequisite: CHIN 553 or permission of instructor.

CHIN 580 Readings in Vernacular Chinese Fiction (5, max. 15) Directed study of selected works of premodern vernacular Chinese narrative, with an emphasis on Ming and Qing fiction. Introduction to various critical approaches to the study of Chinese narrative.

CHIN 582 Topics in Chinese Literature and Cultural Studies (5, max. 15) Directed study of aspects of twentieth-century Chinese literary and popular cultures. Provides both historical coverage and a grounding in various theoretical and methodological problems. Topics include print culture, cinema, popular music, as well as aspects of material culture; emphasis varies. Prerequisite: permission of instructor.

CHIN 583 Seminar in Modern Chinese Literature (5) Directed study of selected works of modern Chinese literature. Primary focus on the novel, short story, and essay.

CHIN 590 Readings in the Thirteen Classics (5) *Boltz* Selected readings from the Thirteen Classics, and from their associated exegetic and hermeneutic traditions. Readings and emphases vary from year to year. Prerequisite: two years of Classical Chinese.

CHIN 591 Studies in the History of Chinese Thought (5) *Knechtges* Directed readings in selected traditional philosophical texts. Han through Tang. Prerequisite: permission of instructor.

CHIN 592 Studies in the History of Chinese Thought (5) *Knechtges* Directed readings in selected traditional philosophical texts. Sung and Yuan. Prerequisite: permission of instructor.

CHIN 593 Studies in the History of Chinese Thought (5) *Knechtges* Directed readings in selected traditional philosophical texts. Ming and Qing. Prerequisite: permission of instructor.

Hindi

HINDI 311 Elementary Hindi (5) Modern literary Hindi. Reading, writing, and conversation. Introduction to Devanagari script. First in a sequence of three. Offered: A.

HINDI 312 Elementary Hindi (5) Modern literary Hindi. Reading, writing, and conversation. Introduction to Devanagari script. Second in a sequence of three. Prerequisite: HINDI 311. Offered: W.

HINDI 313 Elementary Hindi (5) Modern literary Hindi. Reading, writing, and conversation. Introduction to Devanagari script. Third in a sequence of three. Prerequisite: HINDI 312. Offered: Sp.

HINDI 321 Intermediate Hindi (5) VLPA Systematic expansion of vocabulary and grammar. Intermediate-level prose and poetry readings. Oral drills. First in a sequence of three. Prerequisite: HINDI 313. Offered: A.

HINDI 322 Intermediate Hindi (5) VLPA Systematic expansion of vocabulary and grammar. Intermediate-level prose and poetry readings. Oral drills. Second in a sequence of three. Prerequisite: HINDI 321. Offered: W.

HINDI 323 Intermediate Hindi (5) VLPA Systematic expansion of vocabulary and grammar. Intermediate-level prose

and poetry readings. Oral drills. Third in a sequence of three. Prerequisite: HINDI 322. Offered: Sp.

HINDI 401 Advanced Hindi (5) VLPA Rapid reading of contemporary Hindi prose, poetry, and drama. Advanced conversation and composition. First in a sequence of three. Offered: A.

HINDI 402 Advanced Hindi (5) VLPA Rapid reading of contemporary Hindi prose, poetry, and drama. Advanced conversation and composition. Second in a sequence of three. Offered: W.

HINDI 403 Advanced Hindi (5) VLPA Rapid reading of contemporary Hindi prose, poetry, and drama. Advanced conversation and composition. Third in a sequence of three. Offered: Sp.

HINDI 404 Derivational Morphology of Hindi/Urdu (3) VLPA Shapiro A systematic introduction to the derivational morphology of Hindi/Urdu. Sanskrit, Persian, Arabic, and English elements in Hindi/Urdu. Treatment of derivational prefixes and suffixes, stem alternations, and methods of compound formation. Prerequisite: HINDI 323.

HINDI 421 Survey of Modern Hindi Literature (3) VLPA Pauwels, Shapiro Survey of Hindi literature from the late nineteenth century to the present. Readings from representative short stories. Prerequisite: HINDI 403.

HINDI 422 Survey of Modern Hindi Literature (3) VLPA Pauwels, Shapiro Survey of Hindi literature from the late nineteenth century to the present. Readings from representative poems. Prerequisite: HINDI 403.

HINDI 423 Survey of Modern Hindi Literature (3) VLPA Pauwels, Shapiro Survey of Hindi literature from the late nineteenth century to the present. Readings from representative novels. Prerequisite: HINDI 403.

HINDI 431 Advanced Conversational Hindi (3, max. 9) VLPA Conversational practice in contemporary Hindi. Prerequisite: HINDI 323.

HINDI 451 Advanced Hindi Readings (3, max. 9) VLPA Readings in modern standard Hindi prose texts drawn from diverse disciplines. Prerequisite: HINDI 403.

HINDI 499 Undergraduate Research (3-5, max. 15) Primarily for Hindi language and literature majors. Offered: AWSpS.

HINDI 501 Studies in Medieval Braj Literature (3, max. 9) Pauwels Introduction to the Braj dialect of Hindi and its literature. Prose readings and selected poetry by Surdas, Raskhan, Bihari, and others. Prerequisite: HINDI 403 or equivalent.

HINDI 502 Studies in Medieval Avadhi Literature (3, max. 9) Pauwels Introduction to the Avadhi dialect of Hindi and its literature. Readings from Ramcaritmanas of Tulsidas and Padmavat of Muhammad Malik Jayasi. Prerequisite: HINDI 403 or equivalent.

HINDI 503 Studies in Medieval Sant Literature (3, max. 9) Shapiro Introduction to the language and literature of Sant poets. Readings include Guru Nanak's Japuji and excerpts from Kabir's Granthavali. Prerequisite: HINDI 403 or equivalent.

HINDI 504 Studies in Medieval Rajasthani Literature (3) Pauwels Introduction to the literary language of Rajasthan. Reading of extracts from representative selections from Rajasthani literature. Prerequisite: HINDI 403 or equivalent.

HINDI 510 Structure of Hindi (3) Shapiro Grammatical analysis of Hindi phonology, syntax, and semantics. Readings from both Western and native grammarians. Prerequisite: HINDI 403 or permission of instructor; recommended: course in linguistics.

Indian

INDN 401 Pali (3) VLPA Cox, Salomon Introduction to Pali language and literature. Prerequisite: SNKRT 303.

INDN 402 Pali (3) VLPA Cox, Salomon Introduction to Pali language and literature.

INDN 410 Prakrit (3, max. 6) VLPA Salomon Introduction to the various Prakrit or Middle Indo-Aryan dialects (Gandhari, Magadhi, Maharashtri, Sauraseni) from literary, canonical, and inscriptional sources. Prerequisite: SNKRT 303.

INDN 490 Senior Seminar (5) Seminar study of special topics in the languages and literatures of South Asia.

INDN 499 Undergraduate Research (3-5, max. 15) Primarily for South Asian language and literature majors. Offered: AWSpS.

INDN 530 Readings in Pali Literature (3, max. 18) Cox, Salomon Reading and interpretation of intermediate and advanced texts in Pali. Prerequisite: INDN 402 or equivalent.

INDN 590 Special Topics in Indology (1-5, max. 27) Studies in selected research topics in South Asian languages and literatures. Prerequisite: graduate standing and permission of instructor.

Indonesian

INDO 111 Elementary Indonesian (5) Introduction to modern standard Indonesian. Emphasis on grammar and conversational drills. Practice with basic phonological, morphological, and syntactic structures. First in a sequence of three. Offered: A.

INDO 112 Elementary Indonesian (5) Introduction to modern standard Indonesian. Emphasis on grammar and conversational drills. Practice with basic phonological, morphological, and syntactic structures. Second in a sequence of three. Prerequisite: INDO 111. Offered: W.

INDO 113 Elementary Indonesian (5) Introduction to modern standard Indonesian. Emphasis on grammar and conversational drills. Practice with basic phonological, morphological, and syntactic structures. Third in a sequence of three. Prerequisite: INDO 112. Offered: Sp.

INDO 211 Intermediate Indonesian (5) VLPA Review/expansion of fundamental grammatical patterns: morphological and syntactic structures, development of conversational skills, reading some literary and cultural materials, writing compositions. First in a sequence of three. Prerequisite: INDO 113. Offered: A.

INDO 212 Intermediate Indonesian (5) VLPA Review/expansion of fundamental grammatical patterns: morphological and syntactic structures, development of conversational skills, reading some literary and cultural materials, writing compositions. Second in a sequence of three. Prerequisite: INDO 211. Offered: W.

INDO 213 Intermediate Indonesian (5) VLPA Review/expansion of fundamental grammatical patterns: morphological and syntactic structures, development of conversational skills, reading some literary and cultural materials, writing compositions. Third in a sequence of three. Prerequisite: INDO 212. Offered: Sp.

INDO 311 Advanced Indonesian (5) VLPA Expanding vocabulary; preparing for research work using original sources; improving reading fluency in modern standard written Indonesian using novels, short stories, newspapers, and other authentic materials. Conversation practice centers on discussion of readings. Writing compositions. First in a sequence of three. Prerequisite: INDO 213. Offered: A.

INDO 312 Advanced Indonesian (5) VLPA Expanding vocabulary; preparing for research work using original sources; improving reading fluency in modern standard written Indonesian using novels, short stories, newspapers, and other authentic materials. Conversation practice centers on discussion of readings. Writing compositions. Second in a sequence of three. Prerequisite: INDO 311. Offered: W.

INDO 313 Advanced Indonesian (5) VLPA Expanding vocabulary; preparing for research work using original sources; improving reading fluency in modern standard written Indonesian using novels, short stories, newspapers, and other authentic materials. Conversation practice centers

on discussion of readings. Writing compositions. Third in a sequence of three. Prerequisite: INDO 312. Offered: Sp.

INDO 499 Undergraduate Research (3-5, max. 15) Primarily for Southeast Asian studies majors. Offered: AWSpS.

Japanese

JAPAN 111 First-Year Japanese (5) Elementary speaking, listening, reading, and writing skills in modern Japanese. First in a sequence of three. Prerequisite: may not be repeated if the student has earned a minimum grade of 0.7; recommended: score of 0-5 on JP 100A placement test if Japanese is language of admission. Offered: A.

JAPAN 112 First-Year Japanese (5) Elementary speaking, listening, reading, and writing skills in modern Japanese. Second in a sequence of three. Prerequisite: minimum grade of 0.7 in JAPAN 111; may not be repeated if the student has earned a minimum grade of 0.7. Offered: W.

JAPAN 113 First-Year Japanese (5) Elementary speaking, listening, reading, and writing skills in modern Japanese. Third in a sequence of three. Prerequisite: minimum grade of .7 in JAPAN 112; may not be repeated if the student has earned a minimum grade of 0.7. Offered: Sp.

JAPAN 134 First-Year Intensive Japanese (15) Fundamentals of the modern Japanese language. Oral communication skills, basic grammar, and reading/writing of hiragana, katakana, and basic kanji. No initial knowledge of Japanese is presumed. Equivalent of JAPAN 111, JAPAN 112, JAPAN 113. Satisfies requirement for entry to JAPAN 211. Students with prior background must take placement test. Offered: S.

JAPAN 145 Foreign Study: Elementary Japanese (1-15, max. 20) For participants in study abroad programs in Japan who complete 100-level language courses in approved programs in Japan. Evaluation by department/faculty required.

JAPAN 211 Second-Year Japanese (5) VLPA Development of further skills in the spoken and written languages. Students must enroll in both a lecture and quiz section to receive credit. First in a sequence of three. Prerequisite: either JAPAN 113, JAPAN 134. Offered: A.

JAPAN 212 Second-Year Japanese (5) VLPA Development of further skills in the spoken and written languages. Students must enroll in both a lecture and quiz section to receive credit. Second in a sequence of three. Prerequisite: JAPAN 211. Offered: W.

JAPAN 213 Second-Year Japanese (5) VLPA Development of further skills in the spoken and written languages. Students must enroll in both a lecture and quiz section to receive credit. Third in a sequence of three. Prerequisite: JAPAN 212. Offered: Sp.

JAPAN 234 Second-Year Intensive Japanese (15) VLPA Equivalent of JAPAN 211, JAPAN 212, JAPAN 213. Satisfies requirements for entry to JAPAN 311, but recommended primarily for those going to Japan shortly upon completion. Prerequisite: either JAPAN 113 or JAPAN 134. Offered: S.

JAPAN 245 Foreign Study: Intermediate Japanese (1-15, max. 20) VLPA For participants in study abroad programs in Japan who complete 200-level language courses in approved programs in Japan. Evaluation by department/faculty required.

JAPAN 311 Third-Year Japanese (5) VLPA Intermediate-level skills in both spoken and written languages. Some introduction to unedited materials. First in a sequence of three. Prerequisite: a minimum grade of 2.0 in either JAPAN 213 or JAPAN 234. Offered: A.

JAPAN 312 Third-Year Japanese (5) VLPA Intermediate-level skills in both spoken and written languages. Some introduction to unedited materials. Second in a sequence of three. Prerequisite: minimum grade of 0.7 in JAPAN 311. Offered: W.

JAPAN 313 Third-Year Japanese (5) VLPA Intermediate-level skills in both spoken and written languages. Some

introduction to unedited materials. Third in a sequence of three. Prerequisite: minimum grade of 0.7 in JAPAN 312. Offered: SpS.

JAPAN 321 Japanese Literature I (5) VLPA *Atkins* Introduction to the literature and culture of Japan from the earliest times until the mid-nineteenth century. Close readings of tales, poems, plays, or essays with an emphasis on understanding cultural and historical contexts. In English. Offered: A.

JAPAN 322 Japanese Literature II (5) VLPA Introduction to the literature and culture of Japan from the mid-nineteenth century to the present. Close reading of novels, short stories, criticism, or other texts with an emphasis on understanding cultural and historical contexts. In English. Offered: W.

JAPAN 323 Japanese Literature III (5) VLPA Introduction to the major works of contemporary Japan in English translation, with readings that focus on the clash of cultures, generational struggles, and war, plus films that portray these themes and reflect modern Japanese life. In English. Offered: Sp.

JAPAN 325 Introduction to Japanese Film (5) VLPA *Bhowmik, Jesty, Mack* Introduction to Japanese film within their social and historical contexts.

JAPAN 334 Third-Year Intensive Japanese (15) VLPA Equivalent to JAPAN 311, JAPAN 312, and JAPAN 313. Prerequisite: minimum grade of 2.0 in either JAPAN 213 or JAPAN 234. Offered: S.

JAPAN 342 The Japanese Language (5) VLPA *K. Ohta* Survey of the nature and structure of the Japanese language, covering genetic and typological affiliations, writing systems, lexicon, and features of Japanese sentence structures. Prerequisite: either JAPAN 311, JAPAN 312, JAPAN 313, JAPAN 334, JAPAN 422, or JAPAN 423, which may be taken concurrently.

JAPAN 343 Japanese Language in Society (5) VLPA/I&S *A. Ohta* Survey of issues in Japanese language use. Areas covered include dialectal variation, language attitudes, gender differences, and pragmatics. Prerequisite: either JAPAN 311, JAPAN 312, JAPAN 313, or JAPAN 334, which may be taken concurrently.

JAPAN 345 Foreign Study: Advanced Japanese (1-15, max. 20) VLPA For participants in study abroad programs in Japan who complete 300-level language courses in approved programs in Japan. Evaluation by department/faculty required.

JAPAN 360 Topics in Japanese Culture (5, max. 15) VLPA Focuses on literature from a limited time period or particular aspects of pre-modern or modern Japanese culture.

JAPAN 361 Topics in Japanese Film (5) VLPA *Bhowmik, Jesty, Mack* Introduces Japanese film through topics organized according to a specific theme or focused on a relatively limited time period. Students learn contemporary approaches to film with an emphasis on understanding them within their social and historical contexts, often through a specific interpretive methodology.

JAPAN 395 Foreign Study: Japanese Linguistics or Literature (1-20, max. 20) VLPA For participants in study abroad programs in Japan who complete coursework in Japanese literature or linguistics.

JAPAN 405 History of the Japanese Language (5-) VLPA Introduction to the history of the Japanese language, including phonology, morphology, syntax, and the writing system. Prerequisite: JAPAN 313; recommended: JAPAN 440; JAPAN 471.

JAPAN 421 Fourth-Year Japanese I (5) VLPA/I&S Reading, class discussion, oral presentations, and composition on topics related to the Japanese language and present-day Japan. Conducted in Japanese. First in a sequence of three. Prerequisite: minimum grade of 2.5 in either JAPAN 313 or JAPAN 334; may not be repeated. Offered: A.

JAPAN 422 Fourth-Year Japanese II (5) VLPA/I&S Reading, class discussion, oral presentations, and composition on topics related to the Japanese language and present-day Japan. Second in a sequence of three. Conducted in Japanese. Prerequisite: minimum grade of 2.5 in either JAPAN 313 or JAPAN 334; may not be repeated. Offered: W.

JAPAN 423 Fourth-Year Japanese III (5) VLPA/I&S Reading, class discussion, oral presentations, and composition on topics related to the Japanese language and present-day Japan. Conducted in Japanese. Third in a sequence of three. Prerequisite: minimum grade of 2.5 in either JAPAN 313 or JAPAN 334; may not be repeated. Offered: Sp.

JAPAN 428 Advanced Oral Communication (3) VLPA *Iwata* Fourth-year Japanese oral communication skills. Instruction in Japanese. Activities include task-based role-play, speeches, discussions, conversations with native speakers, and study of societal aspects of speech. Prerequisite: minimum grade of 2.5 in either JAPAN 313 or JAPAN 334.

JAPAN 429 Advanced Writing in Japanese (3) VLPA *Nishikawa* Focuses on the development of advanced writing and language proficiency in Japanese. Instruction in Japanese. Prerequisite: minimum grade of 2.5 in either JAPAN 313 or JAPAN 334.

JAPAN 431 Readings in Modern Japanese Literature (5) VLPA Reading and discussion of selected modern literary texts in the original language, concentrating on the short story. Close attention to grammar and syntax. Prerequisite: minimum grade of 2.5 in either JAPAN 313 or JAPAN 334; may not be repeated.

JAPAN 432 Readings in Modern Japanese Literature (5) VLPA Reading and discussion of selected modern literary texts in the original language, concentrating on the short story. Close attention to grammar and syntax. Prerequisite: minimum grade of 2.5 in either JAPAN 313 or JAPAN 334.

JAPAN 433 Readings in Modern Japanese Literature (5) VLPA Reading and discussion of selected modern literary texts in the original language, concentrating on the short story. Close attention to grammar and syntax. Prerequisite: minimum grade of 2.5 in either JAPAN 313 or JAPAN 334.

JAPAN 434 Seminar in Premodern Japanese Literature (5) VLPA Seminar study of special topics in Premodern Japanese literature. Prerequisite: JAPAN 321.

JAPAN 435 Seminar in Modern Japanese Literature (5) VLPA Seminar study of special topics in modern Japanese literature. Prerequisite: JAPAN 322.

JAPAN 440 Introduction to Japanese Linguistics (5) VLPA *A. Ohta, K. Ohta* Overview of major topics in the linguistic description of Japanese: phonology, morphology, syntax, history, dialects, sociolinguistics, and the writing system. Elementary training in phonological, morphological, and syntactic analysis of Japanese. Prerequisite: either JAPAN 313 or JAPAN 334, which may be taken concurrently; JAPAN 342 or JAPAN 343; recommended: introductory linguistics course.

JAPAN 441 The Acquisition of Japanese as a Second or Foreign Language (5) Ohta Focuses on how Japanese is acquired or learned by non-native speakers in North America and Japan. Includes study of how Japanese is learned in both naturalistic settings such as study abroad and in foreign language classrooms. Prerequisite: either JAPAN 312, which may be taken concurrently, or JAPAN 334.

JAPAN 443 Topics in Japanese Sociolinguistics (5) VLPA/I&S *A. Ohta* Methodology and theory of sociolinguistic analysis. Reading of research literature and training in analysis of Japanese language data. Prerequisite: either JAPAN 313, which may be taken concurrently or JAPAN 334; either JAPAN 342, JAPAN 343, JAPAN 440 or JAPAN 441.

JAPAN 445 Foreign Study: Fourth-Year Japanese (1-15, max. 20) VLPA For participants in study abroad programs in Japan who complete 400-level language courses in approved programs in Japan. Evaluation by department/faculty required.

JAPAN 451 Readings in Japanese for China and Korea Specialists (5) VLPA

JAPAN 460 Readings in Japanese Culture (5, max. 15) VLPA Reading and discussion of texts in Japanese on various aspects of Japanese culture, such as film, anime, art, and other socio-cultural phenomena. Close attention to grammar and syntax. Prerequisite: minimum grade of 2.5 in either JAPAN 313 or JAPAN 334.

JAPAN 471 Introduction to Classical Japanese (5) VLPA *Atkins* Introduction to classical Japanese writing system, grammar, and vocabulary. Prerequisite: minimum grade of 2.5 in either JAPAN 313 or JAPAN 334; may not be repeated. Offered: A.

JAPAN 472 Readings in Classical Japanese Literature I (5) VLPA *Atkins* Continued study of the classical language with a transition to reading literary works and understanding their cultural contexts. Prerequisite: JAPAN 471. Offered: W.

JAPAN 473 Readings in Classical Japanese Literature (5) VLPA Readings in prose, poetry, and drama, antiquity to nineteenth century. Prerequisite: JAPAN 472. Offered: Sp.

JAPAN 481 Advanced Japanese through Content (5) VLPA *Ohta* Instruction in Japanese. Dictionary skills in Japanese and Kanji required. Prerequisite: JAPAN 313.

JAPAN 499 Undergraduate Research (3-5, max. 15) For Japanese language and literature majors. Offered: AWSpS.

JAPAN 505 Kambun (5) Atkins Introduction to Kambun, a method of reading texts written in Chinese as classical Japanese. Prerequisite: permission of instructor.

JAPAN 531 Advanced Readings in Modern Japanese Literature (5, max. 15) Rapid reading of modern literary and critical texts. Prerequisite: permission of instructor.

JAPAN 532 Advanced Readings in Modern Japanese Literature (5, max. 15) Rapid reading of modern literary and critical texts. Prerequisite: permission of instructor.

JAPAN 533 Advanced Readings in Modern Japanese Literature (5, max. 15) Rapid reading of modern literary and critical texts. Prerequisite: permission of instructor.

JAPAN 540 Seminar on Japanese Linguistics (3, max. 15) *A. Ohta* Problems in the history and structure of the Japanese language. Topics vary each quarter, according to the needs and interests of the students. Prerequisite: JAPAN 440 or permission of instructor.

JAPAN 561 No and Kyogen (5, max. 15) Close reading and analysis of No texts in Japanese, with some attention to Kyogen. Discussion of categorization, structure, imagery, style, mode, theme, authorship, source material, theory, and problems of translation. Prerequisite: permission of instructor.

JAPAN 571 Advanced Readings in Classical Japanese Literature (5) Continued readings in classical literary texts. Prerequisite: permission of instructor.

JAPAN 572 Advanced Readings in Classical Japanese Literature (5) Continued readings in classical literary texts. Prerequisite: permission of instructor.

JAPAN 573 Advanced Readings in Classical Japanese Literature (5) Continued readings in classical literary texts. Prerequisite: permission of instructor.

JAPAN 580 Development of Modern Japanese Fiction (5, max. 15) Reading and translation of major works of modern fiction in the original, with emphasis on the chronological development of modern prose style. Prerequisite: permission of instructor.

JAPAN 590 Seminar in Japanese Literature (5, max. 15) Close examination of selected periods, writers, or genres, including problems of literary criticism in Japanese literature. Prerequisite: permission of instructor.

JAPAN 591 Seminar in Japanese Film (5) *Jesty* Close examination of the history of Japanese film, or a select aspect of Japanese film study such as a particular genre, director, or scholarly approach. Prerequisite: permission of instructor.

Korean

KOREAN 101 First-Year Korean Non-Heritage (5) Elementary speaking, listening, reading, and writing skills in modern Korean. Open only to students with no formal or informal background in the language. First in a sequence of three. Offered: A.

KOREAN 102 First-Year Korean Non-Heritage (5) Elementary speaking, listening, reading, and writing skills in modern Korean. Open only to students with no formal or informal background in the language. Second in a sequence of three. Prerequisite: KOREAN 101. Offered: W.

KOREAN 103 First-Year Korean Non-Heritage (5) Elementary speaking, listening, reading, and writing skills in modern Korean. Open only to students with no formal or informal background in the language. Third in a sequence of three. Prerequisite: KOREAN 102. Offered: Sp.

KOREAN 134 First-Year Intensive Korean (15) Covers the fundamentals of the modern Korean language. Includes Hangul, oral communication skills, and basic grammar. Presumes no initial knowledge of Korean. Equivalent to KOREAN 101, KOREAN 102, and KOREAN 103. Cannot be taken for credit in combination with KOREAN 101, KOREAN 102, and KOREAN 103 or KOREAN 135. Students with prior background must take placement test. Offered: S.

KOREAN 135 Elementary Korean for Heritage Learners (5) Provides grammar background for students who know Hangul phonetically and have minimal oral communication skills. For students with minimal spoken/home Korean background but no formal classes. Not open to students who received schooling in Korean during childhood. Satisfies prerequisite for KOREAN 211. Prerequisite: score of 45-65 on the KR100A placement test. Offered: A.

KOREAN 145 Foreign Study: Elementary Korean (1-15, max. 20) For participants in study abroad programs who complete elementary language courses in approved programs in Korea. Evaluation by department/faculty required.

KOREAN 201 Second-Year Korean Non-Heritage (5) VLPA Development of further skills in the spoken and written languages. Open only to students with no formal or informal background in the language prior to first-year Korean at UW. First in a sequence of three. Prerequisite: either KOREAN 103, KOREAN 134, or placement test. Offered: A.

KOREAN 202 Second-Year Korean Non-Heritage (5) VLPA Development of further skills in the spoken and written languages. Open only to students with no formal or informal background in the language prior to first-year Korean at UW. Second in a sequence of three. Prerequisite: KOREAN 201 or placement test. Offered: W.

KOREAN 203 Second-Year Korean Non-Heritage (5) VLPA Development of further skills in the spoken and written languages. Open only to students with no formal or informal background in the language prior to first-year Korean at UW. Third in a sequence of three. Prerequisite: KOREAN 202 or placement test. Offered: Sp.

KOREAN 204 Spoken Korean (5) VLPA The Korean language as spoken in ordinary conversational situations. Phonetic accuracy and appropriateness of idiom. May be taken any summer after completion of first-year Korean. Prerequisite: KOREAN 103.

KOREAN 211 Second Year Korean Heritage (5) VLPA Development of further skills in the spoken and written languages. Open only to students with formal or informal background in the language prior to first-year Korean at the UW. First in a sequence of three. Prerequisite: either score of 66-90 on KR100A placement test or KOREAN 135. Offered: A.

KOREAN 212 Second-Year Korean Heritage (5) VLPA Development of further skills in the spoken and written languages. Open only to students with formal or informal background in the language prior to first-year Korean at the

UW. Second in a sequence of three. Prerequisite: KOREAN 211. Offered: W.

KOREAN 213 Second-Year Korean Heritage (5) VLPA Development of further skills in the spoken and written languages. Open only to students with formal or informal background in the language prior to first-year Korean at the UW. Third in a sequence of three. Prerequisite: KOREAN 212. Offered: Sp.

KOREAN 245 Foreign Study: Intermediate Korean (1-15, max. 20) VLPA For participants in study abroad programs who complete intermediate language courses in approved programs in Korea. Evaluation by department/faculty required.

KOREAN 301 Third-Year Korean (5) VLPA Advanced/intermediate level skills in spoken and written language. Continued oral and aural proficiency with added emphasis on ability to read simple, unedited real-life materials and write in short essay form. First in a sequence of three. Prerequisite: minimum grade of 2.0 in KOREAN 203, KOREAN 212, or KOREAN 213. Offered: A.

KOREAN 302 Third-Year Korean (5) VLPA Advanced/intermediate level skills in spoken and written language. Continued oral and aural proficiency with added emphasis on ability to read simple, unedited real-life materials and write in short essay form. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in KOREAN 301. Offered: W.

KOREAN 303 Third-Year Korean (5) VLPA Advanced/intermediate level skills in spoken and written language. Continued oral and aural proficiency with added emphasis on ability to read simple, unedited real-life materials and write in short essay form. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in KOREAN 302. Offered: Sp.

KOREAN 345 Foreign Study: Advanced Korean (1-15, max. 20) VLPA For participants in study abroad programs who complete advanced language courses in approved programs in Korea. Evaluation by department/faculty required.

KOREAN 360 Topics in Korean Literature and Culture (5, max. 15) VLPA H. CHO Focuses on Korean literature from a limited time period or particular aspects of Korean culture.

KOREAN 395 Foreign Study: Intermediate Korean Literature and Linguistics (1-5, max. 20) VLPA Intermediate Korean literature or linguistics studies abroad in approved programs. Evaluation by department/faculty required. Offered: AWSpS.

KOREAN 411 Readings in Contemporary Korean (5) VLPA Provides experiences in reading a variety of contemporary styles. Includes informal essays, short stories, one-act plays, academic essays, and newspaper editorials. Prerequisite: KOREAN 303. Offered: A.

KOREAN 412 Readings in Contemporary Korean (5) VLPA Provides experience in reading a variety of contemporary styles. Materials from published works include informal essays, short stories, one-act plays, academic essays, and newspaper editorials. Offered: W.

KOREAN 413 Readings in Contemporary Korean (5) VLPA Provides experience in reading a variety of contemporary styles. Materials from published works include informal essays, short stories, one-act plays, academic essays, and newspaper editorials. Offered: Sp.

KOREAN 415 Readings in Korean Literature and Culture (5) VLPA H. CHO Reading and discussion of selected modern literary texts and other cultural texts in the original language. Offered: A.

KOREAN 416 Readings in Korean Literature and Culture (5) VLPA H. CHO Reading and discussion of selected modern literary texts and other cultural texts in the original language. Offered: W.

KOREAN 417 Readings in Korean Literature and Culture (5) VLPA H. CHO Reading and discussion of selected modern literary texts and other cultural texts in the original language. Offered: Sp.

KOREAN 435 Seminar in Modern Korean Literature and Culture (5, max. 15) VLPA H. CHO Seminar study of special topics in modern Korean literature and culture.

KOREAN 440 Introduction to Korean Linguistics (5, max. 15) VLPA S. KIM Introduction to major topics in the linguistic description of Korean language. Prerequisite: either ASIAN 201, LING 200, or LING 400.

KOREAN 442 Special Topics in Korean Language and Culture (5, max. 15) VLPA S. KIM, E. WON Focuses on particular aspects and topics of Korean language and culture. Prerequisite: either KOREAN 203 or KOREAN 212.

KOREAN 445 Foreign Study: Korean Literature (1-15, max. 20) VLPA Modern 400-level Korean language studied abroad in approved programs in Korea. Evaluation by department/faculty required.

KOREAN 495 Foreign Study: Advanced Korean Literature and Linguistics (1-5, max. 20) VLPA Intermediate Korean literature or linguistics studied abroad in approved programs. Evaluation by department/faculty required. Offered: AWSpS.

KOREAN 499 Undergraduate Independent Study (3-5, max. 15) For Korean language and literature majors. Offered: AWSpS.

KOREAN 531 Advanced Readings in Modern Korean Literature (5) Literature and literary criticism in Korean. Prerequisite: fourth-year Korean or equivalent.

KOREAN 532 Advanced Readings in Traditional Vernacular Korean Literature (5) Readings in traditional Korean vernacular literature, including poetry, sung narrative, and fiction. Prerequisite: fourth-year Korean or equivalent.

Sanskrit

SNKRT 301 Introduction to Sanskrit (5) Cox, Salomon Basic grammar and vocabulary of the classical language. Reading of elementary texts from the epic or Puranic literature. First in a sequence of three. Offered: A.

SNKRT 302 Introduction to Sanskrit (5) Cox, Salomon Basic grammar and vocabulary of the classical language. Reading of elementary texts from the epic or Puranic literature. Second in a sequence of three. Prerequisite: SNKRT 301. Offered: W.

SNKRT 303 Introduction to Sanskrit (5) Cox, Salomon Basic grammar and vocabulary of the classical language. Reading of elementary texts from the epic or Puranic literature. Third in a sequence of three. Prerequisite: SNKRT 302. Offered: Sp.

SNKRT 401 Intermediate Sanskrit (5) VLPA Cox, Salomon Further study of classical grammar; introduction to classical literature and Vedic language and texts. First in a sequence of three. Prerequisite: SNKRT 303. Offered: A.

SNKRT 402 Intermediate Sanskrit (5) VLPA Cox, Salomon Further study of classical grammar; introduction to classical literature and Vedic language and texts. Second in a sequence of three. Offered: W.

SNKRT 403 Intermediate Sanskrit (5) VLPA Cox, Salomon Further study of classical grammar; introduction to classical literature and Vedic language and texts. Third in a sequence of three. Offered: Sp.

SNKRT 411 Advanced Sanskrit (5, max. 15) VLPA Cox, Salomon Reading and analysis of classical texts, chosen according to students' interests. First in a sequence of three. Prerequisite: SNKRT 403. Offered: A.

SNKRT 412 Advanced Sanskrit (5, max. 15) VLPA Cox, Salomon Reading and analysis of classical texts, chosen according to students' interests. Second in a sequence of three. Offered: W.

SNKRT 413 Advanced Sanskrit (5, max. 15) VLPA Cox, Salomon Reading and analysis of classical texts, chosen according to students' interests. Third in a sequence of three. Offered: Sp.

SNKRT 491 Vedic Studies (3) VLPA *Salomon* Readings of selected Vedic texts, with linguistic, religious, and historical analyses. Includes background material on Vedic religion, literature, and culture. First in a sequence of three. Prerequisite: SNKRT 303.

SNKRT 492 Vedic Studies (3) VLPA *Salomon* Readings of selected Vedic texts, with linguistic, religious, and historical analyses. Includes background material on Vedic religion, literature, and culture. Second in a sequence of three.

SNKRT 493 Vedic Studies (3) VLPA *Salomon* Readings of selected Vedic texts, with linguistic, religious, and historical analyses. Includes background material on Vedic religion, literature, and culture. Third in a sequence of three.

SNKRT 494 Readings in Religious Classics of India (5) VLPA Reading and analysis of the older religious brahmanical texts. Prerequisite: SNKRT 402.

SNKRT 495 Studies in Indian Thought (3, max. 9) VLPA *Cox* Religious and philosophical traditions in South Asia. The original documents studied vary from year to year. Prerequisite: SNKRT 402.

SNKRT 499 Undergraduate Research (3-5, max. 15) Primarily for Sanskrit language and literature majors. Offered: AWSpS.

SNKRT 550 Seminar on Sanskrit Literature (3, max. 9) *Salomon* Detailed study of selected authors, periods, or traditions, within the context of Indian literary history. Prerequisite: SNKRT 403 or permission of instructor.

SNKRT 555 Seminar on Sanskrit Grammar (3, max. 6) *Salomon* Reading and critical study of traditional literature on grammar and language, including texts of Paninian and other schools. Offered: A.

SNKRT 560 Readings in Philosophical Sanskrit (3, max. 9) *Cox, Salomon* Intensive reading and analysis of Hindu or Buddhist philosophical texts. Prerequisite: SNKRT 494 or permission of instructor.

SNKRT 570 Seminar in Indian Epigraphy and Paleography (3, max. 6) *Salomon* Introduction to the study of inscriptions and other original documents in Sanskrit and Prakrit languages and in Kharosthi, Brahmi, and derived scripts. History of writing in India and development of Indic scripts. Methods of critical evaluation of inscriptions as sources of political and cultural history. Prerequisite: SNKRT 403.

SNKRT 581 Readings in Buddhist Texts (3, max. 9) *Cox* Interpretation of original sources. Texts vary from year to year. Prerequisite: ability to study sources in the original languages, an introduction to Buddhist thought, and permission of instructor.

SNKRT 582 Readings in Buddhist Texts (3, max. 9) *Cox* Interpretation of original sources. Texts vary from year to year. Prerequisite: ability to study sources in the original languages, an introduction to Buddhist thought, and permission of instructor.

Thai

THAI 111 Elementary Thai (5) *Kesavatana-Dohrs* Introduction to modern spoken and written Thai. Emphasis on spoken language competence with additional skills in elementary reading and writing. Designed for students with no prior knowledge of Thai. First in a sequence of three. Offered: A.

THAI 112 Elementary Thai (5) *Kesavatana-Dohrs* Introduction to modern spoken and written Thai. Emphasis on spoken language competence with additional skills in elementary reading and writing. Designed for students with no prior knowledge of Thai. Second in a sequence of three. Prerequisite: THAI 111. Offered: W.

THAI 113 Elementary Thai (5) *Kesavatana-Dohrs* Introduction to modern spoken and written Thai. Emphasis on spoken language competence with additional skills in elementary reading and writing. Designed for students with no prior knowledge of Thai. Third in a sequence of three. Prerequisite: THAI 112. Offered: Sp.

THAI 145 Foreign Study: Elementary Thai (1-15, max. 20) For participants in study abroad programs who complete elementary language courses in approved programs in Thailand. Evaluation by department faculty required.

THAI 211 Intermediate Thai (5) VLPA *Kesavatana-Dohrs* Continuation of THAI 113. Expands students' abilities in the four language skills of listening, speaking, reading, and writing. First in a sequence of three. Prerequisite: THAI 113. Offered: A.

THAI 212 Intermediate Thai (5) VLPA *Kesavatana-Dohrs* Expands students' abilities in the four language skills of listening, speaking, reading, and writing. Second in a sequence of three. Prerequisite: THAI 211. Offered: W.

THAI 213 Intermediate Thai (5) VLPA *Kesavatana-Dohrs* Expands students' abilities in the four language skills of listening, speaking, reading, and writing. Third in a sequence of three. Prerequisite: THAI 212. Offered: Sp.

THAI 245 Foreign Study: Intermediate Thai (1-15, max. 20) VLPA For participants in study abroad programs who complete intermediate language courses in approved programs in Thailand. Evaluation by department faculty required.

THAI 311 Advanced Thai (5, max. 15) VLPA *Kesavatana-Dohrs* Advanced reading and translation of selections from various Thai authors, with occasional practice in conversation and composition. Prerequisite: THAI 213. Offered: A.

THAI 312 Advanced Thai (5, max. 15) VLPA *Kesavatana-Dohrs* Advanced reading and translation of selections from various Thai authors, with occasional practice in conversation and composition. Prerequisite: THAI 311. Offered: W.

THAI 313 Advanced Thai (5, max. 15) VLPA *Kesavatana-Dohrs* Advanced reading and translation of selections from various Thai authors, with occasional practice in conversation and composition. Prerequisite: THAI 312. Offered: Sp.

THAI 345 Foreign Study: Advanced Thai (1-15, max. 20) VLPA For participants in study abroad programs who complete 300-level language courses in approved programs in Thailand. Evaluation by department faculty required.

THAI 499 Undergraduate Research (3-5, max. 15) For Thai language and literature majors. Offered: AWSpS.

Urdu

URDU 311 Elementary Urdu (5) Modern literary Urdu. Reading, writing, conversation, and listening comprehension. Introduction to Perso-Arabic script. First in a sequence of three.

URDU 312 Elementary Urdu (5) Modern literary Urdu. Reading, writing, conversation, and listening comprehension. Introduction to Perso-Arabic script. Second in a sequence of three. Prerequisite: URDU 311.

URDU 313 Elementary Urdu (5) Modern literary Urdu. Reading, writing, conversation, and listening comprehension. Introduction to Perso-Arabic script. Third in a sequence of three. Prerequisite: URDU 312.

URDU 321 Intermediate Urdu (5) VLPA Systematic expansion of vocabulary and grammar. Intermediate-level prose and poetry readings. Expansion of skills in reading, writing, speaking, and listening comprehension. First in a sequence of three. Prerequisite: URDU 313.

URDU 322 Intermediate Urdu (5) VLPA Systematic expansion of vocabulary and grammar. Intermediate-level prose and poetry readings. Expansion of skills in reading, writing, speaking, and listening comprehension. Second in a sequence of three. Prerequisite: URDU 321.

URDU 323 Intermediate Urdu (5) VLPA Systematic expansion of vocabulary and grammar. Intermediate-level prose and poetry readings. Expansion of skills in reading, writing, speaking, and listening comprehension. Third in a sequence of three. Prerequisite: URDU 322.

URDU 401 Advanced Urdu (5) VLPA Rapid reading of contemporary Urdu prose and poetry. Advanced conversation

and composition. First in a sequence of three. Prerequisite: URDU 323.

URDU 402 Advanced Urdu (5) VLPA Rapid reading of contemporary Urdu prose and poetry. Advanced conversation and composition. Second in a sequence of three. Prerequisite: URDU 401.

URDU 403 Advanced Urdu (5) VLPA Rapid reading of contemporary Urdu prose and poetry. Advanced conversation and composition. Third in a sequence of three. Prerequisite: URDU 402.

URDU 499 Independent Study (3-5, max. 15) For Urdu language and literature majors. Offered: AWSpS.

Vietnamese

VIET 111 Elementary Vietnamese (5) *Nguyen* Introduction to modern Vietnamese conversation. Emphasis on correct pronunciation, spelling, and sentence structure. Designed for students with no previous exposure to Vietnamese. First in a sequence of three. Offered: A.

VIET 112 Elementary Vietnamese (5) *Nguyen* Introduction to modern Vietnamese conversation. Emphasis on correct pronunciation, spelling, and sentence structure. Designed for students with no previous exposure to Vietnamese. Second in a sequence of three. Prerequisite: VIET 111. Offered: W.

VIET 113 Elementary Vietnamese (5) *Nguyen* Introduction to modern Vietnamese conversation. Emphasis on correct pronunciation, spelling, and sentence structure. Designed for students with no previous exposure to Vietnamese. Third in a sequence of three. Prerequisite: VIET 112. Offered: Sp.

VIET 145 Foreign Study: Elementary Vietnamese (1-15, max. 20) For participants in study abroad programs who complete elementary language courses in approved programs in Vietnam. Evaluation by department faculty required.

VIET 211 Intermediate Vietnamese (5) VLPA *Nguyen* Development of conversation skills, reading for comprehension, and writing short compositions. First in a sequence of three. Prerequisite: VIET 113. Offered: A.

VIET 212 Intermediate Vietnamese (5) VLPA *Nguyen* Development of conversation skills, reading for comprehension, and writing short compositions. Second in a sequence of three. Prerequisite: VIET 211. Offered: W.

VIET 213 Intermediate Vietnamese (5) VLPA *Nguyen* Development of conversation skills, reading for comprehension, and writing short compositions. Third in a sequence of three. Prerequisite: VIET 212. Offered: Sp.

VIET 245 Foreign Study: Intermediate Vietnamese (1-15, max. 20) VLPA For participants in study abroad programs who complete intermediate language courses in approved programs in Vietnam. Evaluation by department faculty required.

VIET 311 Advanced Vietnamese (5) VLPA *Nguyen* Develops proficiency in reading, writing, listening, and speaking standard colloquial Vietnamese at an advanced level to prepare students to do research. Includes readings in fiction and nonfiction literature, vocabulary and grammar, writing comprehensive exercises, and topic-based conversations. First in a series of three. Prerequisite: VIET 213.

VIET 312 Advanced Vietnamese (5) VLPA *Nguyen* Develops proficiency in reading, writing, listening, and speaking standard colloquial Vietnamese at an advanced level to prepare students to do research. Includes readings in fiction and nonfiction literature, vocabulary and grammar, writing comprehensive exercises, and topic-based conversations. Second in a series of three. Prerequisite: VIET 311.

VIET 313 Advanced Vietnamese (5) VLPA *Nguyen* Develops proficiency in reading, writing, listening, and speaking standard colloquial Vietnamese at an advanced level to prepare students to do research. Includes readings in fiction and nonfiction literature, vocabulary and grammar, writing

comprehensive exercises, and topic-based conversations. Third in a series of three. Prerequisite: VIET 312.

VIET 345 Foreign Study: Advanced Vietnamese (1-15, max. 20) VLP For participants in study abroad programs who complete 300-level language courses in approved programs in Vietnam. Evaluation by department faculty required.

VIET 496 Special Studies in Vietnamese (3-5, max. 15) VLP *Nguyen* Topics vary. Emphasizes improving language skills for research. Primarily for Southeast Asian studies majors. Offered: AWSp.

VIET 499 Undergraduate Research (3-5, max. 15) Nguyen Undergraduate research/independent study in Vietnamese language and literature. Offered: AWSp.

Astrobiology

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

ASTBIO 115 Astrobiology: Life in the Universe (5) NW R. *BUICK, D. CATLING, V. MEADOWS, W. SULLIVAN* Introduction to the new science of astrobiology, study of the origin and evolution of life on Earth, and the search for microbial and intelligent life elsewhere in the Universe. Designed for non-science, liberal arts majors. Offered: jointly with ASTR 115/BIOL 114/ESS 115/OCEAN 115.

ASTBIO 501 Astrobiology Disciplines (4) R. *BUICK, D. CATLING, V. MEADOWS* Review of research and subject matter relevant to astrobiology from within the disciplines of biology, astronomy, oceanography, atmospheric science, chemistry, planetary science, and geology. Offered: A, even years.

ASTBIO 502 Astrobiology Topics (4) R. *BUICK, D. CATLING, V. MEADOWS* Investigation in detail of research topics of current interest. Offered: A, odd years.

ASTBIO 550 Professional Development for Astrobiology (2) Seminar in preparation for the academic job market; writing and reviewing grant proposals; building and managing interdisciplinary research teams; understanding the multiple career paths available in astrobiology; interdisciplinary teaching; and professional ethics. Credit/no-credit only. Offered: W, odd years.

ASTBIO 575 Seminar in Astrobiology (1, max. 10) Discussion of recent research in astrobiology. Credit/no-credit only. Offered: W, even years.

ASTBIO 576 Astrobiology Colloquium (1, max. 15) Current research topics in astrobiology. Credit/no-credit only. Offered: ASp.

ASTBIO 600 Independent Study or Research (*) Study or research under the supervision of individual faculty members.

Astronomy

C319 Physics-Astronomy Building

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

UNDERGRADUATE PROGRAM

Adviser

C319 Physics-Astronomy, Box 351580

(206) 543-2888

office@astro.washington.edu

The Department of Astronomy offers the following undergraduate program:

- The Bachelor of Science degree with a major in astronomy

Bachelor of Science

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

Department Admission Requirements

PHYS 121, PHYS 122, PHYS 123 (or full transfer equivalent) with a 2.00 cumulative GPA for the three courses.

Major Requirements

89 credits as follows:

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

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* With this degree, students obtain knowledge of the components of the universe, an understanding of the physics of its structure, and the technical skills to obtain and analyze data from telescopes. Graduates go on to graduate school or work at observatories or in industrial applications (lasers, x-ray, optical imaging) or in teaching applications. Students are able to do the following:
 - Understand the principal findings, common application, and current problems within astronomy as a scientific discipline.
 - Be versed in the computational methods and software resources utilized by professional astronomers.

- Have experience operating modern astronomical instrumentation and analyzing a range of experimental data.
- Assess, communicate, and reflect their understanding of astronomy and the results of astrophysical experiments in both oral and written formats.
- Learn in a diverse environment with a variety of individuals, thoughts, and ideas.

• *Instructional and Research Facilities:* The department operates a 30-inch telescope with modern instrumentation, primarily for students, at the Manastash Ridge Observatory near Ellensburg. The department is also part of a consortium of universities that operate a 3.5-meter optical/infrared telescope located on Sacramento Peak, New Mexico and that are partners in the innovative Sloan Digital Sky Survey and the future Large Synoptic Survey Telescope. Students also have access to a variety of national facilities, such as the Kitt Peak and Cerro Tololo observatories and the Very Large Array. A variety of research is conducted with satellite instruments such as the Hubble Space Telescope. Data analysis and theoretical research are conducted on the department's cluster of computers, and on a variety of UW and national supercomputer facilities. Undergraduate majors often assist faculty members in acquisition, reduction, and interpretation of data.

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

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

GRADUATE PROGRAM

Graduate Program Coordinator

C319 Physics-Astronomy, Box 351580

(206) 543-2888

grad@astro.washington.edu

A series of graduate courses in solar system, stellar, galactic, and extragalactic astrophysics is offered. The heart of the graduate program is the collaboration of students and faculty members in research at the frontiers of astronomy. Students work collaboratively with members of the faculty to develop the techniques and insight necessary for successful research and, subsequently, to define a thesis topic. The student's thesis research may use theoretical, computational, or observational material (obtained through the facilities of the UW or one of the national ground- or space-based observatories, or a combination). Active research programs in observations and theory are being carried out in a variety of areas, including astrobiology and extrasolar planets, interplanetary dust and comets, stellar atmo-

spheres and interiors, stellar evolution and populations, interacting binary stars and compact objects, interstellar matter and nebulae, computational astrophysics and data mining, galaxies and quasars, large scale structure and cosmology, and dark matter and energy.

Doctor of Philosophy

Admission Requirements

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

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

Degree Requirements

90 credits minimum, to include the following:

Typically PhD students take formal courses during their first two years at the UW while at the same time sampling research projects with various faculty. The department offers a full set of graduate astronomy courses covering every major research area in astrophysics. Areas covered include planetary astronomy, stellar interiors and atmospheres, interstellar medium, galaxies, dynamics, cosmology, physical processes, observational astronomy, and a variety of special topics. Even in their first year, students are encouraged to embark on faculty-supervised research programs so they can make informed decisions about a thesis topic and a professional research career.

Core Curriculum: Each quarter of their first two years, students usually take at least two graduate-level core courses in astronomy, along with a third course emphasizing additional physical or mathematical science study or astronomical research. Typical core courses include ASTR 507, ASTR 519, ASTR 521, ASTR 531, ASTR 557, ASTR 561 in one year, and ASTR 508, ASTR 509, ASTR 511, ASTR 512, ASTR 513, ASTR 541, in the alternate year, along with ASTR 500 and ASTR 581 (latter two often offered annually).

Students must pass two examinations, the qualifying examination and the general examination, before being admitted to PhD candidacy. The qualifying examination, a written examination covering general knowledge, must be passed by the end of the third year of matriculation. The general examination is an oral examination on a topic related to a student's proposed PhD research topic. Students embark on their PhD research program after passing the general examination, typically in their third or fourth year at UW. Most students complete their PhD thesis and defense two to three years later.

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

Assistantships

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

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/.

ASTR 101 Astronomy (5) NW, QSR Introduction to the universe, with emphasis on conceptual, as contrasted with mathematical, comprehension. Modern theories, observations; ideas concerning nature, evolution of galaxies; quasars, stars, black holes, planets, solar system. Not open for credit to students who have taken ASTR 102 or ASTR 301; not open to upper-division students majoring in physical sciences or engineering. Offered: AWSpS.

ASTR 102 Introduction to Astronomy (5) NW, QSR Emphasis on mathematical and physical comprehension of nature, the sun, stars, galaxies, and cosmology. Designed for students who have had algebra and trigonometry and high school or introductory-level college physics. Cannot be taken for credit in combination with ASTR 101 or ASTR 301. Offered: A.

ASTR 105 Exploring the Moon (5) NW Smith Examines the questions why did we go to the moon, what did we learn, and why do we want to go back. Offered: W.

ASTR 115 Astrobiology: Life in the Universe (5) NW R. BUICK, D. CATLING, V. MEADOWS, W. SULLIVAN Introduction to the new science of astrobiology, study of the origin and evolution of life on Earth, and the search for microbial and intelligent life elsewhere in the Universe. Designed for non-science, liberal arts majors. Offered: jointly with AST-BIO 115/BIOL 114/ESS 115/OCEAN 115.

ASTR 150 The Planets (5) NW, QSR For liberal arts and beginning science students. Survey of the planets of the solar system, with emphases on recent space exploration of the planets and on the comparative evolution of the Earth and the other planets. Offered: AWSpS.

ASTR 160 Introduction to Exoplanets (3/5) NW Introduction to exoplanets. Explores how studies of extrasolar planets have changed our views of how planets and planetary systems form and evolve. Examines the science behind the search for Earth-like planets and life beyond our Solar System. May not earn credit if credit earned in ASTR 419. Recommended: one 100- or 200-level astronomy course.

ASTR 190 Modern Topics in Astronomy for Non-Science Majors (3/5, max. 10) NW Topics of current interest, such as origin of chemical elements, novae and supernovae, white dwarfs, neutron stars, black holes, active galaxies, quasars, or interstellar medium and astrochemistry. Choice of topics depends on instructor and class interest. Prerequisite: either one 100- or one 200-level ASTR course.

ASTR 192 Pre-Major in Astronomy Research Seminar (3-5) NW Introduction to astronomical computing and research methods for students interested in astronomy and in the premajor-in-astronomy program. Co-requisite: ASTR 102. Offered: A.

ASTR 201 The Universe and the Origin of Life (5) NW, QSR Sequel to 101 or 102, emphasizing modern views of the atomic and molecular evolution of the universe from the initial "big bang" through the formation of the solar system and the emergence of biological forms on the earth. The latter part of the course considers questions about the existence of, and communication with, extraterrestrial intelligent life, and finally the ultimate fate of the cosmos.

ASTR 210 Distance and Time: Size and Age in the Universe (5) NW, QSR Space and time as basic concepts in physical science. How we define and measure them, how the concepts have developed over the centuries, and how modern measurements allow us to determine the size and age of the universe.

ASTR 211 The Universe and Change (5) NW, QSR Gravity as central to the form and evolution of the universe. Con-

ceptual formulation of gravity from the Renaissance to Einstein. Its consequences from the falling of an apple to the slowing of the expansion of the universe. Offered: W.

ASTR 270 Public Outreach in Astronomy (3) VLPA/NW Emphasis on giving effective scientific presentations, developing and giving educational programs to school-age groups, and communicating knowledge of astronomy to others. Give talks at the Jacobsen Observatory on campus and presentations in the Astronomy Department's planetarium. Learn to operate a telescope and the planetarium equipment. Prerequisite: one astronomy course at either the 100-, 200-, or 300-level. Offered: Sp.

ASTR 300 Introduction to Programming for Astronomical Applications (2) QSR Smith Introduction to programming needed for astronomical applications: Linux operating systems, PERL, IDL. Recommended for astronomy majors planning to take 400-level astronomy courses, to pursue individual research projects, or to apply for research experience for undergraduate appointments. Prerequisite: either ASTR 321, ASTR 322, or ASTR 323, any of which may be taken concurrently. Offered: AW.

ASTR 301 Astronomy for Scientists and Engineers (3) NW Introduction to astronomy for students in the physical sciences or engineering. Topics similar to ASTR 101, but the approach uses more mathematics and physics. Prerequisite: PHYS 123.

ASTR 313 Science in Civilization: Physics and Astrophysics Since 1850 (5) I&S/NW Organization and pursuit of the physical and astrophysical sciences, focusing on the major unifying principles of physics and astronomy and the social and cultural settings in which they were created. Offered: jointly with HSTCMP 313.

ASTR 321 The Solar System (3) NW Solar system; planetary atmospheres, surfaces and interiors, the moon, comets. The solar wind and interplanetary medium. Formation of the solar system. Prerequisite: PHYS 224 which may be taken concurrently. Offered: A.

ASTR 322 The Contents of Our Galaxy (3) NW Introduction to astronomy. Basic properties of stars, stellar systems, interstellar dust and gas, and the structure of our galaxy. Prerequisite: PHYS 224 which may be taken concurrently; recommended: PHYS 225 which may be taken concurrently. Offered: W.

ASTR 323 Extragalactic Astronomy and Cosmology (3) NW Galaxies, optical and radio morphology and properties. Clusters of galaxies, radio sources, and quasars. Observational cosmology. Prerequisite: ASTR 322 which may be taken concurrently. Offered: Sp.

ASTR 400 Undergraduate Research Seminar (1) NW Introduces research topics conducted by astronomy faculty. Each week a faculty member describes her/his current research and the opportunities available for interested majors to participate in the research. Credit/no-credit only. Offered: A.

ASTR 419 Exoplanets (3) NW Exoplanet properties, discovery, and habitability. Examines the science involved in the search for Earth-like planets and life beyond our Solar System. Topics include: exoplanet environments, modelling exoplanet planetary systems, planetary habitability, detection, and properties of exoplanets. May not earn credit if credit earned in ASTR 160. Prerequisite: ASTR 321.

ASTR 421 Stellar Observations and Theory (3) NW Observations and theory of the atmospheres, chemical composition, internal structure, energy sources, and evolutionary history of stars. Prerequisite: ASTR 322. Offered: W.

ASTR 423 High-Energy Astrophysics (3) NW High-energy phenomena in the universe. Includes supernova, pulsars, neutron stars, x-ray and gamma-ray sources, black holes, cosmic rays, quasi stellar objects, active galactic nuclei, diffuse background radiations. Radiative emission, absorption processes, and models derived from observational data. Prerequisite: PHYS 224; PHYS 225.

ASTR 425 Cosmology (3) QSR Agol, Connolly, Quinn Studies the universe as a whole. Overview of fundamental observations of cosmology and an introduction to general relativity. Examines theories of the past and future history of the universe, the nature of dark matter and dark energy, and the origin of ordinary matter on the large-scale structure. Prerequisite: PHYS 224; PHYS 225.

ASTR 427 Methods of Computational Astrophysics (3) NW Quinn Provides hands-on experiences in writing computer programs to solve astrophysics problems. Topics include: interpolation and extrapolation, integration, ordinary, differential equations, root finding, optimization, linear algebra, Monte-Carlo partial differential equations, and parallel techniques.

ASTR 480 Introduction to Astronomical Data Analysis (5) NW Hands-on experience with electronic imaging devices (CCDs) and software for image reduction and analysis. Introduction to operating systems, reduction software, and statistical analysis with applications to CCD photometry. Prerequisite: ASTR 300; ASTR 323, which may be taken concurrently. Offered: Sp.

ASTR 481 Introduction to Astronomical Observation (5) NW Theory and practice of obtaining optical data at a telescope. Preparation, obtaining data with a CCD on a telescope, and subsequent data analysis for completion of a research project. Prerequisite: ASTR 480. Offered: S.

ASTR 482 Writing Scientific Papers (2) Szkody Principles of organizing, developing, and writing resumes, scientific research papers for journals, and astronomy articles for general public interest. Prerequisite: ASTR 481, ASTR 499, PHYS 494, PHYS 495, or PHYS 496, any of which may be taken concurrently. Offered: A.

ASTR 497 Topics in Current Astronomy (1-3, max. 9) NW Recent developments in one field of astronomy or astrophysics.

ASTR 498 Independent Study (1-3, max. 15) NW Astronomy-related projects supervised by a faculty member. Projects may be hardware, software, or library work in preparation for conducting astronomical research. Credit/no-credit only.

ASTR 499 Undergraduate Research (*, max. 15) Special astronomical problems and observational projects, by arrangement with instructor.

ASTR 500 Practical Methods for Teaching Astronomy (1-3, max. 5) Seminar in the preparation of lecture and workshop materials with emphasis on demonstration, visual aids, and the evaluation of students' progress. Credit/no-credit only.

ASTR 507 Physical Foundations of Astrophysics I (3) Thermodynamics from an astronomer's point of view: black body radiation, basic radiative transfer, equation of state, degenerate gases, crystallization at high density.

ASTR 508 Physical Foundations of Astrophysics II (3) Introduction to astronomical hydrodynamics and magnetohydrodynamics, basic theorems and application to stellar and interstellar magnetic fields. Introduction to plasma physics and waves in a plasma.

ASTR 509 Physical Foundations of Astrophysics III (3) Potential theory as applied to astrophysical systems. Orbits. Integrals of motion. Equilibrium and stability of stellar systems. Encounters of stellar systems. Kinetic theory of collisional systems. Applications of stellar dynamics to star clusters, galaxies, and large-scale structure.

ASTR 510 Nuclear Astrophysics (3) Big bang nucleosynthesis; nuclear reactions in stars; solar neutrinos and neutrino oscillations; core-collapse supernovae; nucleosynthesis in stars, novae, and supernovae; neutron stars; composition and sources of cosmic rays; gamma ray bursts; atmospheric neutrinos. Offered: jointly with PHYS 554; A.

ASTR 511 Galactic Structure (3) Kinematics, dynamics, and contents of the galaxy. Spiral structure. Structure and evolution of galaxies.

ASTR 512 Extragalactic Astronomy (3) Types of galaxies. Integrated properties, content, and dynamics. Extragalactic distance scale, groups and clusters. Radio sources. Observational cosmology.

ASTR 513 Cosmology and Particle Astrophysics (3) Big bang cosmology; relativistic world models and classical tests; background radiation; cosmological implications of nucleosynthesis; baryogenesis; inflation; galaxy and large-scale structure formation; quasars; intergalactic medium; dark matter.

ASTR 519 Radiative Processes in Astrophysics (3) Theory and applications of astrophysical radiation processes: transfer theory; thermal radiation; theory of radiation fields and radiation from moving charges; bremsstrahlung; synchrotron; Compton scattering; plasma effects.

ASTR 521 Stellar Atmospheres (3) Theory of continuous radiation and spectral line formation. Applications to the sun and stars. Prerequisite: PHYS 421 or equivalent.

ASTR 531 Stellar Interiors (4) Physical laws governing the temperature, pressure, and mass distribution in stars. Equation of state, opacity, nuclear energy generation, computational methods. Models of main sequence stars and star formation. Prerequisite: PHYS 421 or equivalent.

ASTR 532 Stellar Evolution (3) Theoretical and observational approaches to stellar evolution. Structure of red giants, supernovae, and white dwarfs. Observations of star clusters and the chemical composition of stars as they relate to the theory of stellar structure. Prerequisite: ASTR 531.

ASTR 541 Interstellar Matter (3) Physical conditions and motions of neutral and ionized gas in interstellar space. Interstellar dust, magnetic fields, formation of grains, clouds, and stars. Prerequisite: modern physics or permission of instructor.

ASTR 555 Planetary Atmospheres (3) Problems of origin, evolution, and structure of planetary atmospheres, emphasizing elements common to all; roles of radiation, chemistry, and dynamical processes; new results on the atmospheres of Venus, Mars, Jupiter, and other solar system objects in the context of comparative planetology. Offered: jointly with ATM S 555/ESS 581.

ASTR 557 Origin of the Solar System (3) Nebular and non-nebular theories of the solar system origin; collapse from the interstellar medium, grain growth in the solar nebula, formation of planetesimals and planets, early evolution of the planets and other possible planetary systems; physical and chemical evidence upon which the ideas concerning the origin of the solar system are based. Offered: jointly with ESS 583.

ASTR 561 High Energy Astrophysics (3) Observed properties of supernovae, x-ray stars, radio sources, quasars. Theories explaining such objects. Origin of cosmic rays.

ASTR 575 Seminar in Astronomy (1-2, max. 20) Discussion of recent research in astronomy and astrophysics. Prerequisite: permission of department. Credit/no-credit only.

ASTR 576 Astronomy Colloquium (1, max. 20) Current research topics in astronomy and astrophysics. Prerequisite: permission of department. Credit/no-credit only.

ASTR 581 Techniques in Optical Astronomy (5) Theory and practice of obtaining optical data. Astronomical photoelectric photometers, spectrographs, interferometers, CCDs, and infrared equipment. Data-reduction techniques with emphasis on statistical analysis using digital computers. Observations with MRO thirty-inch telescope.

ASTR 597 Topics in Observational Astrophysics (1-5, max. 20)

ASTR 598 Topics in Theoretical Astrophysics (1-5, max. 20)

ASTR 599 Advanced Astronomy Seminar (1-3, max. 6) Practical exercises in astrophysics. Emphasis on methods and techniques of simulation, acquisition, evaluation, and

analysis of observational data and its interpretation using models of astrophysical systems. Prerequisite: permission of instructor.

ASTR 600 Independent Study or Research (*-)

ASTR 700 Master's Thesis (*-)

ASTR 800 Doctoral Dissertation (*-)

Biochemistry

303 Bagley

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

UNDERGRADUATE PROGRAM

Adviser

109 Bagley, Box 351700

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

advisers@chem.washington.edu

The Biochemistry Program offers the following programs of study:

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

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

Bachelor of Science

Program Admission Requirements

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

Direct Freshman Admission

1. Open to freshman students formally admitted to the UW.
2. Score of 5 on the AP chemistry examination.
3. Indication on the UW freshman application of biochemistry as the student's first choice of major.
4. Successful direct-admission applicants generally have received a minimum 1400 on the SAT (math and verbal sections), or minimum 30 on the ACT.
5. Admission is for autumn quarter only.

Research/Honors Admission

1. Students with exceptional records can apply for consideration for admission to the biochemistry major via the Honors or Research track. Students seeking admission should submit an application that includes:
 - a. Cover sheet (available on the Department of Chemistry website)

- b. Unofficial transcript
 - c. Statement of purpose. May include a description of interest in biochemistry, career goals, undergraduate research interests, degree interest (BA or BS), and any other information applicant believes is useful in evaluating the application.
 - d. (Research track only) Written letter or recommendation from research adviser.
2. **Honors Track.** Students participating in the chemistry Honors sequence who have completed the following courses with a minimum cumulative GPA of 3.00: CHEM 145, CHEM 155 (10 credits); MATH 124 and MATH 125, or MATH 134 and MATH 135 (10 credits).
 3. **Research Track.** Students who have performed at least 6 credits of undergraduate research (CHEM 199, CHEM 299, or higher) and who provide a strong recommendation from faculty research adviser. Chemistry undergraduate research may be considered as well.

Early Admission

1. **Course requirements:** CHEM 142, CHEM 152, CHEM 162 (or CHEM 145, CHEM 155, CHEM 165) (15 credits). BIOL 180 (5 credits); MATH 124, MATH 125 (or MATH 134, MATH 135) (10 credits).
2. Factors included in the admission decision include academic performance as measured by GPA in courses required for application, difficulty of other courses completed, frequency of incompletes or withdrawal grades, number of repeated courses, relevant work and life experience, and record of honors.
3. Successful applicants for the BS biochemistry program typically have a cumulative GPA greater than 3.20 in courses listed above under course requirements. Successful applicants for the BA biochemistry program typically have a cumulative GPA greater than 3.00 in courses listed above under course requirements.

Regular Admission

1. **Course requirements:** CHEM 142, CHEM 152, CHEM 162 (or CHEM 145, CHEM 155, CHEM 165) (15 credits). CHEM 237, CHEM 238 (or CHEM 335, CHEM 336) (8 credits). BIOL 180, BIOL 200 (10 credits). MATH 124, MATH 125 (or MATH 134, MATH 135) (10 credits).
2. Factors in the admission decision include academic performance as measured by GPA in courses required for application, difficulty of other courses completed, frequency of incompletes or withdrawal grades, number of repeated courses, relevant work and life experience, and record of honors.
3. Successful applicants for the BS biochemistry program typically have a cumulative GPA greater than 2.50 in courses listed above under course requirements, with no individual course grade lower than a 2.0. Successful applicants for the BA biochemistry program typically have a cumulative GPA greater than 2.00 in courses listed above under course requirements, with no individual grade below a 1.7.

Major Requirements

105 credits, as follows:

1. **General Chemistry:** CHEM 142, CHEM 152, CHEM 162 (or CHEM 145, CHEM 155, CHEM 165)
2. **Organic Chemistry:** CHEM 237, CHEM 238, CHEM 239, CHEM 241, CHEM 242 (or CHEM 335, CHEM 336, CHEM 337, CHEM 346, CHEM 347)
3. **Physical Chemistry:** CHEM 452, CHEM 453 (or CHEM 455, CHEM 456, CHEM 457)
4. **Biochemistry:** BIOC 426, BIOC 440, BIOC 441, BIOC 442
5. **Biology:** BIOL 180, BIOL 200
6. **Mathematics:** MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)

7. **Physics:** PHYS 121, PHYS 122, PHY 123 (or PHYS 114, PHYS 115, PHYS 116), with the PHYS 121 sequence recommended
8. **Genome Science:** GENOME 361 or GENOME 371
9. 11 credits chosen from a current department list (available in 303 Bagley or at depts.washington.edu/chem/undergrad/degreeeqs.html) of upper-division science classes including math, biology, microbiology, chemistry, and genome sciences. Up to 9 credits of approved advanced-level undergraduate research may also be applied to this requirement. Research conducted outside chemistry or biochemistry must first be approved by a biochemistry adviser.
10. **Grade and Graduation Requirements:** A minimum grade of 2.0 and a minimum cumulative 2.50 GPA required for all chemistry, biology, and biochemistry courses counted toward the major. Minimum 2.50 GPA required for the BIOC 440, BIOC 441, and BIOC 442 sequence. Minimum overall cumulative 2.50 GPA required for graduation.

Bachelor of Arts

Program admission requirements same as for BS degree, above.

Major Requirements

90-92 credits as follows:

1. **General Chemistry:** either CHEM 142, CHEM 152, CHEM 162, (or CHEM 145, CHEM 155, CHEM 165)
2. **Organic Chemistry:** either CHEM 237, CHEM 238, CHEM 239, CHEM 241, CHEM 242, or CHEM 335, CHEM 336, CHEM 337, CHEM 346, CHEM 347
3. **Biochemistry:** BIOC 405, BIOC 406
4. **Physical Chemistry:** CHEM 452, CHEM 453
5. **Biology:** BIOL 180, BIOL 200
6. **Mathematics:** either MATH 124, MATH 125, MATH 126, or MATH 134, MATH 135, MATH 136
7. **Physics (12-15 credits):** either PHYS 121, PHYS 122, PHYS 123, or PHYS 114, PHYS 115, PHYS 116
8. **Science Electives:** 9 credits to be taken from a current department list available in 303 Bagley or at depts.washington.edu/chem/undergrad/degreeeqs.html. Up to 3 credits of advanced undergraduate research may count toward this requirement. Research conducted outside chemistry or biochemistry must first be approved by a biochemistry adviser.
9. **Grade and Graduation Requirements:** Minimum grade of 1.7 in chemistry, biochemistry, and biology courses required for the major. Minimum cumulative 2.00 GPA required for graduation.

Continuation Policy

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

Student Outcomes and Opportunities

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

awareness of the broader implications of biochemical processes; have had the opportunity to work as part of a team to solve scientific problems; and have had an introduction to opportunities in, and requirements for, the careers available to biochemistry majors.

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

- **Instructional and Research Facilities:** Research facilities for the department are housed in the Biochemistry-Genetics Building, which provides approximately 52,000 square feet of research space, conference rooms, and a departmental library. In the immediate vicinity are the departments of Immunology, Genome Sciences, Microbiology, and Pharmacology, as well as programs in biomolecular structure, molecular medicine, neurobiology, and molecular and cellular biology, with which the department has common research interests. Laboratories are equipped with modern research equipment and are supported by external, centralized research facilities. An emphasis on biomedical research is facilitated by the location of the department within the School of Medicine.
- **Honors Options Available:** With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- **Research, Internships, and Service Learning:** No formal internship program. Students are encouraged to pursue national and regional internships. See adviser for more information.
- **Program Scholarships:** Resident tuition scholarships and book prizes are awarded annually by the Department of Chemistry to eligible chemistry and biochemistry majors. Applications are available during the month of March for the following academic year. See department adviser for more information.
- **Student Organizations/Associations:**
 - Alpha Chi Sigma: the UW affiliate of the national chemistry-related science organization for chemistry and biochemistry majors
 - Phi Lambda Upsilon: the UW affiliate of the national chemistry honorary society
 - The Free Radicals: a general undergraduate club for chemistry and biochemistry majors.

Of Special Note:

- The Bachelor of Science in Biochemistry degree requires a minimum of 195 credits.
- Students are strongly encouraged to participate in undergraduate research.

Biology

106 Kincaid

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

UNDERGRADUATE PROGRAM

Adviser

318 Hitchcock, Box 355320

206-543-9120

bioladv@uw.edu

The Department of Biology offers the following programs of study:

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

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

The Bachelor of Science options are as follows:

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

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

Bachelor of Arts

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

Department Admission Requirements

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

Major Requirements

90 credits as follows:

1. Introductory biology, three to six quarters of chemistry, mathematics, and genetics are the same as required by

the BS, listed below. However, physics is not required and the remaining 36 upper-division elective credits may be chosen from any biology course or any courses on the electives lists from the five options for the BS degree.

2. Additional Degree Requirements

- a. Minimum 15 credits of 400-level biology electives taken at the UW.
- b. Minimum GPA requirements same as for a BS

Bachelor of Science

Suggested First- and Second-Year Courses: Students should concentrate on general chemistry and mathematics the first year, biology and organic chemistry the second year (see major requirements for specific courses). Transfer students: complete an entire sequence at one school if possible. It is not necessary, or even desirable, to complete the Areas of Knowledge requirement during the first two years.

Department Admission Requirements

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

Minimum requirements for consideration:

1. Matriculated student in good academic standing at UW Seattle.
2. Minimum 2.0 grade in each of BIOL 180, BIOL 200, and BIOL 220
3. Minimum 2.50 cumulative GPA for any supporting chemistry, physics, mathematics, and biology courses (or other courses that may apply to major requirements) completed at time of application.
4. Personal statement: May include description of interest in biology, career goals, undergraduate research interests, degree interest (BA or BS), and any other information applicant believes is useful in evaluating the application.

Meeting minimum requirements does not guarantee admission. Other factors include overall academic record and difficulty of other courses completed; time to degree set by UW Satisfactory Progress Policy, including frequency of incompletes or withdrawal grades and number of repeated courses; relevant work and life experience; and record of honors.

Major Requirements

90 credits as follows for all options:

1. A one-year sequence of introductory biology for majors (BIOL 180, BIOL 200, BIOL 220)
2. Three to six quarters of chemistry, covering general and organic chemistry: CHEM 120, CHEM 220, and CHEM 221; or CHEM 142, CHEM 152, CHEM 223, and CHEM 224; or CHEM 142, CHEM 152, CHEM 162* and CHEM 237, CHEM 238, and CHEM 239
3. One of the following two-quarter sequences of mathematics (calculus/statistics):
 - a. MATH 124 and MATH 125
 - b. Q SCI 291 and Q SCI 292
 - c. Either BIOST 310, Q SCI 381, or STAT 311; Q SCI 482
 - d. One approved calculus class and one approved statistics class; see adviser for approved lists.
 - e. Two quarters of physics: PHYS 114 and PHYS 115, or PHYS 121 and PHYS 122
 - f. *Genetics:* either GENOME 361, GENOME 371, or BIOL 340/FISH 340.

g. *Natural history/biodiversity:* one course selected from approved list (3 credits)

h. *Option Requirement:* 300- and 400-level courses selected from lists specific to each option. See department website for additional information. (34 credits)

*CHEM 162 is not required for this degree; however, CHEM 237, CHEM 238, and CHEM 239 are required by many professional programs and graduate schools, and that sequence does require CHEM 162.

4. Additional Degree Requirements:

- a. Minimum 2.00 cumulative GPA for all UW courses applied toward major requirements, including required supporting courses (chemistry, physics, mathematics), introductory biology, and upper-division coursework. (A grade of 2.0 is not required in individual courses.)
- b. Minimum 15 credits of 400-level biology electives taken at the UW.
- c. Two 300- or 400-level laboratory courses

Because of the differing specific requirements and choices for each option, it is extremely important for students to work closely with the Biology departmental advisers to insure completion of these 22-25 credits.

Continuation Policy

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

Minor

Paleobiology

Along with the Departments of Anthropology and Earth and Space Sciences, the Department of Biology offers a minor in paleobiology. For more information on the minor, see its entry elsewhere in the General Catalog.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The department graduates between 350 and 400 students each year. Biology degrees are applicable to many different fields, depending upon student interests. Students in the program gain analytical and laboratory skills that prepare them for entry-level positions in a variety of biologically related areas, including, but not limited to, biotechnology, laboratory and/or field research support, health science support, wildlife biology, and ecology and conservation work with a variety of agencies, consulting firms, and research organizations in the Northwest. Students may enter graduate programs that focus on some aspect of biological science (such as genetics, microbiology, immunology, ecology, environmental health, or cell and molecular biology), or enter a variety of professional programs, such as veterinary medicine, medicine, dentistry, pharmacy, laboratory medicine, and nursing.

- *Instructional and Research Facilities:* The Department of Biology occupies 128,000 square feet in Hitchcock, Johnson, and Kincaid Halls. Extensive research laboratories, teaching laboratories, computer workstations, and support services are found throughout the department.

Specialized facilities include more than 16,000 square feet of greenhouse, seawater facilities, growth rooms, electron microscopes, and other specialized equipment. Undergraduates have access to most of these facilities, especially those engaged in undergraduate research.

Off campus, the internationally recognized Marine Research Station, Friday Harbor Laboratories, provides

many opportunities for undergraduates, from courses to research apprenticeships.

- **Honors Options Available:** With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- **Research, Internships, and Service Learning:** Biology faculty welcome undergraduates into their research programs, often working closely with them. Approximately 40 percent of the 900 undergraduate biology majors finish with undergraduate research experience.

UW proximity to such Seattle area organizations as the Fred Hutchinson Cancer Research Center, Swedish Hospital, numerous biotech companies, NOAA, National Marine Fisheries Research Center, the Seattle Aquarium, and the Woodland Park Zoo, as well as the close ties of Biology faculty to Friday Harbor Laboratories and the faculty in the College of the Environment provide opportunities for biology majors to develop internships within these organizations. See adviser for ways to get credit for such experiences.

- **Department Scholarships:** Several scholarships are available, in a few cases to biology majors only. Most of these support students wishing to pursue an undergraduate research experience. They are competitive, sometimes highly so. They include:
 - **Howard Hughes Undergraduate Research Internship:** approximately 20 per year for freshmen and 20 per year for juniors and seniors.
 - **Friday Harbor Laboratory (FHL) Apprenticeships:** \$3,000 for one quarter, spring or autumn.
 - **Mary Gates Scholarships:** very competitive, across all science disciplines.
 - **Herschel and Caryl Roman Scholarship:** \$2,500-\$5,000 annually to one or two students who have an interest in genetics research.
 - **Porath/Johnson Endowed Scholarship:** one-year, \$5,000 scholarship to an outstanding biology major.

For qualifications, deadlines, and other details, see adviser or consult the Department of Biology website.

- **Student Organizations/Associations:** Beta Beta Beta Biology Honor Society, tribeta@uw.edu; Pre Med Society (Alpha Epsilon Delta), aed@uw.edu.

Degree Requirements

1. Request appointment of a Supervisory Committee no later than autumn quarter of the second year in residence. Meet at least once annually with the Supervisory Committee.
2. Upon completion of 18 graded credits and 60 regular credits of coursework, schedule the general examination, which consists of a written research proposal followed by an oral examination, taken no later than spring quarter of the second year in residence. Successful completion makes the student a candidate for the PhD degree.
3. Hold an appointment as a teaching assistant (TA) for at least three quarters while in residence.
4. Request appointment of a dissertation reading committee at the beginning of the quarter of anticipated graduation. The committee consists of three members of the student's Supervisory Committee.
5. Successfully defend the doctoral dissertation at the final examination. After completion of 27 dissertation credits, the student is ready to take the final examination, devoted to the subject of the dissertation. The format of the examination is a public seminar.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsat/.

BIOL 100 Introductory Biology (5) NW Develops an awareness of science by studying basic biological principles and their application to problems of humans and society in the contexts of special topics or themes, which vary quarter to quarter. For non-science majors only.

BIOL 106 Introductory Biology Seminar (1/3, max. 6) NW Focuses on current topics in biology. Topics vary from quarter to quarter. Designed to enhance learning skills of students who intend to take BIOL 180/BIOL 200/BIOL 220 and major in one of the biological sciences. Recommended: high school chemistry and biology, or one quarter of college chemistry.

BIOL 108 Evolution and Human Behavior (3) NW Introduction to evolution by natural selection, examining the light it can throw on human biology and behavior in such areas as the nature of sex differences, sexual conflict, and conflict between parents and children. Does not fulfill major requirements. Offered: jointly with BIO A 100.

BIOL 110 Freshman Discovery Seminar in Biology (5) NW Introduces incoming freshman to research basics and scholarly inquiry skills used in the study of biology.

BIOL 114 Astrobiology: Life in the Universe (5) NW R. BUICK, D. CATLING, V. MEADOWS, W. SULLIVAN Introduction to the new science of astrobiology, study of the origin and evolution of life on Earth, and the search for microbial and intelligent life elsewhere in the Universe. Designed for non-science, liberal arts majors. Offered: jointly with AST-BIO 115/ASTR 115/ESS 115/OCEAN 115.

BIOL 118 Survey of Physiology (5) NW Human physiology, for nonmajors and health sciences students. Offered: AWSpS.

BIOL 119 Elementary Physiology Laboratory (1) NW Prerequisite: BIOL 118 which may be taken concurrently. Offered: AWSpS.

BIOL 120 Current Controversies in Biology (2-5, max. 6) NW Explores a current controversial topic in biology, stressing information needed by the general public to make informed personal, political, and ethical decisions relating to this topic.

BIOL 180 Introductory Biology (5) NW Mendelian genetics, evolution, biodiversity of life forms, ecology, and conservation biology. Open to all students interested in biology

whether intending to major in the biological sciences, enroll in preprofessional programs, or fulfill a Natural World requirement. First course in a three-quarter series (BIOL 180, BIOL 200, BIOL 220). Offered: AWSpS.

BIOL 200 Introductory Biology (5) NW For students intending to take advanced courses in the biological sciences or enroll in preprofessional programs. Metabolism and energetics, structure and function of biomolecules, cell structure and function, animal development. Second course in a three-quarter series (BIOL 180, BIOL 200, BIOL 220). Prerequisite: minimum grade of 1.7 in either BIOL 180, B BIO 180, or TESC 120; either CHEM 152, CHEM 155, CHEM 220, CHEM 223, or CHEM 237. Offered: AWSpS.

BIOL 220 Introductory Biology (5) NW For students intending to take advanced courses in the biological sciences or enroll in preprofessional programs. Animal physiology, plant development and physiology. Final course in a three-quarter series (BIOL 180, BIOL 200, BIOL 220). Prerequisite: minimum grade of 2.0 in either BIOL 200, B BIO 220, or TESC 130. Offered: AWSpS.

BIOL 250 Marine Biology (3/5) I&S/NW Lecture-laboratory course in marine biology focusing on physical, biological, and social aspects of the marine environment. Topics include oceanography, ecology, physiology, behavior, conservation, fisheries, exploration, and activism. Weekend field trip. Honors section research project. Offered: jointly with FISH 250/OCEAN 250; AS.

BIOL 280 The History of Life (4) NW P. WARD Follows the history of life from its first formation including the origin of life and life's diversification from single cells through multi-cellularity. Examines fossils and DNA evidence from understanding the sequence of events and evolutionary history of life.

BIOL 293 Study Abroad - Biology (1-10, max. 10) NW For participants in UW Study Abroad program. Specific content varies and must be individually evaluated. Credit does not apply to major requirements without approval.

BIOL 300 Introduction to Neuroscience (4) NW Provides a broad introduction to the study of brain function in humans and other animals. Emphasizes how circuits within the brain process sensory information and generate complex movements. No credit if NBIO 301, NBIO 302, or BIOL 461 already taken. Prerequisite: either MATH 111, MATH 112, MATH 120, MATH 124, MATH 144, Q SCI 190, or Q SCI 291. Offered: W.

BIOL 302 Laboratory Techniques in Cell and Molecular Biology (4) NW T. IMAIZUMI, L. MARTIN-MORRIS Explores the use of various cell and molecular laboratory techniques, such as PCR, cloning, gel electrophoresis, and bacterial transformation through hands-on experiments. Students produce a portfolio of techniques they have learned. Writing credit. Prerequisite: either BIOL 355 or a minimum grade of 2.5 in either BIOL 200, B BIO 200, or TESC 130.

BIOL 305 Science Communication: Video Storytelling in Biology (3) VLPA/NW P. BOERSMA Students make a short film on a biological story, concept, or theory. Includes developing a storyline, getting the shots to make compelling viewing, editing, and producing a short video. Prerequisite: either BIOL 180, B BIO 180, or TESC 120. Offered: Sp.

BIOL 311 Biology of Fishes (3/5) NW Covers morphological, physiological, behavioral, and ecological diversity of fishes of the world; designed to provide a basic foundation for advanced courses in all areas of aquatic sciences. 3-credit option does not include laboratory. Recommended: 10 credits biological science. Offered: jointly with FISH 311; W.

BIOL 315 Biological Impacts of Climate Change (3) NW Covers the biological impacts of climate change, including changes in species distributions and interactions, altered phenology, and ecosystem dynamics. Discusses implications of these biological impacts for society (e.g., food security, public health, and resource management). Prerequisite: either BIOL 180, B BIO 180, or TESC 120.

GRADUATE PROGRAM

Graduate Program Coordinator

106 Kincaid Hall, Box 351800

206-685-8240

biograd@u.washington.edu

Doctor of Philosophy

Admission Requirements

1. Satisfy UW Graduate School requirements as shown at www.grad.washington.edu/students/index.shtml
2. Have or obtain an academic background equivalent to that required of students receiving a BS degree from the department www.biology.washington.edu. Assessment of background and requirements for any remedial work is made in the student's meeting with a temporary guiding committee just prior to the beginning of autumn quarter, in the student's first year of residence. The committee develops a list of required actions to correct any perceived deficiencies and recommends courses likely to be of value to the student in the first year or two of study.

BIOL 317 Plant Classification and Identification (5) NW R. OLMSTEAD Classification and diversity of seed plants; concepts and principles of classification, lab and field study of common plant families in Washington, and skill development for identification of species. One weekend field trip. Offered: SpS.

BIOL 325 The Tree of Life (4) NW S. FREEMAN Provides an overview of biodiversity by focusing on key characteristics of major lineage throughout the tree of life. Explores major diversification events by analyzing changes in reproduction, energetics, cell structure, sensory systems, and adaptations to abiotic stress, and species interactions. Prerequisite: either BIOL 220, B BIO 220, or TESC 140.

BIOL 330 Natural History of Marine Invertebrates (5) NW Field and laboratory course emphasizing the habits, habitats, adaptations, and interrelationships of marine animals. Weekend field trips required. Offered: S.

BIOL 331 Landscape Plant Recognition (3) NW S. REICH-ARD Field recognition of important groups of woody landscape plants, emphasizing diversity at the genus and family levels. Cultivated plant nomenclature. Plant descriptive characters evident in the field with eye and hand lens. Hardiness and landscape applications. Recommended: BIOL 317. Offered: jointly with ESRM 331; Sp.

BIOL 340 Genetics and Molecular Ecology (5) NW Application of molecular markers to ecology, evolution, and the management of living resources. Emphasis on understanding the strengths and weaknesses of the approach based on case studies. Prerequisite: BIOL 200. Offered: jointly with FISH 340; A.

BIOL 350 Foundations in Physiology (3) NW Physiology core course for biological sciences majors. Analysis of basic principles of animal and plant physiology, with emphasis on cellular processes that mediate organismic processes. Serves as gateway to upper-division courses in physiology. Prerequisite: minimum grade of 2.0 in either BIOL 220, B BIO 220, or TESC 140; recommended: either PHYS 115 or PHYS 122. Offered: AWSpS.

BIOL 354 Foundations in Evolution and Systematics (3) NW Evolution and systematics core course for biological sciences majors. Emphasizes patterns, processes, and consequences of evolutionary change. Serves as gateway to 400-level courses and seminars in evolution, population genetics, sociobiology, conservation biology, phylogenetics, and systematics. Prerequisite: either BIOL 180, B BIO 180, TESC 120, or BIO A 201. Offered: ASp.

BIOL 355 Foundations in Molecular Cell Biology (3) NW Cell biology core course for biological sciences majors. Emphasis on molecular approaches to understand cell structure, function, and regulation, and the analysis of experimental design and data interpretation. Serves as a prerequisite to advanced 400-level cell, molecular, and developmental biology courses and seminars. Prerequisite: minimum grade of 2.0 in either BIOL 200, B BIO 200, TESC 130. Offered: AWSpS.

BIOL 356 Foundations in Ecology (3) NW Ecology core course for biological sciences majors. Emphasizes understanding species interactions in biological communities and relationships of communities to environment. Serves as a prerequisite to 400-level courses and senior seminars in ecology, population, and conservation biology. Prerequisite: either BIOL 180, B BIO 180, or TESC 120. Offered: AW.

BIOL 360 Cellular Anatomy (4) NW Zeman Recognition of cellular and tissue structures in plants and animals with correlations to normal physiology and disease states. Prerequisite: minimum grade of 2.0 in either BIOL 220, B BIO 220, or TESC 140; may not be taken for credit if credit earned in BIOL 403.

BIOL 380 Biomedical Advances and Society (3) I&S A. SCHIVELL Recent biological advances studied in the context of our society, designed to foster critical thinking, public awareness, and policy impact. Topics may include human reproductive technologies, genetic engineering,

embryonic stem cell research, and medical scanning improvements. Prerequisite: either BIOL 220, B BIO 220, or TESC 140.

BIOL 385 Evolutionary Medicine (3) NW B. DUNCAN, D. EISENBERG Explores evolutionary causes of health and disease. Considers how natural selection and the legacies of our human, primate, mammalian and bacterial ancestries have shaped our biology. Topics include mental disorders, aging, cancer, diet, obesity, diabetes, infectious diseases, racism, and health differences between human groups. Prerequisite: either BIO A 201 or BIOL 180. Offered: jointly with BIO A 355.

BIOL 396 Peer Facilitation - Teaching in Biology (1-4, max. 8) NW For undergraduates working in biology courses as peer facilitators. Peer facilitators assist with labs, lectures, and course administration and gain direct classroom experience. No independent teaching or grading. Opportunities vary by quarter and instructor. Prerequisite: either BIOL 350, BIOL 354, BIOL 355, or BIOL 356. Credit/no-credit only.

BIOL 399 Biology Internship Program (2-12, max. 15) NW B. WIGGINS Coordinated internship in a biology-related field. Allows a structured, real world biology work experiences off-campus. All internships must be approved by instructor. Credit/no-credit only. Offered: AWSpS.

BIOL 400 Experiments in Molecular Biology (4) NW A. CROWE, A. SCHIVELL Integrated reading, writing, and experimentation in molecular biology. Design and implementation of experiments using modern molecular biology techniques to address current questions in biology. Emphasizes reading and evaluating primary research literature. Includes practice in different scientific writing styles. Prerequisite: minimum grade of 2.0 in BIOL 355.

BIOL 401 Advanced Cell Biology (3) NW Selected topics in molecular cell biology. Strong emphasis on reading and interpreting primary research literature. Writing intensive course. Prerequisite: BIOL 355.

BIOL 402 Functional Genomics (4) NW A. PAREDEZ Students perform initial characterization of novel genes through epitope tagging and localization. Skills covered include: preparation of solutions, Genomic Database queries, PCR, electrophoresis, DNA purification, cloning, transformation, and immunofluorescence microscopy. Prerequisite: minimum grade of 2.0 in BIOL 355.

BIOL 403 Physiological Mechanisms of Histology (5) NW L. ZEMAN Develops recognition of cellular structures with correlations to normal physiology and disease states. Laboratory projects cover harvesting, sectioning, and mounting tissue. Includes weekly scientific papers. Prerequisite: either a grade of 3.0 in either BIOL 220, B BIO 220, or TESC 140, or a minimum grade of 2.0 in BIOL 350 or BIOL 355; may not be taken for credit if credit earned in BIOL 360.

BIOL 404 Animal Physiology: Cellular Aspects (3) NW H. DE LA IGLESIA Examines the physiology of membrane transport, nervous signaling, sensory systems, behavioral modulation, muscle, neuronal and endocrine integration, and circadian rhythms. Emphasis on the cellular and tissue level. Prerequisite: either BIOL 220, B BIO 220, or TESC 140; either CHEM 224 or CHEM 239; either PHYS 115 or PHYS 122. Offered: A.

BIOL 405 Cellular and Molecular Biology of Human Disease (3) NW Emphasizes the understanding of disease mechanisms through studies of genetic and cellular basis human disease and disease models. Based on analyses of primary research articles. Prerequisite: minimum grade of 2.0 in BIOL 355; either GENOME 361 or GENOME 371; either BIOC 405, BIOC 440, BIOL 401.

BIOL 408 Mechanisms of Animal Behavior (4) NW Beecher, Brenowitz, Sisneros Comparative exploration of physiological and perceptual mechanisms that control behaviors necessary for survival and reproduction in animals. Model systems discussed include animal communication, mate choice, escape behavior, learning and memory, orienta-

tion, biological rhythms, foraging behavior. Prerequisite: either minimum 2.0 grade in BIOL 180, or 3.5 in PSYCH 200, or 2.0 in PSYCH 300. Offered: jointly with PSYCH 408.

BIOL 409 Sociobiology (5) NW Biological bases of social behavior, emphasizing evolution as a paradigm. Emphasizes how to think like an evolutionary biologist, especially with regard to interest conflict. Topics are individual versus group selection, kin selection, altruism, mating systems, sexual conflict, alternate reproductive strategies, and parent/offspring conflict. Prerequisite: either minimum grade of 2.0 in BIOL 180, 2.0 in B BIO 180, 2.0 in TESC 120, 3.5 in PSYCH 200, or 2.0 in PSYCH 300. Offered: jointly with PSYCH 409.

BIOL 411 Developmental Biology (4) NW Embryology and subsequent development of vertebrate and invertebrate animals, including *Xenopus*, mammals, chicks, *Drosophila*, echinoderms. Morphological changes in developing animals; experimental analysis of developing systems; underlying genetic and biochemical regulation of development. Prerequisite: minimum grade of 3.0 in either BIOL 200, B BIO 200, or TESC 130, or a minimum grade of 2.0 in BIOL 354 or BIOL 355. Offered: AW.

BIOL 413 Molecular Genetics of Development (4) NW J. PARRISH Uses molecular biology, cell biology, and genetic approaches to investigate how nutrient signals influence neuron growth. Prerequisite: BIOL 355.

BIOL 414 Molecular Evolution (5) NW Survey of empirical approaches to the study of molecular evolution and ecology, drawing on examples from a variety of taxa and the recent literature. Topics include DNA sequencing and systematics, fingerprinting approaches in behavioral ecology, and adaptive evolution at the molecular level. Prerequisite: BIOL 354. Offered: jointly with GENOME 414.

BIOL 415 Evolution and Development (3) NW D. PARICHY Analysis of intertwined developmental and evolutionary processes studied through evolution of developmental genes, proteins, and expression patterns in different organisms. Includes reading and analyzing implications for ecology evolution, and human disease. Prerequisite: either a minimum grade of 3.0 in BIOL 200, B BIO 200, or TESC 130, or a minimum grade of 2.0 in either BIOL 354 or BIOL 355.

BIOL 416 Molecular Genetics of Plant Development (3) NW Plant growth and development examined in molecular-genetic terms. Covers mutation, dominance, redundancy, epistasis, and key technologies for discovery of gene function as well as embryogenesis, meristem formation, flower development, and other problems in plant development. Prerequisite: minimum grade of 2.0 in BIOL 220, B BIO 220, TESC 140, GENOME 361, or GENOME 371.

BIOL 417 Comparative Reproductive Physiology of Vertebrates (4) NW Compares the reproductive physiology of fishes, amphibians, reptiles, birds, and mammals. Prerequisite: either BIOL 350 or BIOL 355.

BIOL 418 Biological Clocks and Rhythms (3) NW H. DE LA IGLESIA Examines circadian rhythms and other forms of biological rhythmicity, including annual and tidal rhythms. Includes theoretical background as well as aspects that range from the molecular and cellular basis to the ecological and evolutionary implications of biological rhythms. Prerequisite: BIOL 350 or BIOL 355.

BIOL 421 Ecological and Evolutionary Physiology of Animals (3) NW Explores the role of physiology in the ecology and evolution of animals. Special emphasis on how physiology influences responses to environmental change. Prerequisite: BIOL 350; either BIOL 354 or BIOL 356.

BIOL 422 Physiology of Plant Behavior (3) NW E. VAN VOLKENBURGH Advanced physiology seminar focusing on plant sensory mechanisms, transport and integration of information, and behavior in response to a variety of environmental stimuli. Prerequisite: either BIOL 220, B BIO 220, or TESC 140.

BIOL 423 Marine Ecological Processes (3) NW E. CAR-RINGTON Studies the ecology of the oceans and coastal regions, emphasizing benthic communities common to the Pacific Northwest. Prerequisite: either BIOL 180, B BIO 180, or TESC 120; recommended: either BIOL 250 or BIOL 356.

BIOL 424 Plant Ecophysiology (5) NW S. K/M Explores physiological mechanisms that underlie ecological observations, including how above- and below-ground microclimates develop and affect plant physiological processes. Discusses acclimation to environmental change along with species differences in physiological processes and plant's occupation of heterogeneous environments. Laboratories emphasize field measurement techniques. Prerequisite: either BIOL 180, B BIO 180, TESC 120, ESRM 201, ESRM 162, or FISH 162. Offered: jointly with ESRM 478; W.

BIOL 425 Plant Physiology and Development (5) NW Expanded coverage of plant growth, nutrition, metabolism, and development. Prerequisite: either BIOL 220, B BIO 220, or TESC 140. Offered: W.

BIOL 427 Biomechanics (5) NW T. DANIEL Physical biology emphasizing a mechanical approach to ecological, evolutionary, and physiological questions. Basic principles underlying fluid and solid mechanics to explore responses of animals to flows, loads, and motions. Prerequisite: either BIOL 220, B BIO 220, or TESC 140; either MATH 125 or Q SCI 292; either PHYS 114 or PHYS 121.

BIOL 428 Sensory Neurophysiology and Ecology (3) NW J. RIFFELL Examines behavioral and physiological processes within an environmental framework. Uses a synthetic approach emphasizing applications to cell biology, physiology and behavior, and biomechanics. Prerequisite: either BIOL 350 or BIOL 355; either PHYS 114 or PHYS 121; recommended: linear algebra.

BIOL 430 Marine Zoology (5) NW Survey of groups of invertebrate animals represented in the San Juan Archipelago; natural history, functional morphology, ecology, distribution, habitat, adaptation, trophic interrelationships, and evolution. Prerequisite: BIOL 445, which must be taken concurrently; permission of Friday Harbor director. Recommended: 20 credits in biological sciences. Offered: jointly with FHL 430.

BIOL 432 Marine Invertebrate Zoology (9) NW Comparative morphology and biology of marine invertebrates with emphasis on field and laboratory studies. Representatives of all major and most minor phyla are collected, observed alive, and studied in detail. Taken at Friday Harbor Laboratories. Not open for credit to students who have taken BIOL 433 or BIOL 434. Recommended: 20 credits in biological sciences. Offered: S.

BIOL 433 Marine Ecology (5) NW J. RUESINK Study of marine ecological processes such as recruitment, disturbance, competition, and predation, and their effects on the structure and diversity of marine communities. Weekend field trips to local intertidal habitats required. Prerequisite: either BIOL 356, BIOL 472, or a minimum grade of 3.4 in either BIOL 180, B BIO 180, or TESC 120. Offered: Sp, odd years.

BIOL 434 Invertebrate Zoology (5) NW Comparative biology and morphology of invertebrates. Laboratory work emphasizes structures and functions. Emphasizes annelids and related worms, mollusks, and arthropods. Not open to students who have taken BIOL 430 or BIOL 432. Prerequisite: either BIOL 220, B BIO 220, or TESC 140.

BIOL 438 Quantitative Approaches to Paleobiology, Morphology, and Systematics (5) NW Introduction to the principles and analytical methods in the study of paleobiology, morphology, and systematics. Topics include paleobiogeography, morphology-based phylogenetics, evolutionary rates, biodiversity curves, functional morphology, morphometrics, and paleoecology. Emphasis on application of methods using fossil and modern specimens. Prerequisite: either BIOL 280, BIOL 354, or ESS 213.

BIOL 440 General Mycology (5) NW J. AMMIRATI General survey of the fungi with emphasis on life cycles, structure, physiology, economic importance. Prerequisite: either BIOL 220, B BIO 220, or TESC 140.

BIOL 441 Trends in Land Plant Evolution (5) NW Covers key innovations and trends during the evolution of land plants. Uses an evolution of development (evo-devo) approach that compares morphological, anatomical, developmental, and molecular traits across main evolutionary lineages of plants. Prerequisite: either BIOL 220, B BIO 220, or TESC 140; either BIOL 350, BIOL 354, BIOL 355, or BIOL 356. Offered: A.

BIOL 442 Mushrooms and Related Fungi (5) NW J. AMMIRATI General biology, ecology, and classification of mushrooms, polypores, puffballs, and other related basidiomycetes. Emphasis on Pacific Northwest species. Prerequisite: either BIOL 360, BIOL 403, or BIOL 440.

BIOL 443 Evolution of Mammals and their Ancestors (5) NW Highlights the evolutionary history and systematics of mammals and their ancestors. Examines fossil and modern mammal specimens from the Burke Museum collections. Required field trip. Prerequisite: either BIOL 354, BIOL 453, or ESS 100. Offered: Sp.

BIOL 444 Ornithology (5) NW Field, lecture, and laboratory study of birds from an evolutionary perspective. Emphasizes taxonomy, breeding systems, brood parasitism, appearance, molt, migration, orientation, social behavior, song, and flight. Includes Saturday and weekend field trips for which students are required to share a portion of transportation costs. Prerequisite: either BIOL 220, B BIO 220, or TESC 140; recommended: BIOL 350 or BIOL 356.

BIOL 445 Marine Botany (5) NW Survey of plants represented in marine environments; natural history; ecology, distribution, habitat, adaptation, and trophic interrelationships. Taken at Friday Harbor laboratories. Prerequisite: either BIOL 220, B BIO 220, or TESC 140; BIOL 430, which must be taken concurrently. Offered: jointly with FHL 440.

BIOL 446 Cell and Molecular Techniques in Algal Biology (3) NW R. CATTOLICO Introduction to major algal groups emphasizing differences in form and function. Laboratory techniques include methods for culturing and plating algae; fluorescence microscopy of chloroplasts and lipid bodies; subcellular fractionation of organelles; pigment analysis and protein determination. Focus placed on scientific writing. Prerequisite: BIOL 220; BIOL 355. Offered: Sp.

BIOL 447 The Greening of the Earth: Influence of Plants on the Evolution of Terrestrial Ecosystems (5) NW C. STROMBERG Examines the evolution of terrestrial ecosystems focusing on how abiotic factors such as climate change have shaped the evolution of vegetation on earth, and how the evolution of vegetation has influenced the evolution of animals. Introduces paleoecological techniques using Burke Museum plant fossils. Prerequisite: either BIOL 354 or ESS 213. Offered: A.

BIOL 448 Mammalogy (5) NW S. SANTANA MATA Studies evolutionary patterns, ecology, behavior, physiology, and taxonomy of mammals. Relies on a comparative, systems approach to understand the major trends and mechanisms maintaining the diversity in form and function in mammals. Prerequisite: either BIOL 350, BIOL 354, or BIOL 356.

BIOL 449 Applied Phylogenetics (3) NW A. LEACHE Emphasizes the estimation of species trees - multilocus estimates of species or population relationships as opposed to genealogies of alleles. Provides students with the computation and bioinformatics skills needed to apply new phylogenetic techniques that can accommodate larger, more complex data sets. Prerequisite: minimum grade of 2.0 in BIOL 354.

BIOL 450 Vertebrate Paleontology (5) NW C. SIDOR Examines fossil vertebrate life, focusing on systematics and morphology of major lineages (fish, reptiles, bird, and early mammal relatives). Examines fossil and modern vertebrates from the Burke Museum collection in the lab. Week-

end field trip. Prerequisite: either BIOL 354, BIOL 452, BIOL 453 or ESS 100. Offered: jointly with ESS 452.

BIOL 451 Invertebrate Paleontology (5) NW Important larger invertebrate groups; morphology, classification, stratigraphic distribution, evolution, paleoecology. Offered: jointly with ESS 451.

BIOL 452 Vertebrate Biology (5) NW The biology of vertebrate animals, emphasizing their diversity, adaptations, and evolutionary history. Introduces aspects of behavior, physiology, morphology, and ecology that emerge from the comparative study of vertebrates. Laboratory includes local field trips, films, and introduction to regional vertebrate fauna. Prerequisite: either BIOL 180, B BIO 180, or TESC 120. Offered: SpS.

BIOL 453 Comparative Anatomy of Vertebrates (5) NW Comparison of the structure of vertebrate organ systems: integument, skeletal, muscle, digestive, respiratory, cardiovascular, urinary, and reproductive, with an emphasis on evolutionary trends. Prerequisite: either BIOL 350 or BIOL 452. Offered: W.

BIOL 454 Entomology (5) NW Covers the biology of terrestrial arthropods, with emphasis on insects. Includes structure, classification, physiology, and ecology of insects. Interrelationships of insects and man. Requires at least one weekend field trip. Prerequisite: either BIOL 180, B BIO 180, or TESC 120.

BIOL 457 Chemical Communication (3) NW J. RIFFELL Exploration of how chemical signals are produced, transported, and influence behavior of microbes, plants, and animals. Synthetic approach, with emphasis on applications to cell biology, neurobiology, and ecology. Prerequisite: either a minimum grade of 2.5 in either BIOL 220, B BIO 220, or TESC 140, or a minimum grade of 2.0 in BIOL 350.

BIOL 458 Behavioral Genetics (4) NW Role of genetics in determining variation in human and animal behavior and in regulating behavioral development. Techniques for quantifying genetic variation, behavioral effects, and gene expression. Prerequisite: either minimum 3.5 grade in PSYCH 200, 2.0 in PSYCH 300, or 2.0 in BIOL 180. Offered: jointly with PSYCH 458.

BIOL 459 Developmental Neurobiology (3) NW M. BOSMA Invertebrate and vertebrate examples illustrate the mechanisms used in constructing nervous systems. Focus on the cellular and molecular mechanisms that underlie questions about the basis of neuronal diversity, axonal pathfinding and target recognition, synaptogenesis, and activity-dependent plasticity. Prerequisite: minimum grade of 2.0 in either BIOL 350 or BIOL 355. Offered: Sp.

BIOL 460 Mammalian Physiology (3) NW Principles of mammalian physiology with special emphasis on the cardiac, respiratory, renal systems taught at the organ and organ systems level. Prerequisite: a minimum grade of 2.5 either BIOL 350 or NBIO 301.

BIOL 461 Neurobiology (3) NW Broad examination of integrative mechanisms in central nervous system function, with emphasis on sensory processing, plasticity, and control of behavior. Examples are taken from a variety of animal groups. Prerequisite: minimum grade of 2.0 in BIOL 350; either PHYS 115 or PHYS 122. Offered: W.

BIOL 462 Advanced Animal Physiology (3) NW Physiology at levels of organisms and behavior, organ systems, and cells - an evolutionary and integrative perspective. Organismal physiology: metabolism, temperature, locomotion, osmoregulation, respiration, circulation, digestion. Prerequisite: minimum grade of 2.0 in either BIOL 350 or NBIO 301. Offered: A.

BIOL 463 Advanced Animal Physiology Lab (3) NW Experimental design and techniques, data analysis, written reports. Original project labs and experiments in physiology. Prerequisite: BIOL 462, which may be taken concurrently. Offered: A.

BIOL 465 Comparative Endocrinology (3) NW Hormonal integration of living processes at all levels in animals: molecules, cells, organs, organisms, populations. Prerequisite: BIOL 350.

BIOL 466 Pathobiology of Emerging Diseases (3) NW L. ZEMAN Examination of the causes, alterations in cellular function, and remediation of emerging diseases in plants and animals from a global perspective. Includes weekly scientific papers. Prerequisite: either BIOL 350, BIOL 355, BIOL 356, or BIOL 380.

BIOL 467 Comparative Animal Physiology (3) NW Studies organismal function in an evolutionary context. Uses a variety of animals to highlight transitions in metabolism, muscle function, respiration, circulation, digestion, excretion, and ion regulation. Prerequisite: either BIOL 220, B BIO 220, or TESC 140.

BIOL 468 Medical Physiology (3) D. WEIGLE Students deepen their understanding of human physiology and pathophysiology by performing in-depth analyses of actual medical cases. Cases are chosen to illustrate the mechanisms of frequently encountered diseases and the clinical presentation of affected patients. Prerequisite: either BIOL 220, B BIO 220, or TESC 140; BIOL 350.

BIOL 469 Evolution and Medicine (3) NW C. BERGSTROM Responds to new applications of evolutionary biology in medicine, now being discovered at an accelerating rate. Emphasizes medically relevant aspects of evolutionary biology. Prerequisite: minimum grade of 2.0 in either BIOL 180, B BIO 180, or TESC 120.

BIOL 470 Biogeography (4) NW Analysis of historical and ecological determinants of current and past distributions of organisms. Integrates techniques developed by taxonomists, paleontologists, geologists, evolutionists, ecologists, and biogeographers to elucidate relationships between geographical distributions and continental drift, ecological interactions, climate, and dispersal abilities of organisms. Prerequisite: either BIOL 220, B BIO 220, or TESC 140.

BIOL 471 Plant Ecology (5) NW Basic concepts of plant ecology, including studies of the environment, plant-environment interactions, populations, communities, and ecosystems. Laboratory includes one weekend field trip, laboratory and greenhouse experiments, and an introduction to ecological problem solving. Prerequisite: either BIOL 180, B BIO 180, or TESC 120.

BIOL 472 Community Ecology (5) NW Covers the complexity of biological communities as influenced by biotic and abiotic factors, as well as the impact of human activities (like global warming) on communities. Prerequisite: BIOL 356.

BIOL 473 Limnology (3) NW Ecology, conservation, and management of inland aquatic ecosystems. Explores interactions among biological, chemical, and physical features of lakes and other aquatic habitats. Prerequisite: BIOL 180. Offered: jointly with FISH 473; A.

BIOL 474 Limnology Laboratory (2) NW Examination of biota of fresh waters, survey of limnological methods, analysis of data, and writing of scientific papers. Prerequisite: BIOL 473/FISH 473/CEE 462, which may be taken concurrently. Offered: jointly with CEE 463/FISH 474; A.

BIOL 475 Intensive Field Experience in Biology (5) NW Introduces field methods and research in various areas of biology, e.g., paleontology, ecology, climate change, and mycology. Includes two or more weeks away from campus at field site. Offered: S.

BIOL 476 Conservation Biology (5) NW Explores biological, managerial, economic, and ethical concepts affecting survival of species. Applications of ecology, biogeography, population genetics, and social sciences for the preservation of species in the face of widespread global habitat modification, destruction, and other human activities. Prerequisite: either a minimum grade of 2.5 in BIOL 180, B BIO 180, TESC 120, or BIOL 356.

BIOL 477 Seminar in Marine Biology (3) NW Roccap Reviews current research in marine biology. Emphasizes critical readings and discussion of primary literature. Prerequisite: FISH 250, OCEAN 250, or BIOL 250; Q SCI 381, STAT 220, or STAT 311. Offered: jointly with FISH 477/OCEAN 477; W.

BIOL 478 Topics in Sustainable Fisheries (3, max. 9) I&S/ NW Seminar series featuring local, national, and internationally known speakers in fisheries management and conservation. Conservation/restoration in practice. Pre-seminar discussion section focusing on select readings. Topics may include harvest management, whaling, by-catch, salmon, marine protected areas, introduced species, citizen action, co-management, and marine ethics. Offered: jointly with ENVIR 478/FISH 478.

BIOL 479 Research in Marine Biology (1-15, max. 15) Individual research on topics in marine biology. Research projects supervised by an individual faculty member. Projects may include laboratory work, fieldwork, and literature surveys. Prerequisite: BIOL 250/FISH 250/OCEAN 250; Q SCI 381. Offered: jointly with FISH 479/OCEAN 479; AWSpS.

BIOL 480 Field Ecology (4) NW P. BOERSMA Field projects examining ecological and behavioral topics such as foraging and social behavior, species interactions, and structure of terrestrial and aquatic communities. Two weekend fieldtrips required. Prerequisite: either BIOL 356 or a minimum grade of 3.0 in either BIOL 180, B BIO 180, or TESC 120. Offered: Sp.

BIOL 481 Experimental Evolutionary Ecology (5) NW B. KERR Explores experimentally approachable questions in ecology and evolution through lectures, laboratory, and field experiments. Topics may include evolution of bacterial antibiotic resistance, the evolution of virulence, seed predation, plant biodiversity, and others. Prerequisite: either BIOL 180, B BIO 180, or TESC 120. Offered: A.

BIOL 482 Advanced Experimental Evolutionary Ecology (2-5, max. 15) NW B. KERR Working in pairs or independently, students pursue supervised original field or laboratory research projects. Projects span three academic quarters, with project development beginning in autumn, research continuing in winter, and culminating in spring with production of a scientific paper. Prerequisite: BIOL 481, which may be taken concurrently. Offered: WSpS.

BIOL 483 Senior Seminar in Paleobiology (1, max. 6) Supervised readings and group discussion. Prerequisite: either BIOL 443, BIOL 447, BIOL 450/ESS 452, BIOL 451/ESS 452, ESS 450, BIO A 388, or ARCHY 470.

BIOL 484 Senior Seminar in Evolution and Systematics (1-3, max. 9) NW Supervised readings and group discussion. Prerequisite: BIOL 354.

BIOL 485 Senior Seminar in Cellular, Molecular and Developmental Biology (1-3, max. 9) NW Supervised readings and group discussion. Prerequisite: minimum grade of 2.0 in either BIOL 350, BIOL 354, BIOL 355, BIOL 356, BIOC 405, BIOC 406, BIOC 440, BIOC 441, or BIOC 442.

BIOL 486 Senior Seminar in Ecology (1-3, max. 9) NW Supervised readings and group discussion. Prerequisite: BIOL 356.

BIOL 487 Senior Seminar in Conservation Biology (1-3, max. 9) NW Supervised readings and group discussion. Prerequisite: BIOL 356.

BIOL 488 Senior Seminar in Physiology (1-3, max. 9) NW Supervised readings and group discussion. Prerequisite: BIOL 350.

BIOL 489 Senior Seminar in Plant Biology (1-3, max. 9) NW Supervised readings and group discussion. Prerequisite: BIOL 220; recommended: one upper-division course emphasizing plant biology.

BIOL 490 Undergraduate Seminar (1-3, max. 6) NW Supervised readings and group discussion of selected topics of broad biological significance. Prerequisite: either BIOL 220, B BIO 220, or TESC 140.

BIOL 492 The Teaching of Biology (2) Basic course in the teaching of biology in the secondary school. Designed to help pre-service teachers identify useful laboratory techniques, materials, and content for the teaching of pre-college biology. Special attention to current issues in biology education. Required for biology students in Teacher Certification Program.

BIOL 493 Study Abroad - Advanced Biology (1-15, max. 15) NW For participants in UW Study Abroad program. Specific content varies and must be individually evaluated. Credit does not apply to major requirements without approval.

BIOL 495 Undergraduate Research in Paleobiology (1-5, max. 10) NW Individually arranged undergraduate research for students in the field of paleobiology.

BIOL 497 Special Topics in Biology (1-5, max. 10) NW

BIOL 498 Library Research (1-5, max. 10)

BIOL 499 Undergraduate Research (1-20, max. 20)

BIOL 500 Topics in Biology (1-3, max. 16)

BIOL 501 Topics in Biological Instruction (1-2, max. 10) Focused discussion of on-going research in instructional methods for life science courses. Credit/no-credit only.

BIOL 502 Grant Writing (3) Introduces the steps of compiling a successful grant proposal, using the NSF graduate fellowship as a template. Offered: A.

BIOL 505 Problems in Biological Instruction (1-3, max. 10)

BIOL 506 Scientific Manuscript Writing (4) Introduces the writing of scientific articles. Students write a scientific manuscript, cover letter, and identify a journal for submission. Offered: W.

BIOL 511 Topics in Mathematical Biology (1-3, max. 15) Discussion of current topics in mathematical biology.

BIOL 520 Departmental Seminar (1, max. 18) Credit/no-credit only. Offered: AWSpS.

BIOL 533 Advanced Organismal Biology (9) Advanced study and research in organismal biology. Emphasizes marine organisms and habitats of the San Juan Archipelago. Includes individual research projects. Prerequisite: permission of Director of Friday Harbor Laboratories. Offered: S.

BIOL 536 Comparative Invertebrate Embryology (9) Diversity in developmental patterns in major marine taxa. Analysis of evolutionary changes in development. Emphasis on observation of live embryos and larvae. Prerequisite: permission of Director of Friday Harbor Laboratories; recommended: courses in invertebrate zoology and developmental biology. Offered: SpS.

BIOL 539 Marine Phycology (9) Field and laboratory studies of marine algae of the San Juan Archipelago with emphasis on seaweed diversity, identification, and the role of algae in marine ecosystems. Offered at Friday Harbor Laboratories.

BIOL 540 Seminar in Molecular, Cellular, and Developmental Biology (1-3, max. 15) Weekly discussions of past and current scientific literature in cell, molecular, and/or developmental biology, review of the state of the field, and presentation of research results. Discussions may cover the full breadth of the discipline or focus on selected topics.

BIOL 541 Topics in Molecular, Cellular, and Developmental Biology (1-3, max. 15) Focused discussion of on-going cell, molecular, or developmental biology research occurring in the instructor's laboratory.

BIOL 542 Analysis of Development (1-3, max. 15) Analysis of structural, physiological, and molecular levels of developmental processes, including gametogenesis, fertilization, cell and tissue movements, induction, and cytodifferentiation. Graduate standing or permission of instructor.

BIOL 543 Biology of Drosophila Seminar (1, max. 12) Weekly presentation by participants of classical literature, current literature, and research in the molecular biology, developmental biology, neurobiology, and genetics of Drosophila.

sophila. Prerequisite: permission of instructor. Offered: AWSp.

BIOL 544 Evolution of Photosynthesis (3) R. CATTOLICO Focuses on the evolution of photosynthetic eukaryotic cells. Interactive discussions target the morphological, genetic, and biochemical consequences of progenitor cell specialization within extant taxa.

BIOL 545 MCD-Biology Professional Skills Seminar (1, max. 6) D. PARICHY Presentations of past or planned research in molecular, cellular, or developmental biology. Participants give presentations in either professional-meeting or chalk-talk formats. Uses written and oral evaluations by audience to focus on scientific content as well as presentation skills. Credit/no-credit only. Offered: AWSp.

BIOL 550 Seminar in Evolution and Systematics (1-3, max. 15) Weekly discussions of past and current scientific literature in evolution and/or systematics, reviews of the state of the field, and presentation of research results. Discussions may cover the full breadth of the discipline or focus on selected topics.

BIOL 551 Topics in Evolution and Systematics (1-3, max. 15) Focused discussion of on-going research in evolution and/or systematics occurring in the instructor's laboratory.

BIOL 552 Advanced Evolution ([2-5]-, max. 10) Successful analytical approaches to understanding evolutionary patterns and the processes that generate them, examined by using a wide array of empirical and theoretical tools. Survey of how theory, modeling, and statistics can be applied to observations and experiments in evolutionary biology.

BIOL 553 Applied Phylogenetics (3) A. LEACHE Emphasizes the estimation of species trees - multilocus estimates of species or population relationships as opposed to genealogies of alleles. Provides students with the computation and bioinformatics skills needed to apply new phylogenetic techniques that can accommodate larger, more complex data sets. Prerequisite: BIOL 354.

BIOL 555 Introduction to Graduate Research in Paleobiology (1) Introduction to paleobiology techniques and resources. Credit/no-credit only. Offered: jointly with ESS 558; A.

BIOL 557 Vertebrate Paleontology (5) Examines the biology of vertebrate animals, emphasizing their diversity, adaptations, and evolutionary history. Introduces aspects of behavior, physiology, morphology, and ecology that emerge from the comparative study of vertebrates. Laboratory includes local field trips and introduction to regional vertebrate fauna. Offered: jointly with ESS 557.

BIOL 560 Seminar in Ecology (1-3, max. 15) Weekly discussions of past and current scientific literature in ecology, reviews of the state of the field, and presentation of research results. Discussions may cover the full breadth of the discipline or focus on selected topics.

BIOL 561 Topics in Ecology (1-3, max. 15) Focused discussion of on-going research in ecology occurring in the instructor's laboratory.

BIOL 563 Experimental Evolutionary Ecology (5) B. KERR Explores experimentally approachable questions in ecology and evolution through lectures, lab, and field experiments. Topics may include evolution of bacterial antibiotic resistance, the evolution of virulence, seed predation, plant biodiversity, and others. Corequisite: BIOL 481. Offered: A.

BIOL 564 Advanced Experimental Evolutionary Ecology (2-5, max. 15) B. KERR Working independently or paired with an undergraduate in BIOL 482, students pursue supervised original field or laboratory research projects. Projects span three academic quarters, with project development beginning in autumn, research continuing in winter, and culminating in spring with production of a scientific paper. Prerequisite: BIOL 563, which may be taken concurrently. Offered: AWSp.

BIOL 565 Community Ecology (5) J. HILLE RIS LAMBERS Covers the complexity of biological communities as influenced by biotic and abiotic factors, as well as the impact of human activities, like global warming, on communities.

BIOL 567 Topics in Advanced Ecology (3, max. 6) Discusses literature on active research areas or controversies in different branches of ecology. Offered: jointly with FISH 567/SEFS 567; W.

BIOL 570 Seminar in Conservation Biology (1-3, max. 15) Weekly discussions of past and current scientific literature in conservation biology, reviews of the state of the field, and presentation of research results. Discussions may cover the full breadth of the discipline or focus on selected topics. tes.

BIOL 571 Topics in Conservation Biology (1-3, max. 15) Focused discussion of on-going research in conservation biology occurring in the instructor's laboratory. Graduate status required, or permission of instructor for undergraduates.

BIOL 580 Seminar in Physiology (1-3, max. 15) Weekly discussions of past and current scientific literature in physiology, reviews of the state of the field, and presentation of research results. Discussions may cover the full breadth of the discipline or focus on selected topics.

BIOL 581 Topics in Physiology (1-3, max. 15) Focused discussion of on-going research in physiology occurring in the instructor's laboratory.

BIOL 583 Physiological Mechanisms of Histology (5) L. ZEMAN Develops recognition of cellular structures with correlations to normal physiology and disease states. Lab projects cover harvesting, sectioning, staining, and mounting tissue. Includes weekly scientific papers.

BIOL 590 Seminar in Organismal Biology (1-3, max. 15) Weekly discussions of past and current scientific literature in organismal biology, reviews of the state of the field, and presentation of research results. Discussions may cover the full breadth of the discipline or focus on selected topics.

BIOL 591 Topics in Organismal Biology (1-3, max. 15) Focused discussion of on-going research in organismal biology occurring in the the instructor's laboratory.

BIOL 600 Independent Study or Research ([1-10]-) Credit/no-credit only.

BIOL 700 Master's Thesis (*-) Credit/no-credit only. Offered: AWSp.

BIOL 800 Doctoral Dissertation (*-) Credit/no-credit only. Offered: AWSp.

Center for Statistics and the Social Sciences

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

CS&SS 221 Statistical Concepts and Methods for the Social Sciences (5) NW, QSR Develops statistical literacy. Examines objectives and pitfalls of statistical studies; study designs, data analysis, inference; graphical and numerical summaries of numerical and categorical data; correlation and regression; and estimation, confidence intervals, and significance tests. Emphasizes social science examples and cases. (Students may receive credit for only one of STAT 220, STAT 221, STAT 311, STAT 221/CS&SS 221/SOC 221, and ECON 311.) Offered: jointly with SOC 221/STAT 221; AWSp.

CS&SS 320 Evaluating Social Science Evidence (5) I&S, QSR A critical introduction to the methods used to collect data in social science: surveys, archival research, experiments, and participant observation. Evaluates "facts and findings" by understanding the strengths and weaknesses of the methods that produce them. Case based. Offered: jointly with SOC 320/STAT 320.

CS&SS 321 Case-Based Social Statistics I (5) I&S, QSR Introduction to statistical reasoning for social scientists. Built around cases representing in-depth investigations into the nature and content of statistical and social-science principles and practice. Hands-on approach: weekly data-analysis laboratory. Fundamental statistical topics: measurement, exploratory data analysis, probabilistic concepts, distributions, assessment of statistical evidence. Offered: jointly with SOC 321/STAT 321; W.

CS&SS 322 Case-Based Social Statistics II (5) I&S, QSR Continuation of CS&SS 321/SOC 321/STAT 321. Progresses to questions of assessing the weight of evidence and more sophisticated models including regression-based methods. Built around cases investigating the nature and content of statistical principles and practice. Hands-on approach: weekly data analysis laboratory. Prerequisite: CS&SS 321/SOC 321/STAT 321, or permission of instructor. Offered: jointly with SOC 322/STAT 322; Sp.

CS&SS 501 Advanced Political Research Design and Analysis (5) Testing theories with empirical evidence. Examines current topics in research methods and statistical analysis in political science. Content varies according to recent developments in the field and with interests of instructor. Offered: jointly with POL S 501.

CS&SS 503 Advanced Quantitative Political Methodology (5) Theory and practice of likelihood inference. Includes probability modeling, maximum likelihood estimation, models for binary responses, count models, sample selection, and basis time series analysis. Offered: jointly with POL S 503.

CS&SS 504 Applied Regression (4) Least squares estimation. Hypothesis testing. Interpretation of regression coefficients. Categorical independent variables. Interactions. Assumption violations: outliers, residuals, robust regression; nonlinearity, transformations, ACE, CART; nonconstant variance. Variable selection and model averaging. Prerequisite: either STAT 342, STAT 390/MATH 390, STAT 421, STAT 481/ECON 481, STAT 509/CS&SS 509/ECON 580, or SOC 425; recommended: MATH 308. Offered: jointly with STAT 504.

CS&SS 505 Review of Mathematics for Social Scientists (1) Reviews basic mathematical skills needed for a meaningful understanding of elementary statistics, data analysis, and social science methodology. Overview of core knowledge required for graduate courses in quantitative methods in social sciences. Topics include discrete mathematics, differential and integral calculus, review of matrix algebra, and basic probabilistic and statistical concepts. Credit/no-credit only. Offered: jointly with SOC 512; Sp.

CS&SS 506 Computer Environments for the Social Sciences (1) Familiarizes graduate students in the social sciences with modern environments for statistical computing. Provides an overview of available resources and a description of fundamental tools used in quantitative courses and doctoral research. Topics include interfaces to web-based resources, UNIX-based computing, and major statistical packages (R, SPLUS, and SAS). Offered: W.

CS&SS 507 Methodology: Quantitative Techniques in Sociology (3) Applied regression analysis with emphasis on interactive computer graphics techniques and interpretation. Application to typical sociological problems. Offered: jointly with SOC 506.

CS&SS 508 Introduction to R for Social Scientists (1) Familiarizes students with the R environment for statistical computing (<http://www.r-project.org>). R is a freely available, multi-platform, and powerful program for analysis

and graphics similar to S-PLUS. Covers the basics of organizing, managing, and manipulating social science data; basic applications; introduction to programming; links to other major statistical packages. Credit/no-credit only. Offered: W.

CS&SS 509 Introduction to Mathematical Statistics: Econometrics I (5) NW Examines methods, tools, and theory of mathematical statistics. Covers, probability densities, transformations, moment generating functions, conditional expectation. Bayesian analysis with conjugate priors, hypothesis tests, the Neyman-Pearson Lemma. Likelihood ratio tests, confidence intervals, maximum likelihood estimation, Central limit theorem, Slutsky Theorems, and the delta-method. (Credit allowed for only one of STAT 390, STAT 481, and ECON 580.) Prerequisite: STAT 311/ECON 311; either MATH 136 or MATH 126 with either MATH 308 or MATH 309; recommended: MATH 324. Offered: jointly with ECON 580/STAT 509; A.

CS&SS 510 Maximum Likelihood Methods for the Social Sciences (5) C. ADOLPH Introduces maximum likelihood, a more general method for modeling social phenomena than linear regression. Topics include discrete, time series, and spatial data, model interpretation, and fitting. Prerequisite: POL S 501/CS&SS 501; POL S 503/CS&SS 503. Offered: jointly with POL S 510; W.

CS&SS 526 Structural Equation Models for the Social Sciences (3) Structural equation models for the social sciences, including specification, estimation, and testing. Topics include path analysis, confirmatory factor analysis, linear models with latent variables, MIMIC models, non-recursive models, models for nested data. Emphasizes applications to substantive problems in the social sciences. Prerequisite: SOC 504, SOC 505, SOC 506 or equivalent; recommended: either CS&SS 505 and CS&SS 506, or equivalent. Offered: jointly with SOC 529.

CS&SS 527 Survey Research Methods (4) A. MOKDAD Provides students with skills in questionnaire development and survey methods. Students develop a questionnaire and design a survey research proposal on a health-related or social topic. Prerequisite: either HSERV 511/HSERV 513; BIOST 517/BIOST 518; or EPI 512/EPI 513, which may be taken concurrently, or permission of instructor. Students should have a survey project in mind. Offered: jointly with G H 533/HSERV 527.

CS&SS 529 Sample Survey Techniques (3) Design and implementation of selection and estimation procedures. Emphasis on human populations. Simple, stratified, and cluster sampling; multistage and two-phase procedures; optimal allocation of resources; estimation theory; replicated designs; variance estimation; national samples and census materials. Prerequisite: either STAT 421, STAT 423, STAT 504, QMETH 500, BIOST 511, or BIOST 517, or equivalent; or permission of instructor. Offered: jointly with BIOST 529/STAT 529.

CS&SS 536 Analysis of Categorical and Count Data (3) Analysis of categorical data in the social sciences. Binary, ordered, and multinomial outcomes, event counts, and contingency tables. Focuses on maximum likelihood estimations and interpretations of results. Prerequisite: SOC 504, SOC 505, SOC 506, or equivalent; recommended: CS&SS 505 and CS&SS 506, or equivalent. Offered: jointly with SOC 536/STAT 536; A.

CS&SS 544 Event History Analysis for the Social Sciences (5) Examines life course research using event-history analysis with applications to the substantive areas of household dynamics, family formation and dissolution, marriage, cohabitation, and divorce, migration histories, residential mobility, and housing careers. Examines continuous- and discrete-time longitudinal models during practical laboratory sessions.

CS&SS 560 Hierarchical Modeling for the Social Sciences (4) Explores ways in which data are hierarchically organized, such as voters nested within electoral districts that are in turn nested within states. Provides a basic theoretic-

cal understanding and practical knowledge of models for clustered data and a set of tools to help make accurate inferences. Prerequisite: SOC 504, SOC 505, SOC 506 or equivalent; recommended: CS&SS 505, CS&SS 506 or equivalent. Offered: jointly with SOC 560/STAT 560.

CS&SS 564 Bayesian Statistics for the Social Sciences (4) Statistical methods based on the idea of probability as a measure of uncertainty. Topics covered include subjective notion of probability, Bayes' Theorem, prior and posterior distributions, and data analysis techniques for statistical models. Prerequisite: SOC 504, SOC 505, SOC 506 or equivalent; recommended: CS&SS 505; CS&SS 506. Offered: jointly with STAT 564.

CS&SS 565 Inequality: Current Trends and Explanations (3) Discussion of recent growth in economic inequality in the United States and competing explanations for these new trends through examination of labor market demographics, industrial composition and restructuring, and the broader political context that impacts policies like minimum wage, strength of unions, and foreign trade. Prerequisite: SOC 504, SOC 505, SOC 506, or equivalent; recommended: either CS&SS 505 and CS&SS 506, or equivalent. Offered: jointly with SOC 565.

CS&SS 566 Causal Modeling (4) Construction of causal hypotheses. Theories of causation, counterfactuals, intervention vs. passive observation. Contexts for causal inference: randomized experiments; sequential randomization; partial compliance; natural experiments, passive observation. Path diagrams, conditional independence, and d-separation. Model equivalence and causal under-determination. Prerequisite: course in statistics, SOC 504, SOC 505, SOC 506, or equivalent; recommended: CS&SS 505, CS&SS 506, or equivalent. Offered: jointly with STAT 566.

CS&SS 567 Statistical Analysis of Social Networks (4) Statistical and mathematical descriptions of social networks. Topics include graphical and matrix representations of social networks, sampling methods, statistical analysis of network data, and applications. Prerequisite: SOC 504, SOC 505, SOC 506, or equivalent; recommended: CS&SS 505; CS&SS 506. Offered: jointly with STAT 567.

CS&SS 568 Game Theory for Social Scientists (5) Studies non-cooperative game-theory and provides tools to derive appropriate statistical models from game-theoretic models of behavior. Equilibrium concepts, learning, repeated games and experimental game theory. Prerequisite: MATH 112, MATH 124, or MATH 134; STAT 311/ECON 311 or equivalent. Offered: jointly with ECON 568; W.

CS&SS 569 Visualizing Data (4) Explores techniques for visualizing social science data to complement graduate training methods. Emphasis on principles and perception of visualization, novel exploration and presentation of data and statistical models, and implementation of recommended techniques in statistics packages. Prerequisite: SOC 504, SOC 505, and SOC 506; recommended: CS&SS 505 and CS&SS 506.

CS&SS 589 Multivariate Data Analysis for the Social Sciences (4, max. 8) Erosheva Provides social scientists with an introduction to multivariate analysis techniques and the knowledge to carry them out. Focuses on statistical methods that explore relationships between observed variables. Topics include principal components, cluster, factor, latent class analysis. Prerequisite: SOC WL 587, SOC WL 588, or equivalent. Offered: jointly with SOC WL 589; A.

CS&SS 590 CSSS Seminar (1, max. 20) Credit/no-credit only.

CS&SS 594 Special Topics in Social Science and Statistics (1-5, max. 30) Topics vary. Prerequisite: permission of instructor. Offered: AWSp.

Center for Studies in Demography and Ecology

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

CSDE 501 Population Studies Seminar Series (1) CSDE affiliates and visitors present current research projects. Credit/no-credit only. Offered: AWSp.

CSDE 502 Population Studies Proseminar (1/2, max. 15) Professional training in demography and populations studies. Includes ethics in population research, human subjects review, proposal application and writing. CSDE faculty research specialization, and research preparation and presentation. Credit/no-credit only. Offered: ASP.

CSDE 513 Demography and Ecology (3) Hirschman Theories and research on human fertility, mortality, mobility, migration, and urbanization in social/economic context. Comparative and historical materials on Europe, the United States, and the Third World. Offered: jointly with SOC 513.

CSDE 555 Population Metrics in Global Health (4) Clark Presents a conceptual framework in which to understand and assess the health of populations. Appropriate methodological tools and techniques from demography, epidemiology, and related disciplines are presented together in this broader context. Offered: Sp.

CSDE 595 Special Topics in Population Studies (1-5, max. 10) Examination of current substantive and methodological topics in demography. Content varies according to recent developments in the field and interest of the instructor.

Center for the Humanities

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

HUM 205 Religion, Violence, and Peace: Patterns Across Time and Tradition (5) I&S, DIV Investigates the complex relationship between violence and peace in a variety of religious traditions. Examines case studies from the ancient Near East, medieval East Asia, and the contemporary West from the standpoint of lived experiences and contemporary theories derived from several academic disciplines. Offered: jointly with JSIS C 205/NEAR E 205; W.

HUM 498 Special Topics in the Humanities (1-6, max. 15) VLPA/I&S Intensive research opportunity, for work on project of independent and/or original design in the cultural disciplines. Mentored by UW and visiting faculty in the arts, humanities, and qualitative social sciences, by arrangement only. Offered: S.

HUM 523 Seminar in Hypertext and Textual Studies (5) Several views of hypertext conceptually explored as a basis for research and evaluation of selected hypertext works. Includes initiating the construction of a World Wide Web hypertext of resources for the study of oral, graphical, handwritten, and printed texts. Included in curriculum of Textual Studies program.

HUM 595 Public Culture, Engaged Scholarship (1-5, max. 25) Explores relations among cultural research, public practice, and diverse forms of engagement. Topics vary by instructor.

HUM 596 Humanities Research Seminar (1-5, max. 15) Explorations of current research in the humanities, most frequently with interdisciplinary emphasis. Offered by selected UW faculty and scholars-in-residence.

HUM 597 Special Topics in the Humanities (1-2, max. 10) Credit/no-credit only.

HUM 600 Independent Study or Research (1-5, max. 10) Develops research ideas, practices, and their implication for applications in particular contexts not covered in standard course offerings. Supports students' specific educational goals. May be undertaken individually or in small investigative teams. Offered: AWSpS.

HUM 601 Internship (2-6, max. 12) Internship with a local organization, agency, or company that provides a field-based, applied learning opportunity; aligns with student's professional and scholarly development goals; benefits the organizations; and has academic merit. Engages with and reflects on cultural dimensions of work experience. Offered: AWSpS.

HUM 602 Capstone Project (3-5) Research, teaching, or engagement experience developed with a capstone advisor and scaled to student's educational goals. Prerequisite: HUM 594. Offered: AWSpS.

HUM 603 Capstone Portfolio (1) Completes the Graduate Certificate in Public Scholarship. Links examples of students' public and applied scholarly work to learning objectives of the Certificate and to personal and professional goals; and articulates the significance of the work to different academic and professional audiences. Credit/no-credit only. Offered: AWSpS.

Chemistry

303 Bagley

Chemistry is a branch of natural science that deals principally with the properties of molecules, the chemical reactions that occur between them, and the natural laws that describe molecular interactions. Chemistry is a central science, having strong interactions with biology, medicine, earth and environmental sciences, physics, and mathematics.

UNDERGRADUATE PROGRAM

Adviser

109 Bagley, Box 351700

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

advisers@chem.washington.edu

The Department of Chemistry offers the following programs of study:

- The Bachelor of Arts degree with a major in chemistry
- The Bachelor of Science degree with a major in chemistry - ACS certified
- The Bachelor of Science degree with a major in chemistry
- A minor in chemistry

The Bachelor of Science degree is designed primarily for those who wish to pursue a career in chemistry or a career in which chemistry plays a central role.

The department offers two Bachelor of Science degrees. The Bachelor of Science with a major in chemistry (ACS certified) meets guidelines established by the American

Chemical Society (ACS). It provides an extensive education in all branches of chemistry and also emphasizes laboratory training. The non-certified major does not emphasize laboratory work as strongly, offers more options among chemistry courses, and allows more flexibility in incorporating coursework outside of chemistry.

The Bachelor of Arts in chemistry fills the needs of students whose chosen career requires a strong background in chemistry with additional expertise in other disciplines.

Bachelor of Science

Suggested First- and Second-Year Courses: CHEM 142, CHEM 152, CHEM 162 (or CHEM 145, CHEM 155, CHEM 165); CHEM 237, CHEM 238, CHEM 239, CHEM 241, CHEM 242 (or CHEM 335, CHEM 336, CHEM 337, CHEM 346, CHEM 347); MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136); PHYS 121, PHYS 122, PHYS 123 (or PHYS 114, PHYS 115, PHYS 116 plus one physics lab course). PHYS 121 sequence recommended.

Department Admission Requirements

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

Direct Freshman Admission

1. Open to freshman students formally admitted to the UW
2. Score of 5 on the AP chemistry examination
3. Indication on the UW freshman application of chemistry as the student's first choice of major
4. Successful direct-admission applicants generally have received a minimum 1400 on the SAT (math and verbal sections) or a minimum 30 on the ACT.
5. Admission is for autumn quarter only.

Research/Honors

1. Students with exceptional records can apply for consideration for admission via the Honors or Research track. Students seeking admission should submit an application that includes:
 - a. Cover sheet (available on the Department of Chemistry website)
 - b. Unofficial transcript
 - c. Statement of purpose: May include a description of interest in chemistry, career goals, undergraduate research interests, degree interest (BA or BS), and any other information applicant believes is useful in evaluating the application.
 - d. (Research Track only) Written letter or recommendation from research adviser.
2. *Honors Track.* Students participating in the chemistry Honors sequence who have completed the following courses with a minimum cumulative GPA of 3.00: CHEM 145, CHEM 155 (10 credits); MATH 124 and MATH 125 (or MATH 134 and MATH 135) (10 credits).
3. *Research Track.* Students who have performed at least 6 credits of undergraduate research (CHEM 199, CHEM 299, or higher) and who provide a strong recommendation from faculty research advisers. Biochemistry undergraduate research may be considered as well.

Early Admission

1. *Course requirements:* CHEM 142, CHEM 152, CHEM 162 (or CHEM 145, CHEM 155, CHEM 165) (15 cred-

its). PHYS 121, PHYS 122 (recommended) or PHYS 114, PHYS 115 (10 or 8 credits). MATH 124, MATH 125 (or MATH 134, MATH 135) (10 credits).

2. Factors in the admission decision include academic performance as measured by GPA in courses required for application, difficulty of other courses completed, frequency of incompletes or withdrawal grades, number of repeated courses, relevant work and life experience, and record of honors.
3. Successful applicants for the BS chemistry and BS chemistry-ACS certified programs typically have a cumulative GPA greater than 3.20 in courses listed above under course requirements. Successful applicants for the BA chemistry program typically have a cumulative GPA greater than 3.00 in courses listed above under course requirements.

Regular Admission

1. *Course requirements:* CHEM 142, CHEM 152, CHEM 162 (or CHEM 145, CHEM 155, CHEM 165) (15 credits). CHEM 237, CHEM 238 (or CHEM 335, CHEM 336) (8 credits). PHYS 121, PHYS 122 (recommended) (or PHYS 114, PHYS 115) (10 or 8 credits). MATH 124, MATH 125 (or MATH 134, MATH 135) (10 credits).
2. Factors in the admission decision include academic performance as measured by GPA in courses required for application, difficulty of other courses completed, frequency of incompletes or withdrawal grades, number of repeated courses, relevant work and life experience, and record of honors.
3. Successful applicants for the BS chemistry and BS chemistry-ACS certified programs typically have a cumulative GPA greater than 2.50 in courses listed above under course requirements, with no individual grade lower than a 2.0. Successful applicants for the BA chemistry program typically have a cumulative GPA greater than 2.00 in courses listed above under course requirements, with no individual grade lower than 1.7.

Major Requirements

Chemistry (ACS-Certified)

95 credits as follows:

1. *Chemistry and Biochemistry Courses:*
 - a. *General Chemistry:* CHEM 142, CHEM 152, CHEM 162 (or CHEM 145, CHEM 155, CHEM 165)
 - b. *Organic Chemistry:* CHEM 237, CHEM 238, CHEM 239, CHEM 241, and CHEM 242 (or CHEM 335, CHEM 336, CHEM 337, CHEM 346 and CHEM 347)
 - c. *Inorganic Chemistry:* CHEM 312, CHEM 317, and CHEM 416 (students completing CHEM 165 are exempt from CHEM 312)
 - d. *Analytical Chemistry:* CHEM 321, CHEM 426
 - e. *Physical Chemistry:* CHEM 455, CHEM 456, CHEM 457, CHEM 461
 - f. *Biochemistry:* BIOC 405 (students should contact adviser regarding alternative prerequisites for BIOC 405)
 - g. *Advanced Chemistry:* 5 credits of numerically graded CHEM or BIOC 400-level courses (not previously listed) and one more course with laboratory (currently CHEM 428, CHEM 462, CHEM 463, and CHEM 465)
 - h. Strongly recommended, research credits in CHEM 399 and CHEM 499.
2. *Mathematics:* MATH 124, MATH 125, MATH 126 and two additional math courses above 300 (recommended MATH 307 and MATH 308, or AMATH 351 and AMATH 352); (alternative math requirement: MATH 134, MATH 135, MATH 136)
3. *Physics:* PHYS 121, PHYS 122, PHYS 123 (or PHYS 114, PHYS 115, PHYS 116 plus one physics lab course). PHYS 121 sequence recommended.

4. *Grade Requirements:* Minimum 2.0 grade in each chemistry course; minimum 2.50 GPA for courses used to satisfy the major degree requirements; minimum overall cumulative 2.50 GPA and minimum 185 credits required for graduation.

Chemistry

92 credits as follows:

1. *Chemistry and Related Courses:*

- General Chemistry:* CHEM 142, CHEM 152, CHEM 162, and CHEM 312 (or CHEM 145, CHEM 155, CHEM 165, and CHEM 416)
 - Organic Chemistry:* CHEM 237, CHEM 238, CHEM 239, and CHEM 241 (or CHEM 335, CHEM 336, CHEM 337, and CHEM 346)
 - Physical Chemistry:* CHEM 455, CHEM 456, CHEM 457
 - Advanced Chemistry Labs:* Two of the following three: CHEM 317, CHEM 321, or CHEM 461
 - Additional Labs:* 5 additional lab credits chosen from the following: CHEM 242, CHEM 317, CHEM 321, CHEM 347, CHEM 426, CHEM 428, CHEM 461, CHEM 462, CHEM 463, CHEM 465, and BIOC 426
 - Science Electives:* 11 credits chosen from CHEM 242, CHEM 317, CHEM 321, CHEM 347, any 400-level numerically graded chemistry or biochemistry courses, or MATH 307 (or AMATH 351). Students with a chemistry GPA of 3.30 or higher may apply up to 6 credits of approved research (CHEM 399 or CHEM 499) toward satisfying this requirement. CHEM 498 may not be used to satisfy this requirement.
2. *Mathematics:* MATH 124, MATH 125, MATH 126 and one course above 300 (recommended: MATH 308 or AMATH 352); alternative MATH requirement: MATH 134, MATH 135, MATH 136.
3. *Physics:* PHYS 121, PHYS 122, PHYS 123 (or PHYS 114, PHYS 115, PHYS 116 plus one physics lab course). PHYS 121 sequence recommended.
4. *Grade Requirements:* Minimum 2.0 grade in each chemistry course; minimum 2.50 GPA required for all chemistry, mathematics, and physics courses used to satisfy major requirements; minimum overall cumulative 2.50 GPA and minimum 182 credits required for graduation.
5. For graduation, a minimum of 182 credits is required with an overall 2.50 cumulative GPA.

Bachelor of Arts

Suggested First- and Second-Year Courses: CHEM 142, CHEM 152, CHEM 162 (or CHEM 145, CHEM 155, CHEM 165) CHEM 237, CHEM 238, CHEM 239, CHEM 241, CHEM 242 (or CHEM 335, CHEM 336, CHEM 337, CHEM 346, CHEM 347); MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136); PHYS 121, PHYS 122, PHYS 123 (or PHYS 114, PHYS 115, PHYS 116 plus one physics lab course). PHYS 121 sequence recommended.

Department Admission Requirements

Same as for Bachelor of Science, shown above

Major Requirements

79-82 credits as follows:

1. *Chemistry Courses:*

- General Chemistry:* CHEM 142, CHEM 152, CHEM 162, CHEM 312 (or CHEM 145, CHEM 155, CHEM 165)
- Organic Chemistry:* CHEM 237, CHEM 238, CHEM 239, CHEM 241, CHEM 242 (or CHEM 335, CHEM 336, CHEM 337, CHEM 346, CHEM 347)
- Analytical Chemistry:* CHEM 321
- Advanced Chemistry Lab:* Either CHEM 317 or CHEM 461

- Advanced Chemistry:* 11 credits of numerically graded CHEM 400-level courses to include either CHEM 455, CHEM 456, CHEM 457 series, or CHEM 452, CHEM 453 series
- Mathematics:* MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
- Physics:* One year of physics including at least 1 credit of laboratory (PHYS 114, PHYS 115, and PHYS 116 and at least one of PHYS 117, PHYS 118, or PHYS 119; or PHYS 121, PHYS 122, and PHYS 123; PHYS 121 sequence recommended).
- Grade Requirements:* Minimum 2.00 GPA in chemistry courses counted toward major; minimum 1.7 grade in all required chemistry courses

Continuation Policy

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

Minor

Minor Requirements: 35-44 credits as follows:

- One of the following three sequences:
 - CHEM 142, CHEM 152, CHEM 162, and one of CHEM 223, CHEM 237, or CHEM 335
 - CHEM 144, CHEM 154, CHEM 164, and one of CHEM 223, CHEM 237, or CHEM 335
 - CHEM 145, CHEM 155, CHEM 165, and one of CHEM 223, CHEM 237, or CHEM 335
- MATH 124 (or Q SCI 291 and Q SCI 292)
- PHYS 114 or PHYS 121
- Three of the following four groups:
 - CHEM 312 (or CHEM 165)
 - CHEM 321
 - One of CHEM 452, CHEM 455, or CHEM 456
 - One of CHEM 224, CHEM 238, CHEM 336
- Minimum 2.00 GPA for the minor; minimum 1.7 grade in each course presented for the minor.
- A minimum of 15 credits taken for the minor must be completed in residence at the University of Washington.

Student Outcomes and Opportunities

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

Teaching high school chemistry, environmental or patent law practice, or working in the chemical industry in sales or management positions are career choices for which the BA in chemistry is generally useful.

- Instructional and Research Facilities:*

Departmental facilities include a spectroscopic and analytical instrumentation laboratory (NMR, GC-MS, X-Ray, IR), Chemistry Library, Center for Enabling New Technologies through Catalysis (CENTC), Center for Process and Analytical Chemistry (CPAC), Materials and Devices for Information Technology Research (MDITR), Center for Nanotechnology, and extensive computing capabilities.

The department's local area network (LAN) is extended through a fiber optic cable to the university-wide network that is connected to Internet, HEPNET, SPAN, and other national and international computer networks.

The Chemistry Study Center offers assistance to students in 100-level chemistry courses and has 40 Pentium computers available to undergraduates taking chemistry courses.

- Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- Research, Internships, and Service Learning:* No formal internship program. Students are encouraged to pursue national and regional internships. See advisers for information.
- Department Scholarships:* Resident tuition scholarships and book prizes are awarded annually by the Department of Chemistry to eligible chemistry and biochemistry majors. Applications are available during the month of March for the following academic year. See department advisers for more information.
- Student Organizations/Associations:*
 - Alpha Chi Sigma: the UW affiliate of the national chemistry-related science organization for chemistry and biochemistry majors
 - Phi Lambda Upsilon: the UW affiliate of the national chemistry honorary society
 - The Free Radicals: a general undergraduate club for chemistry and biochemistry majors

Of Special Note:

- The BS degree in chemistry requires a minimum of 182 credits to graduate.
- The BS degree in chemistry, ACS-Certified option, requires a minimum of 185 credits to graduate.
- The BA degree in chemistry requires a minimum of 180 credits to graduate.
- Students are strongly encouraged to participate in undergraduate research.
- The maximum number of credits that may be earned combining CHEM 199 and CHEM 299 is 12; the maximum number of credits that may be earned combining CHEM 399 and CHEM 499 is 24.

GRADUATE PROGRAM

Graduate Program Coordinator

109D Bagley, Box 351700

(206) 543-4787

graduate@chem.washington.edu

The Master of Science and Doctor of Philosophy programs are designed to lead to positions of leadership and independent investigation in research institutes, industrial laboratories, and government agencies, and as teachers, researchers, or administrators in colleges and universities in chemistry or allied fields.

Students can pursue research in the following areas of chemistry: analytical, bioanalytical, bioinorganic, biorganic, biophysical, environmental, inorganic, materials,

medicinal, nuclear, organic, organometallic, physical, polymer, process analytical, and theoretical.

Thesis research for the Master of Science degree and dissertation research for the Doctor of Philosophy degree will constitute an original contribution of knowledge worthy of report in the scientific literature.

Refer to the Chemistry Department website for more detailed information regarding admission and graduation requirements.

Master of Science

The Department of Chemistry offers primarily the PhD degree. The Master of Science program is not open to master's-only students, except under specific conditions.

Graduation Requirements: With Thesis -- 36 approved credits with 18 in courses at the 500 level or above; 18 credits in courses at the 400 or 500 level taken for numerical grade with a 2.7 grade minimum in each graded course; 9 credits in thesis research. Without Thesis -- Same as with thesis, except that additional coursework may be substituted for the required research. Minimum GPA of 3.00 required.

Doctor of Philosophy

Admission Requirements

1. Baccalaureate degree with major in chemistry or allied sciences
2. Graduate Record Examination scores

Degree Requirements

90 credits, to include:

1. *Required coursework:* 18-27 credits of coursework to support the student's individualized program of study, approved by the Graduate Program Coordinator, at the 400 or 500 level, with a 2.7 grade minimum in each graded course, and a minimum 3.00 GPA
2. *Seminars:* Participation in departmental seminars
3. *Dissertation:* Minimum 27 credits of dissertation (CHEM 800) work
4. Candidacy examinations covering area of specialization

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscaat/

CHEM 110 Introduction to General Chemistry (3-5) NW Introduction to general chemistry with an emphasis on developing problem solving skills. Covers basic concepts of chemistry along with the mathematics required for quantitative problem solving. For students without high school chemistry or with limited mathematics background. Successful completion of CHEM 110 prepares students to enroll in CHEM 142. Credit/no-credit only. Offered: A.

CHEM 120 Principles of Chemistry I (5) NW, QSR First course in a three-quarter overview of general chemistry, organic chemistry, and biochemistry. Not for students majoring in biochemistry, chemistry, or engineering. Includes matter and energy, chemical nomenclature, chemical reactions, stoichiometry, modern atomic theory, chemical bonding. Laboratory. Only 5 credits can be counted toward graduation from the following: CHEM 120, CHEM 142, CHEM 145. Offered: AS.

CHEM 142 General Chemistry (5) NW, QSR For science and engineering majors. Atomic nature of matter, stoichiometry, gas laws, chemical equilibrium, solubility, and acids and bases. Includes laboratory. No more than the number of credits indicated can be counted toward graduation from the following course groups: CHEM 142, CHEM 145 (5 credits). Cannot be taken for credit if CHEM 120 already

taken. Recommended: high school chemistry; placement into MATH 120 or higher. Offered: AWSpS.

CHEM 145 Honors General Chemistry (5) NW, QSR CHEM 145 and CHEM 155 cover material in CHEM 142, CHEM 152, and CHEM 162. Includes laboratory. Prerequisite: either MATH 124 or MATH 134, either of which may be taken concurrently; score of 66% on HCHEMC placement test, score of 3, 4 or 5 on AP Chemistry exam, or IB score of 5, 6, or 7 on high level chemistry exam. No more than the number of credits indicated can be counted toward graduation from the following course groups: CHEM 142, CHEM 145 (5 credits); CHEM 145, CHEM 155, CHEM 162 (10 credits). Offered: A.

CHEM 152 General Chemistry (5) NW, QSR Aqueous equilibria, titrations, buffers, energy, enthalpy and thermochemistry, spontaneity, entropy and free energy, electrochemistry, quantum mechanics, and atomic theory. Includes laboratory. Prerequisite: a minimum grade of 1.7 in either CHEM 142, or CHEM 145. No more than the number of credits indicated can be counted toward graduation from the following course groups: CHEM 152, CHEM 155 (5 credits). Offered: AWSpS.

CHEM 155 Honors General Chemistry (5) NW, QSR Continuation of CHEM 145. Includes laboratory. Together CHEM 145 and CHEM 155 cover material in CHEM 142, CHEM 152, and CHEM 162. No more than the number of credits indicated can be counted toward graduation from the following course groups: CHEM 152 or CHEM 155 (5 credits); CHEM 145, CHEM 155, CHEM 162 (10 credits). Prerequisite: minimum grade of 2.2 in CHEM 145. Offered: W.

CHEM 162 General Chemistry (5) NW, QSR General bonding and molecular-orbital theory, chemical kinetics, liquids and solids, properties of solutions, the elements in groups 1A-4A, the elements in groups 5A-8A, transition metals and coordination chemistry, and organic chemistry. Includes laboratory. Prerequisite: a minimum grade of 1.7 in CHEM 152. No more than the number of credits indicated can be counted toward graduation from the following course groups: CHEM 162, CHEM 165 (5 credits). Offered: AWSpS.

CHEM 165 Honors General Chemistry (5) NW, QSR Introduction to systematic inorganic chemistry: representative elements, metals, and nonmetals. Includes coordination complexes, geochemistry, and metallurgy. Additional material on environmental applications of basic chemistry presented. Includes laboratory. No more than the number of credits indicated can be counted toward graduation from the following course groups: CHEM 162, CHEM 165 (5 credits); CHEM 165, CHEM 312 (5 credits). Prerequisite: minimum grade of 2.2 in CHEM 155. Offered: Sp.

CHEM 190 Freshman Discovery Seminar in Chemistry (5) NW Introduces incoming freshman to research basics and scholarly inquiry skills used in the study of chemistry.

CHEM 198 Tutorial Study (2, max. 6) NW Credit/no-credit only.

CHEM 199 Special Problems (1-6, max. 6) Research in chemistry. Credit/no-credit only. Offered: AWSpS.

CHEM 220 Principles of Chemistry II (5) NW Second course in a three-quarter overview of general chemistry, organic chemistry, and biochemistry. Not for students majoring in biochemistry, chemistry, or engineering. Introduction to organic chemistry including organic compounds, functional groups, aromaticity, and stereochemistry. Prerequisite: a minimum grade of 1.7 in either CHEM 120 or CHEM 142. Offered: W.

CHEM 221 Principles of Chemistry III (5) NW Third course in a three-quarter overview of general chemistry, organic chemistry, and biochemistry. Not for students majoring in biochemistry, chemistry, or engineering. Introduction to biochemistry including biomolecular structure, proteins, nucleic acids, biochemical cycles, and cellular energetics. Only 5 credits can be counted toward graduation from the

following: CHEM 221, CHEM 223, CHEM 237, CHEM 335. Prerequisite: 1.7 in CHEM 220. Offered: Sp.

CHEM 223 Organic Chemistry - Short Program (4) NW First of a two-quarter lecture series in organic chemistry, for those who elect not to complete the CHEM 237, CHEM 238, CHEM 239 sequence. Introduction to structure, nomenclature, properties, and reactions of the main functional families of organic compounds. Stereochemistry and spectroscopy. No more than 5 credits can be counted toward graduation from the following course group: CHEM 221, CHEM 223, CHEM 237, CHEM 335. Prerequisite: a minimum grade of 1.7 in either CHEM 152 or CHEM 155; recommended: CHEM 162. Offered: AS.

CHEM 224 Organic Chemistry - Short Program (4) NW Continuation of CHEM 223. Structure, nomenclature, properties, and reactions of aldehydes, ketones, carboxylic acid derivatives, amines, carbohydrates, lipids, amino acids, peptides, proteins, and nucleic acids. No laboratory accompanies this course, but CHEM 241 laboratory may be taken concurrently. No more than 4 credits can be counted toward graduation from the following course group: CHEM 224, CHEM 239, CHEM 337. Prerequisite: 1.7 in CHEM 223. Offered: WS.

CHEM 237 Organic Chemistry (4) NW First course for students planning to take three quarters of organic chemistry. Structure, nomenclature, reactions, and synthesis of the main types of organic compounds. No organic laboratory accompanies this course. No more than 5 credits can be counted toward graduation from the following course groups: CHEM 221, CHEM 223, CHEM 237, CHEM 335. Prerequisite: a minimum grade of 1.7 in either CHEM 155 or CHEM 162. Offered: AWSpS.

CHEM 238 Organic Chemistry (4) NW Second course for students planning to take three quarters of organic chemistry. Further discussion of physical properties and transformations of organic molecules, especially aromatic and carbonyl compounds. No more than the number of credits indicated can be counted toward graduation from the following course groups: CHEM 238, CHEM 336 (4 credits). Prerequisite: either 1.7 in CHEM 237 or 1.7 in CHEM 335. Offered: AWSpS.

CHEM 239 Organic Chemistry (3) NW Third course for students planning to take three quarters of organic chemistry. Polyfunctional compounds and natural products, lipids, carbohydrates, amino acids, proteins, and nucleic acids. Includes introduction to membranes, enzyme mechanisms, prosthetic groups, macromolecular conformations and supramolecular architecture. No more than 4 credits can be counted toward graduation from the following course groups: CHEM 224, CHEM 239, CHEM 337. Prerequisite: either 1.7 in CHEM 238 or 1.7 in CHEM 336. Offered: AWSpS.

CHEM 241 Organic Chemistry Laboratory (3) NW Introduction to organic laboratory techniques. Preparation of representative compounds. Designed to be taken with CHEM 224 or CHEM 238. No more than the number of credits indicated can be counted toward graduation from the following course group: CHEM 241, CHEM 346 (3 credits). Prerequisite: minimum 1.7 grade in CHEM 237; either CHEM 224, CHEM 238, or CHEM 336, any of which may be taken concurrently. Offered: AWSpS.

CHEM 242 Organic Chemistry Laboratory (3) NW Preparations and qualitative organic analysis. Designed to be taken with 239. No more than the number of credits indicated can be counted toward graduation from the following course group: CHEM 242, CHEM 347 (3 credits). Prerequisite: minimum 1.7 grade in either CHEM 241 or CHEM 346; minimum 1.7 grade in either CHEM 224, CHEM 238, or CHEM 336, which may be taken concurrently. Offered: AWSpS.

CHEM 291 Study Abroad - Chemistry (1-15, max. 15) NW For student in the UW study abroad program. Content varies and is individually evaluated. Credit does not apply to major degree requirements without departmental approval.

CHEM 299 Special Problems and Report Writing (1-6, max. 6) Research in chemistry and/or study in the chemical literature. Requires writing a scientific report. Credit/no-credit only. Offered: AWSpS.

CHEM 312 Inorganic Chemistry (3) NW The periodic table: chemistry of representative and transition elements. Aqueous chemistry, solid state chemistry, and everyday aspects of inorganic chemistry emphasized. Not intended for students who have completed CHEM 165. No more than the number of credits indicated can be counted toward graduation from the following course group: CHEM 165, CHEM 312 (5 credits). Prerequisite: either CHEM 155 or CHEM 162; either CHEM 224, CHEM 238, or CHEM 336. Offered: AWS.

CHEM 317 Inorganic Chemistry Laboratory (4) NW Experimental exploration of the periodic table. Techniques of preparation and characterization of inorganic compounds. Handling of air-sensitive materials and gases. Prerequisite: either CHEM 165 or CHEM 312; either CHEM 242 or CHEM 347. Offered: WSp.

CHEM 321 Quantitative Analysis (5) NW Introduction to chemical analysis, including gravimetric, volumetric, spectrophotometric, and potentiometric analyses. Laboratory computer use included. Prerequisite: either CHEM 155, CHEM 162, or CHEM 164. Offered: AWSpS.

CHEM 335 Honors Organic Chemistry (4) NW For chemistry majors and otherwise qualified students planning three or more quarters of organic chemistry. Structure, nomenclature, reactions, and synthesis of organic compounds. Theory and mechanism of organic reactions. Studies of biomolecules. No organic laboratory accompanies this course. No more than 5 credits can be counted toward graduation from the following course group: CHEM 221, CHEM 223, CHEM 237, CHEM 335. Prerequisite: either CHEM 155 or CHEM 162. Offered: A.

CHEM 336 Honors Organic Chemistry (4) NW For chemistry majors and otherwise qualified students planning three or more quarters of organic chemistry. Structure, nomenclature, reactions, and synthesis of organic compounds. Theory and mechanism of organic reactions. Studies of biomolecules. No more than 4 credits can be counted toward graduation from the following course groups: CHEM 238, CHEM 336. Prerequisite: minimum grade of 2.2 in CHEM 335. Offered: W.

CHEM 337 Honors Organic Chemistry (4) NW For chemistry majors and otherwise qualified students planning three or more quarters of organic chemistry. Structure, nomenclature, reactions, and synthesis of organic compounds. Theory and mechanism of organic reactions. Studies of biomolecules. Includes introduction to membranes, enzyme mechanisms, prosthetic groups, macromolecular conformations, and supramolecular architecture. No more than 4 credits can be counted toward graduation from the following course groups: CHEM 239, CHEM 337. Prerequisite: minimum grade of 2.2 in CHEM 336. Offered: Sp.

CHEM 346 Organic Chemistry Honors Laboratory (3) NW To accompany CHEM 336. No more than the number of credits indicated can be counted toward graduation from the following course group: CHEM 241, CHEM 346 (3 credits). Prerequisite: 1.7 in CHEM 335; CHEM 336 which may be taken concurrently. Offered: W.

CHEM 347 Organic and Qualitative Organic Honors Laboratory (3) NW Continuation of CHEM 346. To accompany CHEM 337. No more than the number of credits indicated can be counted toward graduation from the following course group: CHEM 242, CHEM 347 (3 credits). Prerequisite: minimum 1.7 grade in CHEM 336; minimum 2.2 grade in CHEM 346; CHEM 337 which may be taken concurrently. Offered: Sp.

CHEM 399 Undergraduate Research (*, max. 12) Research in chemistry. Credit/no-credit only. Offered: AWSpS.

CHEM 410 Radiochemistry Laboratory (2) NW Introductory general service course for students planning further work

in nuclear or tracer applications. Safety procedures, detection and measurement of nuclear radiation, radiochemical and tracer techniques. Prerequisite: CHEM 418, which may be taken concurrently.

CHEM 416 Transition Metals (3) NW Survey of selected key topics in the chemistry of the transition metals, including emphasis on the structure, bonding, and reactivity of major classes of compounds. Prerequisite: either CHEM 165 or CHEM 312; either CHEM 453, CHEM 455, or CHEM 475, which may be taken concurrently. Offered: A.

CHEM 417 Organometallic Chemistry (3) NW Chemistry of the metal-carbon bond for both main group and transition metals. Structure and reactivity with applications to organic synthesis and catalysis. Prerequisite: either CHEM 224, CHEM 239, or CHEM 337; CHEM 416. Offered: W.

CHEM 418 Nuclear Chemistry (3) NW Natural radioactivity, nuclear systematics and reactions, radioactive decay processes, stellar nucleosynthesis, applications of radioactivity. Prerequisite: either CHEM 453, CHEM 455, or CHEM 475.

CHEM 419 Bioinorganic Chemistry (3) NW Description of transition metal-containing systems found in biology. Structural and electronic properties and reactivity of metalloproteins, metalloenzymes, and metallocofactors. Methods used to probe and model metal sites by spectroscopic and synthetic techniques. Prerequisite: either CHEM 224, CHEM 239, or CHEM 337; CHEM 416. Offered: Sp, even years.

CHEM 426 Instrumental Analysis (3) NW Introduction to modern instrumental methods of chemical analysis, including chromatography, optical and mass spectroscopy, electrochemistry and flow injection analysis. Basic concepts of transducers, spectrometers, mass analysis, separation sciences, and computerized data acquisition and reduction. Includes laboratory. Prerequisite: CHEM 321. Offered: W.

CHEM 428 Bioinstrumental Analysis (3) NW Modern instrumental methods of bioanalysis of DNA and proteins, including agarose gel electrophoresis, PCR, Sanger sequencing for nucleic acid analysis and ELISA, SDS-PAGE, and LC/MS-MS analysis of proteins. Mass analysis, separation sciences, and bioinformatics tools. Includes laboratory. No credit allowed if BIOC 426 taken. Prerequisite: either BIOC 405 or BIOC 440. Offered: Sp.

CHEM 429 Chemical Separation Techniques (3) NW Introduction to modern separation techniques such as gas chromatography, high-performance liquid chromatography, electrophoresis, and field flow fractionation. Prerequisite: either CHEM 224, CHEM 239, or CHEM 337; either CHEM 241, CHEM 321, or CHEM 346. Offered: Sp.

CHEM 436 Chemical Biology (3) NW Protein structure and forces that hold proteins together; mechanistic enzymology, basics of how enzymes work as catalysts; protein-ligand binding, both theory and measurement approaches; fundamentals of protein analysis including gels and immunological methods; activity-based protein profiling. DNA synthesis along with methods for directed DNA mutagenesis and recombinant protein production. Prerequisite: either CHEM 224, CHEM 239, or CHEM 337; recommended: either BIOC 405 or BIOC 440.

CHEM 452 Physical Chemistry for Biochemists I (3) NW General equilibrium thermodynamics emphasizing biochemical applications: ligand binding, biological oxidation-reduction reactions, membranes, active transport, colligative properties, and surface tension. No more than the number of credits indicated can be counted toward graduation from the following: 452, 456 (3 credits). Prerequisite: either CHEM 155 or CHEM 162; either MATH 125 or MATH 134; either PHYS 115 or PHYS 122. Offered: AWS.

CHEM 453 Physical Chemistry for Biochemists II (3) NW Continuation of CHEM 452. Includes transport properties, enzyme kinetics, introduction to quantum mechanics, spectroscopy, and classical statistical mechanics. Prereq-

uisite: either CHEM 452 or CHEM 456; either MATH 126 or MATH 135; either PHYS 116 or PHYS 123; recommended: MATH 307; MATH 308. Offered: WSp.

CHEM 455 Physical Chemistry (3) NW Introduction to quantum chemistry and spectroscopy. Theory of quantum mechanics presented at an elementary level and applied to the electronic structure of atoms and molecules and to molecular spectra. Prerequisite: either CHEM 155 or CHEM 162; either MATH 126 or MATH 136; either PHYS 116 or PHYS 123; recommended: MATH 307; MATH 308. Offered: Asp.

CHEM 456 Physical Chemistry (3) NW Chemical thermodynamics. Laws of thermodynamics presented with applications to phase equilibria, chemical equilibria, and solutions. No more than the number of credits indicated can be counted toward graduation from the following course group: CHEM 452, CHEM 456 (3 credits). Prerequisite: either CHEM 155 or CHEM 162; either MATH 126 or MATH 136; either PHYS 116 or PHYS 123; recommended: MATH 307. Offered: WS.

CHEM 457 Physical Chemistry (3) NW Introduction to statistical mechanics, kinetic theory, and chemical kinetics. Prerequisite: either CHEM 455 or CHEM 475; either CHEM 456 or CHEM E 326. Offered: Sp.

CHEM 458 Air Pollution Chemistry (4) NW Global atmosphere as a chemical system emphasizing physical factors and chemical processes that give rise to elevated surface ozone, particulate matter, and air toxics; international issues of air pollution transport and changing tropospheric background composition; and regulatory control strategies and challenges. Aimed at science and engineering majors. Recommended: either ATM S 358 or CHEM 162, MATH 126, and PHYS 123. Offered: jointly with ATM S 458; A.

CHEM 460 Spectroscopic Molecular Identification (3) NW Basic theory of spectral techniques - infrared and ultraviolet/visible spectroscopy, NMR, and mass spectrometry - with emphasis on spectral interpretation skills needed for the elucidation of structure, conformation, and dynamics in organic and biological chemistry. Prerequisite: either CHEM 224, CHEM 239, or CHEM 337; recommended: either CHEM 455 or CHEM 475. Offered: A.

CHEM 461 Physical Chemistry Laboratory (3) NW Physical measurements in chemistry. Vacuum techniques, calorimetry, spectroscopic methods, electrical measurements. Prerequisite: either CHEM 453, or both CHEM 455 and CHEM 456, or both CHEM 456 and CHEM 475; recommended: CHEM 457. Offered: ASpS.

CHEM 462 Techniques of Synthetic Organic Chemistry (2-3) NW Laboratory techniques of synthetic organic chemistry. Vacuum distillation, multistep synthesis, air sensitive reagents, photochemistry, chromatography, and separation techniques. Prerequisite: either CHEM 242 or CHEM 347; CHEM 460 which may be taken concurrently. Offered: A.

CHEM 463 Spectroscopic Techniques for Structural Identification (2) NW Laboratory techniques of spectroscopic analysis for structural determination using UV, IR, NMR, mass spectroscopy. Prerequisite: CHEM 460. Offered: W.

CHEM 464 Computers in Data Acquisition and Analysis (3) NW Introduction to use of the computer in the chemistry laboratory. Principles of microcomputers and their use for such problems as data acquisition, noise reduction, and instrument control. Prerequisite: either CHEM 453, CHEM 455, or CHEM 475; MATH 136, or both MATH 307 and MATH 308. Offered: Sp.

CHEM 465 Computations in Chemistry (3) NW Computer calculations on color graphics workstations applied to problems in chemistry. Numerical methods and algorithms for calculating classical dynamics, quantum wavefunctions, wavepacket propagation, chemical kinetics. Use of computer programs for calculating electronic wavefunctions, molecular conformations, simulations of liquids and

solids. Prerequisite: either CHEM 455 or CHEM 475, either of which may be taken concurrently. Offered: Sp.

CHEM 475 Honors Physical Chemistry (3) NW Introduction to quantum chemistry, spectroscopy. Theory of quantum mechanics applied more rigorously than in CHEM 455. Application of quantum mechanics to electronic structure of atoms and molecules. Computer software used to solve problems. Prerequisite: either CHEM 155 or CHEM 162; either MATH 126 or MATH 136; either PHYS 116 or PHYS 123; recommended: MATH 307; MATH 308. Offered: A.

CHEM 484 Materials Chemistry (3) NW Overview of basic principles, techniques, and applications associated with solid materials. Topics include description of crystals, examples of crystal structures, structural analysis, band structures of solid materials, preparation of materials, materials for microelectronics, and materials for information technology. Prerequisite: CHEM 453 or CHEM 455. Offered: jointly with MSE 484; ASp.

CHEM 491 Study Abroad - Advanced Chemistry (1-15, max. 15) NW For students in the UW study abroad program. Content varies and is individually evaluated. Credit does not apply to major degree requirements without departmental approval.

CHEM 499 Undergraduate Research and Report Writing (*, max. 12) Research in chemistry and/or study in the chemical literature. Credit/no-credit only. Offered: AWSpS.

CHEM 500 Grant Proposal and Scientific Writing (1) Introduces steps in compiling a successful grant proposal and writing scientific articles, personal statements, research summaries, and procuring recommendation letters, using the NSF graduate fellowship as a guide. Students gain experience in peer review processes as assessment of current scientific literature. Credit/no-credit only. Offered: A.

CHEM 501 Readings in Chemistry (1, max. 9) Individual meetings with faculty to discuss readings (journal articles, book chapters, proceedings) in the chemical sciences. Credit/no-credit only. Offered: AWSpS.

CHEM 508 Advanced Inorganic Chemistry (3, max. 9) Discussion of selected applications of physical techniques to the study of inorganic molecules. Topics include group theory, magnetic resonance spectroscopy (NMR and ESR), vibrational spectroscopy (IR and Raman), electronic spectroscopy, magnetism, and electrochemistry. Offered: A.

CHEM 510 Current Problems in Inorganic Chemistry (3, max. 9) Primarily for doctoral candidates in inorganic chemistry. Current topics (e.g., bioinorganic, advanced organometallic, materials and solid state, advanced inorganic spectroscopy). See department for instructor and topics during any particular quarter. Offered: Sp.

CHEM 520 Current Problems in Analytical Chemistry (3, max. 9) Primarily for doctoral candidates in analytical chemistry. Current topics (e.g., flow injection analysis, mass spectrometry, and advanced radiochemistry). See department for instructor and topics during any particular quarter. Offered: AWSpS.

CHEM 522 Atomic and Molecular Analytical Spectroscopy (3) Quantitative analysis of atomic and molecular species, using all forms of electromagnetic radiation, electrons, and gaseous ions.

CHEM 523 Geochemical Cycles (4) Descriptive, quantitative aspects of earth as biogeochemical system. Study of equilibria, transport processes, chemical kinetics, biological processes; their application to carbon, sulfur, nitrogen, phosphorus, other elemental cycles. Stability of biogeochemical systems; nature of human perturbations of their dynamics. Prerequisite: permission of instructor. Offered: jointly with ATM S 508/OCEAN 523.

CHEM 529 Chemical Separation Techniques (3) Introduction to modern separation techniques such as gas chromatography, high-performance liquid chromatography, electrophoresis, and field flow fractionation. Offered: Sp.

CHEM 530 Advanced Organic Chemistry (3) Fundamental aspects of organic structures and transformations. Structure and basicity of carbanions, substitution reactions, elimination reactions, nucleophilic addition and addition/elimination reactions, condensation reactions, structure and rearrangements of carbocations, electrophilic addition, electrophilic substitutions, neighboring group effects. Prerequisite: CHEM 337. Offered: A.

CHEM 531 Advanced Organic Chemistry (3) Synthetic organic chemistry. Discussion of practical methods for the synthesis of complex organic molecules with an emphasis on strategy and the control of stereochemistry. Prerequisite: CHEM 530. Offered: W.

CHEM 532 Advanced Organic Chemistry (3) Chemical biology. Application of chemical methods to the study of biological processes that occur in cells. Prerequisite: CHEM 530 and CHEM 531. Offered: Sp.

CHEM 540 CURRENT PROBLEMS IN ORGANIC CHEMISTRY (1-3, max. 12)

CHEM 550 Introduction to Quantum Chemistry (3) Origins and basic postulates of quantum mechanics, solutions to single-particle problems, angular momentum and hydrogenic wave functions, matrix methods, perturbation theory, variational methods. Prerequisite: CHEM 455. Offered: A.

CHEM 551 Introduction to Quantum Chemistry (3) Electronic structure of many-electron atoms and molecules, vibration and rotation levels of molecules, effects of particle exchange, angular momentum and group theory, spectroscopic selection rules. Prerequisite: CHEM 550. Offered: W.

CHEM 552 Statistical Mechanics (3) General theorems of statistical mechanics, relation of the equilibrium theory to classical thermodynamics, quantum statistics, theory of imperfect gases, lattice statistics and simple cooperative phenomena, lattice dynamics and theory of solids, liquids, solutions, and polymers, time-dependent phenomena and mechanisms of interaction. Prerequisite: CHEM 455 and CHEM 456 (concurrent registration permitted) or equivalent. Offered: W.

CHEM 553 Statistical Mechanics (3) General theorems of statistical mechanics, relation of the equilibrium theory to classical thermodynamics, quantum statistics, theory of imperfect gases, lattice statistics and simple cooperative phenomena, lattice dynamics and theory of solids, liquids, solutions, and polymers, time-dependent phenomena and mechanisms of interaction. Prerequisite: CHEM 552. Offered: Sp.

CHEM 560 Current Problems in Physical Chemistry (1-3, max. 12) Primarily for doctoral candidates in physical chemistry. A discussion of topics selected from active research fields. See department for instructor and the topic during any particular quarter.

CHEM 564 Organic Electronic and Photonic Materials/Polymers (3) Physical and material concepts determining properties of organic electronic and photonic materials. Discusses electronic structure, physico-chemical characterization, and device application. Includes introduction of electronic band structure of polymers, electrically conducting polymers; organic nonlinear optical electroluminescent materials; polymer optical fibers; tow-photon absorption materials for 3-D microfabrication. Offered: jointly with MSE 560; W.

CHEM 565 Computations in Chemistry (3) Covers computer calculations applied to problems in chemistry. Introduces to numerical methods and algorithms for calculating classical dynamics, quantum wavefunctions, wavepacket propagation, and chemical kinetics. Uses computer programs for calculating electronic wavefunctions, molecular conformations, and simulations of liquids and solids. Offered: Sp.

CHEM 581 Preparation for Second-Year Exam (3-, max. 9) Preparation for examination. Open only to students ac-

cepted for doctoral work in chemistry, in their second year of study. Credit/no-credit only. Offered: AWSp.

CHEM 590 Seminar in General Chemistry (1, max. 18) For chemistry graduate students only. Credit/no-credit only. Offered: AWSp.

CHEM 591 Seminar in Inorganic Chemistry (1, max. 18) For chemistry graduate students only. Credit/no-credit only. Offered: AWSp.

CHEM 592 Seminar in Analytical Chemistry (1, max. 18) For chemistry graduate students only. Credit/no-credit only. Offered: AWSp.

CHEM 593 Seminar in Organic Chemistry (1, max. 18) For chemistry graduate students only. Credit/no-credit only. Offered: AWSp.

CHEM 595 SEMINAR IN PHYSICAL CHEMISTRY (1, max. 18) Credit/no-credit only.

CHEM 597 Nanotechnology Seminar (1, max. 18) Emphasizes frontier research in nanoscience and nanotechnology and on intellectual interactions within the nanotechnology community. Presented by experts in the field, with most being from other institutions. Prerequisite: graduate standing and permission of instructor. Credit/no-credit only. Offered: jointly with BIOEN 518; AWSp.

CHEM 600 Independent Study or Research (*-) Prerequisite: permission of coordinator. Offered: AWSpS.

CHEM 700 Master's Thesis (*-) Prerequisite: permission of coordinator. Offered: AWSpS.

CHEM 800 Doctoral Dissertation (*-) Prerequisite: permission of coordinator. Offered: AWSpS.

Classics

218 Denny

The discipline of classics concerns itself with the cultures of ancient Greece and Rome from prehistoric times to the Middle Ages. The department is concerned with the Greek and Latin languages and their literatures, including poetry, drama, history, philosophy, rhetoric, and political theory, as well as with classical art and archaeology. The ancient cultures of Greece and Rome hold an extraordinary place in the American past and present, thanks to their central role in forming the basic conceptual categories that shape our intellectual, professional, and civic lives. The vast temporal and geographic gulf that divides these ancient cultures from modernity brings students and scholars of classics face to face with the otherness of antiquity and forces a critical examination of our own cultural roots.

UNDERGRADUATE PROGRAM

Adviser

218 Denny, Box 353110

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The Department of Classics offers the following programs of study:

- The Bachelor of Arts degree with majors in classics, Greek, Latin, and classical studies.
- Minors in classical studies, Greek, Latin, and classics and ancient history.

The majors in classics, Greek, and Latin emphasize the development of expertise in Greek and Latin and can include coursework in the history, literature, philosophy, science, and the art and archaeology of these two contrasting but related cultures. Students who intend to continue their studies to the PhD degree are advised to take the BA in

classics or, alternatively, the BA in Latin or Greek with as many courses in the second language as possible.

A fourth major, the Bachelor of Arts with a major in classical studies, is especially suited to students wishing to explore the literature, history, art, archaeology, and philosophy of classical antiquity, primarily through English translations. The classical studies major demands less study of the classical languages of Greece and Rome than is required for the other majors. Students with no previous exposure to Greek or Latin can complete the classical studies major in two years. Students have often combined this major with another major such as English, history, or art history, and even with a non-humanities major such as computer science, biochemistry, or economics.

Bachelor of Arts

Suggested First- and Second-Year College Courses: First- and second-year Latin and/or classical Greek, classics in translation, ancient history, classical art and archaeology, ancient philosophy.

Department Admission Requirements

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

Major Requirements

66 credits in each of the majors, to include:

- *Greek:* 27 approved credits in Greek at the 400 level plus 9 credits chosen with department approval from courses in Latin, Greek at the 400 level, classics in English, classical art and archaeology, ancient history, the history of ancient philosophy, and the history of ancient science. The major must include a minimum of 2 credits of CLAS 495.
- *Latin:* 27 approved credits in Latin at the 400 level plus 9 credits chosen with department approval from courses in Greek, Latin at the 400 level, classics in English, classical art and archaeology, ancient history, the history of ancient philosophy, and the history of ancient science. The major must include a minimum of 2 credits of CLAS 495.
- *Classics:* 15 approved credits in Greek at the 400 level and 15 approved credits in Latin at the 400 level; 6 additional credits (including 2 credits of CLAS 495) chosen from the following courses: Greek and Latin at the 400 level, classics in English, classical art and archaeology, ancient history, the history of ancient philosophy, and the history of ancient science.
- *Classical Studies:* Greek or Latin through 307 or the equivalent; 36 additional credits chosen with department approval from the following courses: Greek and Latin at 400 level (including a minimum of 2 credits of CLAS 495), classics in English, classical art and archaeology, ancient history, the history of ancient philosophy, and the history of ancient science. Classical studies is especially suited to students not preparing for graduate study in classics but wishing to explore the literature, history, art, archaeology, and philosophy of classical antiquity primarily through English translations.

Note: Competence to take 400-level courses which count toward the Latin, Greek, and classics majors generally requires four-to-six quarters (20-30 credits) of previous study.

Minor

Minor Requirements: Minimum 25 credits as follows for each of the minors except Classics and Ancient History, which requires 30 credits:

- *Classical Studies:* 25 approved credits from classics in English, classical art and archaeology, ancient history, the history of ancient philosophy, and the history of ancient science.

- *Greek:* Minimum 25 credits in Greek, including at least 6 credits at the 400 level (excluding GREEK 490).
- *Latin:* Minimum 25 credits in Latin, including at least 6 credits at the 400 level (excluding LATIN 490).
- *Classics and Ancient History:* 30 credits from the course list below, including at least 20 upper-division credits (15 of which must be taken at the UW). 100-level credit is not accepted. Minimum 10 credits from each department (Classics and History). A minimum grade of 2.0 is required in each course. Not available to students pursuing majors or other minors in classics.

Courses: CLAS 210, CLAS 320, CLAS 322, CLAS 324, CLAS 326, CLAS 328, CLAS 330, CLAS 424, CLAS 427, CLAS 428, CLAS 430, CLAS 432, CLAS 435, CLAS 445, CLAS 496 (except when topic is medieval); CL AR 340, CL AR 341, CL AR 342, CL AR 343, CL AR 442, CL AR 443, CL AR 444, CL AR 446, CL AR 447, CL AR 448; GREEK (all upper-division courses except GREEK 300 and GREEK 301); LATIN (all upper-division courses except LATIN 300, LATIN 301, LATIN 401, and LATIN 402); HSTAM 205, HSTAM 302, HSTAM 312, HSTAM 313, HSTAM 314, HSTAM 330, HSTAM 401, HSTAM 402, HSTAM 403; HIST 490 (when topic is ancient), HIST 498 (when topic is ancient).

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The undergraduate study of classics emphasizes critical analysis of language and culture and clear and effective writing. The BA with a major in classics is a respected terminal degree in itself. Like other degree programs in the humanities, it emphasizes the acquisition of those analytic and communications skills which are indispensable for careers in government, journalism, law, industry, medicine, and business. The classics major (especially in its more language-intensive forms) is often a mark of distinction when a graduate applies for admission to professional school.
- *Many who take the bachelor's degree in classics go on to pursue graduate work in the subject at leading PhD programs.* Graduates include winners of prestigious national awards such as Mellon Fellowships for graduate study and the Rhodes Scholarship.
- *Instructional and Research Facilities:* The departmental office provides access to several computers for research and coursework. The Classics Department sponsors numerous lectures by distinguished speakers visiting from universities in this country and abroad; undergraduates are always welcome to attend.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* None offered.
- *Department Scholarships:*
 - *Jim Greenfield Undergraduate Scholarship* is intended for undergraduate majors in classics. The object of the Jim Greenfield scholarship is to enable exceptionally well-qualified students to devote the maximum time and energy to their study of the classics at the University of Washington. While the first criterion is academic promise, an applicant's current means of support is also taken into consideration; therefore, the amount of the award may vary from partial tuition to full tuition and some expenses. Successful candidates may reapply for the following year.
 - *Jim Greenfield Undergraduate Travel Bursaries:* Jim Greenfield Undergraduate Travel Bursaries may be used for the department's Rome Program, for travel associated with participation in archaeological excavations, for independent travel to areas of classical

interest, or for other kinds of study-related travel for which the applicant can make a cogent case. In some cases an award might allow a student to remain overseas for study travel in the wake of the department's Rome Program. Further information about applying for a Jim Greenfield Undergraduate Travel Bursary is available in the department office.

In addition to the above, undergraduates are eligible to apply or be nominated for:

- *Classics Students Travel Fund:* provides financial support for students in the Classics Department who are intending to participate in the departmental Rome program or extramural programs, to attend conferences, or to travel to specific places in support of their studies.
- *Harvey Bruce Densmore Memorial Fund:* rewards distinguished undergraduate students of Greek.
- *Student Organizations/Associations:* None

Of Special Note:

- CLAS 101, CLAS 102, CLAS 205, and HIST 111 may not be taken in fulfillment of major requirements for baccalaureate degrees in the Department of Classics.
- *Classical Seminar in Rome:* During spring quarter, the department offers instruction in classics for advanced undergraduate majors and graduate students at the University of Washington Rome Center, located in the Palazzo Pio on the Campo de Fiori.

GRADUATE PROGRAM

Graduate Program Coordinator

218 Denny, Box 353110

(206) 543-2266

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The Department of Classics offers programs of graduate study leading to the Master of Arts and Doctor of Philosophy degrees. The MA degree may be in Greek, Latin, or classics (a combination of Greek and Latin). The PhD degree requires both Greek and Latin.

The program of formal instruction ensures comprehensive and thorough training in the basic disciplines needed for teaching and research. The department offers courses in the major writers and periods of literature, philosophy, and history, in classical art and archaeology, and in Greek and Latin linguistics. The courses in Greek and Latin literature include many works on the PhD-degree reading list. Seminars introduce research techniques through the study of more specialized topics, which vary from quarter to quarter. Students may include in their programs courses and seminars given by other departments in such subjects as ancient philosophy, ancient and medieval history, comparative literature, and linguistics.

Master of Arts

Admission Requirements

Strong preparation in Latin and Greek, preferably a full undergraduate major. Although the MA may be attained with work in only one of the languages, students who plan to work toward the PhD must be prepared to do graduate work in both Latin and Greek.

Degree Requirements

36 credits, as follows:

1. 27 credits in courses and seminars approved by the department as applicable toward an advanced degree and either a) 9 additional credits and a research paper or b) a thesis (9 credits). At least 18 of the total 36 credits must be at the 500 level or above.

2. Competence in reading German, French, or Italian, demonstrated by passing a departmental examination.

Doctor of Philosophy

Admission Requirements

Strong preparation in Latin and Greek, preferably a full undergraduate major. Admission to the PhD program is granted after completion of the MA degree.

Degree Requirements

90 credits, as follows:

1. Minimum three academic years of graduate study, of which at least two must be at the UW, and one in full-time residence at the University for three out of four consecutive quarters.
2. 90 credits in courses approved by the department. At least half (which include dissertation credits) must be at the 500 level or above.
3. Competence in reading German and French, or German and Italian, demonstrated by passing departmental examinations.
4. Graduate courses (or the equivalent) in Greek and Latin composition.
5. The classics proseminar (or equivalent).
6. Written preliminary examinations:
 - a. Translation exams on Greek and Latin literature. Reading lists in each language guide the student's preparation for these exams.
 - b. A written examination on a special field of classical studies, e.g.: a period of Greek or Roman history, Greek or Latin epigraphy, Athenian or Roman topography, Greek or Roman religion, classical linguistics, metrics, or palaeography, an area of intellectual history, a literary theme or cultural institution. This examination must be taken before the doctoral orals but is preferably taken earlier in the student's graduate program.
 - c. Written examinations on two special authors, one Greek and one Latin, which assume a deep familiarity with the text, a knowledge of the textual history, and the important secondary works and trends in scholarship. A special author examination may be taken only after the translation examination in that language has been passed.
7. An oral general examination on Greek and Roman history, literature, philosophy, and related subjects.
8. A dissertation approved by the student's Supervisory Committee, and an oral examination on the dissertation.
9. Graduate students are expected to have teaching experience before completing their terminal degrees.

Research Facilities

The Suzzallo Library has an extensive classics collection. The department's seminar room in Denny Hall, which is available to graduate students for their study and research, contains an excellent non-circulating library with such reference works as Pauly-Wissowa, *L'Année Philologique*, the *Thesaurus Linguae Latinae*, the *Müller Handbuch series*, the *Teubner* and *Oxford texts*, commentaries on the classical authors, standard collections of inscriptions and fragments, and a number of important serials. The department also possesses a license for the *Thesaurus Linguae Graecae*, *Thesaurus Linguae Latinae*, and other databases.

Teaching Assistantships and Fellowships

The Department of Classics is able to provide substantial support at the graduate level. Jim Greenfield Graduate Fellowships are typically available to highly meritorious incom-

ing graduate students; Jim Greenfield Dissertation Fellowships provide support at the dissertation stage; Phillip and Estelle DeLacy Fellowships and Nesholm Family Endowment Fellowships provide funding to graduate students for various needs; and the Classics Student Travel Fund provides travel funding (to academic conferences, programs abroad, etc.)

In addition, a number of teaching assistantships are available. Assistants teach sections of elementary Latin and Greek, courses in Latin and Greek derivatives, conduct discussion sections in classical literature in translation, or assist faculty members with other courses. The teaching load is four to six hours a week throughout the academic year.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsat/

Classical Archaeology

CL AR 340 Pre-Classical Art and Archaeology (3) VLPA K. TOPPER Survey of the art and the other material remains of the civilizations in the Aegean from the Neolithic Age to the end of the Bronze Age, with special emphasis on Minoan Crete and the Mycenaean kingdoms of mainland Greece, illustrated by slides. The history, techniques, and results of significant excavations are examined. Offered: jointly with ART H 340.

CL AR 341 Greek Art and Archaeology (3) VLPA S. LEVIN-RICHARDSON, K. TOPPER Survey of the material remains and the developing styles in sculpture, vase painting, architecture, and the minor arts from the geometric to the Hellenistic periods, illustrated by slides. Principal sites and monuments, as well as techniques and methods of excavation, are examined in an attempt to reconstruct the material culture of antiquity. Offered: jointly with ART H 341.

CL AR 342 Roman Art and Archaeology (3) VLPA K. TOPPER Roman architecture and art, with emphasis on the innovations of the Romans; illustrated by slides. Offered: jointly with ART H 342.

CL AR 343 Hellenistic Art and Archaeology (3) VLPA K. TOPPER Survey of the art of Greece and the eastern Mediterranean from the time of Alexander the Great to the Roman conquest. Principal sites with their sculpture, painting, mosaics, and minor arts examined in lectures illustrated with slides. Offered: jointly with ART H 343.

CL AR 442 Greek Painting (3) VLPA K. TOPPER Study of painted decoration on Greek vases, with emphasis on stylistic developments and cultural and historical influences. Painting on other media also examined as evidence allows. Offered: jointly with ART H 442.

CL AR 443 Roman Painting (3) VLPA S. LEVIN-RICHARDSON, K. TOPPER Study of surviving painting from the Roman world, with emphasis on wall paintings from Pompeii and Herculaneum. Principal topics for discussion: the four styles of Pompeian painting the dependence of Roman painters on Greek prototypes, and the significance of various kinds of painting as domestic decoration. Offered: jointly with ART H 443.

CL AR 444 Greek and Roman Sculpture (3) VLPA K. TOPPER History and development of Greek sculpture and sculptors, their Roman copyists, and Roman portraits and sarcophagi. Emphasis on Greek sculpture of the fifth century BC. Offered: jointly with ART H 444.

CL AR 446 Greek Architecture (3) VLPA K. TOPPER Detailed study of Greek architecture from its beginnings, with special emphasis on the Periclean building program in fifth-century Athens. Offered: jointly with ART H 446.

CL AR 447 The Archaeology of Early Italy (3) VLPA S. LEVIN-RICHARDSON, K. TOPPER Study of the principal archaeological sites of early Italy, including Etruria, Sicily, southern

Italy, and archaic Rome up to the Republican period. Attention given to the material remains and their relationship to the Etruscan, ancient Sicilian, and early Roman civilizations. Offered: jointly with ART H 447.

CL AR 448 The Archaeology of Italy (3) VLPA S. LEVIN-RICHARDSON, K. TOPPER Study of the principal archaeological sites in Italy with special emphasis on ancient Rome. Sites include the Alban hills, Ostia, Pompeii, Herculaneum, Tarquinia, Paestum, Tivoli, and Praeneste. Attention given to the relationship between material remains and their purpose in ancient life. Illustrated by slides. Offered: jointly with ART H 448.

CL AR 513 Athenian Topography (5) K. TOPPER Detailed consideration of the topography and monuments of ancient Athens from the beginning through the Roman period.

CL AR 541 Seminar in Greek and Roman Art (5) S. LEVIN-RICHARDSON, K. TOPPER In-depth study of selected topics and problems of the art of ancient Greece and Rome. Offered: jointly with ART H 541.

Classical Linguistics

CL LI 501 Comparative Phonology of Greek and Latin (5) O. LEVANIUK Phonological developments of Greek and Latin from Indo-European to the classical periods of both languages.

CL LI 503 History of the Greek Language (5) O. LEVANIUK Morphological and syntactical development of the Greek language from Homer through the New Testament; the development of prose and poetic style.

CL LI 505 History of the Latin Language (5) O. LEVANIUK Morphological and syntactical development of the Latin language; the development of Latin as a literary language.

CL LI 506 Italic Dialects (5) O. LEVANIUK Principal remains of the non-Latin languages and dialects of ancient Italy.

CL LI 508 Greek Dialects (5) O. LEVANIUK The non-Attic dialects of ancient Greek, based on a study of inscriptions and the literary remains.

Classics

CLAS 101 Latin and Greek in Current Use (2) VLPA Designed to improve and increase English vocabulary through a study of the Latin and Greek elements in English, with emphasis on words in current literary and scientific use. No auditors. Knowledge of Latin or Greek is not required. Offered: AWSpS.

CLAS 102 Grammar and Syntax through Latin (3) VLPA Improve familiarity with basic grammar, syntax, logic through study of mechanics of the Latin language. For Educational Opportunity Program students only. No auditors. Knowledge of Latin or Greek not required.

CLAS 122 Gateway to the Ancient Greco-Roman World (5) VLPA Clauss Introduces students to aspects of Ancient Greek and/or Roman literature and culture. Develops understanding of the nature and process of critical thinking and basic research techniques.

CLAS 205 Bioscientific Vocabulary Building From Latin and Greek (3) VLPA Designed to help the student master the scientific vocabulary of his or her particular field by a study of the Latin and Greek roots that are used to create the majority of scientific terms. No auditors. Knowledge of Latin or Greek is not required. Offered: AWSpS.

CLAS 210 Greek and Roman Classics in English (5) VLPA Blondell, Clauss, Connors, Gowing, Hinds, Hollmann, Kamen, Levaniuk, Levin-Richardson, Stroup, Topper Introduction to classical literature through a study of the major Greek and Latin authors in modern translation. Offered: AWSp.

CLAS 320 Greek and Roman Private and Public Life (5) VLPA/I&S Kamen Study of the civic and social practices and institutions of everyday Greek and Roman private and public life, including the family, social classes, the courts

and legal systems, military service and war, technology and the trades, money and banking, agriculture and rural life. Many lectures illustrated by slides. Offered: A.

CLAS 324 Greek and Roman Athletics (5) I&S *Stroup* Surveys Greek and Roman athletic festivals and events; the place of athletes and sports in ancient politics, economy, religion, art, and literature; and the relationship between ancient athletic spectacle and its modern heirs.

CLAS 326 Women in Antiquity (5) VLPA/I&S, DIV *Connors, Levaniouk* A broad survey of primary sources in medicine, law, philosophy, religious ritual, myth, history, and ethnography, informed by perspectives from literature, art, and archaeology. Provides students the tools to analyze the social roles of women in ancient Greece and Rome.

CLAS 328 Sex, Gender, and Representation in Greek and Roman Literature (3) VLPA/I&S, DIV *Hinds, Levin-Richardson, Stroup* Affirmation and inversion of gender roles in Greek and Roman literature, myths of male and female heroism; marginalization of female consciousness; interaction of gender, status, and sexual preference in love poetry. Readings from epic, drama, historiography, romance, and lyric.

CLAS 330 The Age of Augustus (5) VLPA/I&S *Gowing* Detailed study of the history and culture of the reign of Augustus, the first Roman emperor (31 BC-AD 14). Includes readings in Augustan authors such as Vergil, Ovid, and Horace as well as the study of Augustan art and architecture. Offered: jointly with HSTAM 330.

CLAS 360 Jews, Greeks, and Romans in the Ancient World (5) VLPA *Stroup* Examines the interactions between populations of Jews, Greeks, and Romans in the ancient Mediterranean from the late Bronze Age through the early Talmudic period, informed by perspectives from literature (religious and secular), art, and archaeology. Offered: jointly with JSIS C 360.

CLAS 399 Study Abroad: Classics (3-15, max. 20) VLPA For participants in Classics overseas study programs. Specific course content determined by assigned faculty member. Credit not applicable to majors in the Classics Department without approval.

CLAS 405 Undergraduate Seminar in Classics (5, max. 15) Seminar on a broadly defined topic in classics. Includes reading in Latin or Greek as appropriate for individual students. Additional readings of works in English translation and works of scholarship chosen to give undergraduate majors familiarity with research methods and perspective on the discipline.

CLAS 422 Intellectual History of Classical Greece (5) VLPA/I&S *Blondell* Uses Plato's Republic as a core text to explore a range of issues of ancient and contemporary interest, such as justice, political theory, education, gender, and the nature of the soul. Besides the Republic and other works of Plato, reading are taken from Homer, Hesiod, the dramatists, and other authors. Taught in English.

CLAS 424 The Epic Tradition (5) VLPA *Clauss, Levaniouk* Ancient and medieval epic and heroic poetry of Europe in English: the Iliad, Odyssey, and Aeneid; the Roland or a comparable work from the medieval oral tradition; pre-Greek forerunners, other Greco-Roman literary epics, and later medieval and Renaissance developments and adaptations of the genre. Choice of reading material varies according to instructor's preference. Offered: jointly with C LIT 424.

CLAS 427 Greek and Roman Tragedy in English (5) VLPA *Stroup* Study of the development of Greek and Roman tragedy, with extensive readings in representative plays of Aeschylus, Sophocles, Euripides, and Seneca.

CLAS 428 Greek and Roman Comedy in English (5) VLPA *Stroup* Readings from the comedies of Aristophanes, Plautus, and Terence.

CLAS 430 Greek and Roman Mythology (3/5) VLPA Principal myths found in classical and later literature. Offered: AWSp.

CLAS 432 Classical Mythology in Film (3/5) VLPA *Clauss* Comparison and discussion of classical myths and modern films inspired by them. Promotes access to the reading of classical mythology. Analyzes significant differences between ancient literary and modern cinematographic representations of the myth.

CLAS 435 The Ancient Novel (3) VLPA *Connors* Reading and discussion of the principal Greek and Roman novels, the earliest European prose fiction, with attention to earlier literature and to imperial culture.

CLAS 445 Greek and Roman Religion (5) VLPA/I&S *Holmann, Levaniouk* Religion in the social life of the Greeks and Romans, with emphasis placed on their public rituals and festivals. Attention is given to the priesthoods, personal piety, rituals of purification and healing, and the conflict of religions in the early Roman Empire. Many lectures illustrated by slides. Recommended: JSIS B 201. Offered: jointly with JSIS C 445.

CLAS 490 Supervised Study (1-6, max. 18) Individual study in classical topics by arrangement.

CLAS 495 Senior Essay (1-3, max. 4) VLPA Usually written in conjunction with another course in the final year of study in the major.

CLAS 496 Special Topics (2-5, max. 15) VLPA Offered occasionally by visitors or resident faculty.

CLAS 510 Interdisciplinary Seminar in Classics (3-5, max. 25) Advanced work on Greek and Latin studies in English translation. Offered: AWSpS.

CLAS 520 Seminar (5, max. 45) Advanced comparative work on Greek and Latin materials studied in both original languages.

CLAS 525 Proseminar (5) Introduces graduate students to the chief subfields, together with their various methodologies and resources, of the broad discipline of classical studies.

CLAS 540 Topics in Greek and Latin Literary History (5, max. 25) Reading of a range of Greek and Latin texts by various authors.

CLAS 700 Master's Thesis (*-)

CLAS 800 Doctoral Dissertation (*-)

Greek

GREEK 101 Elementary Greek (5) An intensive study of grammar, with reading and writing of simple Attic prose. First in a sequence of three. Offered: A.

GREEK 102 Elementary Greek (5) An intensive study of grammar, with reading and writing of simple Attic prose. Second in a sequence of three. Prerequisite: GREEK 101. Offered: W.

GREEK 103 Elementary Greek (5) Reading of selections from classical Greek literature. Third in a sequence of three. Prerequisite: GREEK 102. Offered: Sp.

GREEK 300 Greek Language, Accelerated (5) Intensive introduction to Attic Greek. Not accepted as upper-division credit toward a major in Greek or classics. Does not satisfy foreign language proficiency requirement. Cannot be taken for credit if GREEK 101 already taken. Offered: WS.

GREEK 301 Greek Language, Accelerated (5) Intensive introduction to Attic Greek. Not accepted as upper-division credit toward a major in Greek or classics. Does not satisfy foreign language proficiency requirement. Cannot be taken for credit if GREEK 101 already taken. Prerequisite: GREEK 300. Offered: SpS.

GREEK 305 Attic Prose (5) VLPA Translation of selections from Attic prose; elementary exercises in Attic prose composition. Recommended: either GREEK 103, GREEK 301, or equivalent.

GREEK 306 Attic Prose (5) VLPA Translation of selections from Attic prose; elementary exercises in Attic prose composition. Prerequisite: GREEK 305.

GREEK 307 Homer (5) VLPA Translation of selections from the Iliad or the Odyssey; Attic prose composition, metrics. Prerequisite: GREEK 306. Offered: Sp.

GREEK 308 Introduction to Koine Greek Texts (3) VLPA *Williams* Reading and discussion of selected religious and philosophical texts from Koine Greek.

GREEK 405 Undergraduate Seminar in Classics (5, max. 15) Seminar on a broadly defined topic in classics. Includes reading in Latin or Greek as appropriate for individual students. Additional readings of works in English translation and works of scholarship chosen to give undergraduate majors familiarity with research methods and perspective on the discipline.

GREEK 413 The Pre-Socratic Philosophers (3) VLPA *Blondell* Recommended: either minimum two years of ancient Greek language study at college level or equivalent.

GREEK 414 Plato (3) VLPA *Blondell* Recommended: either minimum two years of ancient Greek language study at college level or equivalent.

GREEK 415 Aristotle (3) VLPA *Blondell* Recommended: either minimum two years of ancient Greek language study at college level or equivalent.

GREEK 422 Herodotus and the Persian Wars (3) VLPA *Holmann, Kamen, Levaniouk, Topper* Recommended: either minimum two years of ancient Greek language study at college level or equivalent.

GREEK 424 Thucydides and the Peloponnesian War (3) VLPA *Gowing, Kamen* Recommended: either minimum two years of ancient Greek language study at college level or equivalent.

GREEK 426 Attic Orators (3) VLPA *Kamen* Recommended: either minimum two years of ancient Greek language study at college level or equivalent.

GREEK 428 Imperial Greek Literature (3-5, max. 15) VLPA *Clauss, Gowing, Hollmann* Readings in imperial Greek prose and poetry from the first century CE onward, including Dio Chrysostom, Appian, Plutarch, Aelius Aristides, Lucian, Athenaeus, and New Testament Koine. Recommended: either minimum two years of ancient Greek language study at college level or equivalent.

GREEK 442 Greek Drama (3) VLPA *Blondell, Levaniouk* Recommended: either minimum two years of ancient Greek language study at college level or equivalent.

GREEK 443 Greek Drama (3) VLPA *Blondell, Levaniouk* Recommended: either minimum two years of ancient Greek language study at college level or equivalent.

GREEK 444 Greek Drama (3) VLPA *Blondell, Levaniouk* Recommended: either minimum two years of ancient Greek language study at college level or equivalent.

GREEK 449 Greek Epic (3) VLPA *Levaniouk* Recommended: either minimum two years of ancient Greek language study at college level or equivalent.

GREEK 451 Lyric Poetry (3) VLPA *Blondell, Levaniouk* Recommended: either minimum two years of ancient Greek language study at college level or equivalent.

GREEK 453 Pindar: The Epinician Odes (3) VLPA *Levaniouk* Recommended: either minimum two years of ancient Greek language study at college level or equivalent.

GREEK 461 Early Greek Literature (3-5, max. 15) VLPA Readings and discussion of selected authors of the early Greek period. Recommended: either minimum two years of ancient Greek language study at college level or equivalent.

GREEK 462 Literature of Classical Athens (3-5, max. 15) VLPA Readings and discussion of selected authors of classical Athens. Recommended: either minimum two years of ancient Greek language study at college level or equivalent.

GREEK 463 Hellenistic Greek Literature (3-5, max. 15) VLPA *Clauss* Readings and discussion of selected authors of the Hellenistic Age. Recommended: either minimum two years of ancient Greek language study at college level or equivalent.

GREEK 490 Supervised Study (*, max. 18) Special work in literary and philosophical texts for graduates and undergraduates. Recommended: either minimum two years of ancient Greek language study at college level or equivalent.

GREEK 500 Grammar and Composition (5) *Hollmann* Translation of passages from English to Greek for the purpose of acquiring advanced knowledge of the grammar and the style of the classical tongue.

GREEK 501 Homer (5) *Levaniouk* Readings from the Iliad or the Odyssey.

GREEK 503 Aristophanes (5) *Kamen* Select comedies.

GREEK 504 Plato (5) *Blondell* The Republic or other dialogues.

GREEK 506 Aristotle (5) *Blondell* Politics or Ethics.

GREEK 508 Lysias and Demosthenes (5) *Kamen* Select speeches, oratorical theory, historical questions.

GREEK 510 Greek Historians (5, max. 10) *Hollmann, Kamen* Selections from Herodotus, Thucydides, or Xenophon.

GREEK 512 Greek Tragedy (5, max. 10) *Blondell, Levaniouk* Aeschylus, Sophocles, and/or Euripides.

GREEK 515 Greek Epigraphy (5) *Kamen* Selected inscriptions from various Greek states and sanctuaries and evidence they provide for religious and social practices, literature, and political history. Classification and editing of inscriptions, and epigraphical techniques.

GREEK 520 Seminar (5, max. 45)

GREEK 540 Topics in Greek Literary History (5, max. 25) Reading of a range of Greek texts by various authors.

GREEK 590 Supervised Study (*, max. 18) Prerequisite: permission of Graduate Program Coordinator.

GREEK 600 Independent Study or Research (*-)

Latin

LATIN 101 Elementary Latin (5) An intensive study of grammar, with reading and writing of simple Latin prose. First in a sequence of three. Offered: A.

LATIN 102 Elementary Latin (5) An intensive study of grammar, with reading and writing of simple Latin prose. Second in a sequence of three. Prerequisite: LATIN 101. Offered: W.

LATIN 103 Elementary Latin (5) Reading of selections from classical Latin literature. Third in a sequence of three. Prerequisite: LATIN 102. Offered: Sp.

LATIN 300 Latin Language, Accelerated (5) Intensive introduction to classical Latin. Not accepted as upper-division credit toward a major in Latin or classics. Does not satisfy foreign language proficiency requirement. Cannot be taken for credit if LATIN 101 already taken. Offered: WS.

LATIN 301 Latin Language, Accelerated (5) Intensive introduction to classical Latin. Not accepted as upper-division credit toward a major in Latin or classics. Does not satisfy foreign language proficiency requirement. Cannot be taken for credit if LATIN 101 already taken. Prerequisite: LATIN 300. Offered: SpS.

LATIN 305 Introduction to Latin Literature (5) VLPA Readings in prose and poetry from various Latin authors; elementary exercises in Latin prose composition. Recommended: either LATIN 103, LATIN 301, or equivalent. Offered: A.

LATIN 306 Cicero and Ovid (5) VLPA Readings from the orations of Cicero and the poetry of Ovid; elementary exercises in Latin prose composition. Prerequisite: LATIN 305. Offered: W.

LATIN 307 Vergil (5) VLPA Selections from the first six books of the Aeneid; elementary exercises in Latin prose composition or metrics. Prerequisite: LATIN 306. Offered: Sp.

LATIN 401 Medieval Latin Literature to 1200 (3) VLPA *Hinds* Texts read in Latin; cultural and historical contexts discussed. Presupposes year and a half of Latin or equivalent. Informal individual guidance available to members of class handling medieval or Renaissance Latin texts in their research. Recommended: LATIN 306.

LATIN 402 Later Medieval and Renaissance Latin Literature (3) VLPA *Hinds* Texts read in Latin; cultural and historical contexts discussed. Presupposes year and a half of Latin or equivalent. Informal individual guidance available to members of class handling medieval or Renaissance Latin texts in their research. Recommended: LATIN 306.

LATIN 405 Undergraduate Seminar in Classics (5, max. 15) Seminar on a broadly defined topic in classics. Includes reading in Latin or Greek as appropriate for individual students. Additional readings of works in English translation and works of scholarship chosen to give undergraduate majors familiarity with research methods and perspective on the discipline.

LATIN 412 Lucretius (3) VLPA *Blondell, Clauss* Recommended: either minimum two years of Latin language study at college level or equivalent.

LATIN 414 Seneca (3) VLPA *Blondell, Gowing, Stroup* Recommended: either minimum two years of Latin language study at college level or equivalent.

LATIN 422 Livy (3) VLPA *Clauss, Gowing, Stroup* Recommended: either minimum two years of Latin language study at college level or equivalent.

LATIN 423 Cicero and Sallust (3) VLPA *Clauss, Gowing, Stroup* Recommended: either minimum two years of Latin language study at college level or equivalent.

LATIN 424 Tacitus (3) VLPA *Clauss, Gowing, Stroup* Recommended: either minimum two years of Latin language study at college level or equivalent.

LATIN 447 Roman Lyric (3) VLPA *Clauss, Connors, Hinds* Recommended: either minimum two years of Latin language study at college level or equivalent.

LATIN 449 Roman Elegy (3) VLPA *Connors, Hinds* Recommended: either minimum two years of Latin language study at college level or equivalent.

LATIN 451 Roman Satire (3) VLPA *Connors, Gowing, Stroup* Recommended: either minimum two years of Latin language study at college level or equivalent.

LATIN 457 Roman Drama (3) VLPA *Connors* Recommended: either minimum two years of Latin language study at college level or equivalent.

LATIN 458 Roman Epic (3) VLPA *Clauss, Connors, Hinds* Recommended: either minimum two years of Latin language study at college level or equivalent.

LATIN 461 Latin Literature of the Republic (3-5, max. 15) VLPA Readings and discussion of selected authors from the era of the Roman Republic. Recommended: either minimum two years of Latin language study at college level or equivalent.

LATIN 462 Latin Literature of the Augustan Age (3-5, max. 15) VLPA Readings and discussion of selected authors from the Augustan era. Recommended: either minimum two years of Latin language study at college level or equivalent.

LATIN 463 Latin Literature of the Empire (3-5, max. 15) VLPA Readings and discussion of selected authors from the Roman Empire. Recommended: either minimum two years of Latin language study at college level or equivalent.

LATIN 465 Roman Topography and Monuments (5, max. 10) VLPA *Clauss, Gowing, Levin-Richardson, Stroup, Topper* Study of the material remains of ancient Rome from the archaic period through the imperial age. Reading of

source materials and inscriptions in Latin. Conducted in Rome. Recommended: either minimum two years of Latin language study at college level or equivalent. Offered: Sp.

LATIN 475 Improvement of Teaching: Latin (5) VLPA Offered: jointly with EDC&I 438.

LATIN 490 Supervised Study (*, max. 18) Special work in literary and philosophical texts for graduates and undergraduates. Recommended: either minimum two years of Latin language study at college level or equivalent.

LATIN 500 Grammar and Composition (5) *Clauss, Gowing, Hinds, Stroup* Translation of passages from English to Latin for the purpose of acquiring advanced knowledge of the grammar and style of the classical tongue.

LATIN 501 Vergil (5) *Clauss, Hinds* The Aeneid.

LATIN 502 Horace (5) *Clauss* Odes or Epistles.

LATIN 503 Plautus and Terence: Early Republican Literature (5) *Connors, Stroup* Plautus and Terence.

LATIN 504 Philosophy at Rome (5) *Blondell, Stroup* Selected philosophical works of Cicero and other sources for Hellenistic and Roman philosophy.

LATIN 506 Cicero (5) *Gowing, Stroup* Select speeches, with attention to rhetorical theory and/or letters.

LATIN 508 Silver Latin Literature (5) *Connors, Hinds* Selections from Martial, Lucan, and Petronius.

LATIN 510 Roman Historians (5, max. 10) *Clauss, Gowing* Caesar, Livy, and Tacitus.

LATIN 512 Augustan Poetry (5, max. 15) *Clauss, Connors, Hinds.*

LATIN 520 Seminar (5, max. 45)

LATIN 540 Topics in Latin Literary History (5, max. 25) Reading of a range of Latin texts by various authors. Offered: AWSpS.

LATIN 565 Seminar in Rome (5, max. 10) *Clauss, Gowing, Levin-Richardson, Stroup, Topper* Study of selected topics and authors in Latin literature. Conducted in Rome.

LATIN 590 Supervised Study (*, max. 18) Prerequisite: permission of Graduate Program Coordinator.

LATIN 600 Independent Study or Research (*-)

Communication

102 Communications

Communication is a process that creates and reveals meanings, relationships, and cultural patterns.

UNDERGRADUATE PROGRAM

Adviser

118 Communications, Box 353740

(206) 543-8860

The Department of Communication offers the following programs of study:

- The Bachelor of Arts degree with a major in communication
- The Bachelor of Arts degree with a major in communication: journalism

Bachelor of Arts

Suggested First- and Second-Year College Courses: COM 201, COM 202.

Department Admission Requirements

1. Minimum 15 credits of COM credits, including minimum 2.5 grade in both COM 201 and COM 202.

2. Minimum 2.50 cumulative GPA in all COM coursework
3. Minimum 2.5 cumulative GPA for all college coursework, including transfer credits
4. Admission is competitive, based on information in the application packet, cumulative GPA, and COM GPA. Completion of the above requirements does not guarantee admission.
5. Students are admitted quarterly - autumn, winter, and spring. Applications are due two weeks after the quarter begins, autumn, winter, and spring quarters. Applications and additional information are available on the web. Students are notified of acceptance by the end of the fifth week of the quarter. If accepted, they can register for the next quarter as majors.
6. Applications are available from the department website on the first day of the quarter. Applications should include application form, copies of transcripts and grade reports, selection of the standard or journalism option, and an essay explaining what led applicants to apply to the major.

Major Requirements

Communication: 50 credits, to include the following:

1. *Introductory courses (10 credits):* COM 201 and COM 202.
2. *Methods in inquiry (5 credits):* Examples of courses that apply include COM 382, COM 405, and COM 485. For full list, see department adviser or website.
3. *Area concentration (15 credits)* in one of the following: communication and culture, communication technology and society, international communication, political communication, rhetoric and critical studies, or social interaction. See advising office or website for description of each area and lists of qualifying courses.
4. *Electives (20 credits)* from the Department of Communication and from selected courses outside the department. See advising office or website for electives list.

Of the 50 required credits specified above, at least 20 must be Communication courses at the 300 level or above, and of those 20, at least 10 must be Communication courses at the 400 level (excluding COM 498/COM 499).

Journalism Option: A minimum of 55 credits, including the following:

1. *Introductory courses (10 credits):* COM 201 and COM 202.
2. *Methods of Inquiry (5 credits):* See advisor for approved list
3. *Skills/Competencies core (19 credits):* COM 360, COM 361, COM 362, COM 364, and COM 457.
4. *Law and Ethics core (10 credits):* COM 440 and COM 468.
5. *Advanced Skills/Competencies (10 credits minimum):* See advising office or department website for list of qualifying courses.

Student Outcomes and Opportunities

- **Learning Objectives and Expected Outcomes:** The Department of Communication prepares students for the challenges of a society that is informed, entertained, persuaded, and shaped by communication. The department seeks out and appeals to students from a variety of backgrounds and perspectives. It nurtures socially responsible, literate citizens who can interpret and evaluate images and messages they create and receive. It teaches students to think critically, respect diversity, communicate effectively, and develop the skills needed for the life-long learning that is central to successful careers and rewarding lives. Undergraduate study in communication has four pedagogical emphases: communication literacy, communication inquiry, theory and concepts, and community engagement.

- **Instructional and Research Facilities:** The Department of Communication has the following labs: Media Lab. News Lab. Observation Labs. It also has an Instructional Resources Center and video-editing facilities. Additionally, the department manages the following centers: The Dart Center, the Center for Communication and Civic Engagement, and the Resource Center for Cyberculture Studies. See the department Website for further information.
- **Honors Options Available:** With College Honors (Completion of Honors Core Curriculum and Departmental Honors; With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- **Research, Internships, and Service Learning:** See adviser for details.
- **Department Scholarships:** None offered
- **Student Organizations/Associations:**
 - Society of Professional Journalists
 - Public Relations Student Society of America

GRADUATE PROGRAM

Graduate Program Coordinator

221 Communications, Box 353740

(206) 543-7269

cominfo@uw.edu

Graduate study in communication engages students in the complexity of modern communication and its centrality to society and, in doing so, prepares them to become thoughtful scholars, teachers, practitioners, and leaders related to this field. The Department of Communication offers graduate programs leading to the degrees of Master of Arts, Doctor of Philosophy, and Master of Communication (MC).

Graduate study in the Department of Communication is guided by four related principles: intellectual and cultural pluralism, interdisciplinary theorizing, collaboration, and public scholarship. Coursework brings together humanistic and social scientific intellectual traditions through a unified core curriculum and a wide selection of graduate seminars. Research and teaching in the department focus on six interrelated areas: communication and culture, communication technology and society, international communication, social interaction, political communication, and rhetoric and critical studies.

The MA degree program provides training in research and scholarship and can be either preparation for doctoral study or a terminal degree. The MA degree requires a minimum of 45 credits of approved coursework and a research thesis. The PhD degree program develops conceptual and methodological capabilities in a substantive area of communication. The PhD degree requires completion of a minimum of 45 post-master credits, general examinations, and a dissertation demonstrating an original scholarly contribution to the field.

The Department of Communication also offers three MC degrees, each of which has specific requirements tailored to that degree. The general MC degree is targeted for mid-career communication professionals who seek to develop an understanding of communication theory related to a special area of interest. The MC in digital media is a professional degree focused on digital media content creation, management, and policy. Native Voices is an MC degree offered in conjunction with American Indian Studies. It is designed for documentary filmmakers who focus their work on subjects relevant to the Native American Community.

Master of Arts

Admission Requirements

1. Minimum 3.00 or B GPA over the two most recent years guarantees consideration. However, average GPAs for the students admitted have been higher.
2. MA applicants must show proof of completion of a bachelor's degree prior to starting the program, though it is common for applicants to be in their senior year of college when they apply to the MA program.
3. Full-time status is strongly encouraged, but domestic U.S. residents who do not receive assistantships can enroll half-time.
4. Students who wish to continue directly into the UW PhD program after completing the UW MA program should apply to the MA/PhD program.
5. **Note to U.S. permanent residents/immigrants (green card holders):** Applicants who are not native speakers of English must submit TOEFL scores taken within the past two years. Only the following applicants are exempt from the TOEFL requirement: citizens of the United States, Australia, Canada, Ireland, New Zealand, or the United Kingdom and non-United States citizens who have received a bachelor's degree or higher from a U.S. institution or from institutions in the countries listed here. Applicants who are not U.S. citizens must also submit a TSE score to be considered for departmental funding. Permanent residency/immigrant status or a degree from the United States does not exempt one from this TSE requirement.

Degree Requirements

45 credits minimum, to include:

1. Two core courses (COM 500 and COM 501) during the first year of study.
2. One additional methods course beyond COM 501
3. Up to 5 credits of COM 594 in five different topics may count toward total, although COM 594 credits are not required for master's students.
4. Up to 3 credits of COM 596 may count toward total. These credits are required for students with assistantships and optional for all others.
5. Completion of the thesis (minimum 10 credits in COM 700) and oral defense.
6. Specific courses should be selected in consultation with the Supervisory Committee.

Master of Communication

Admission Requirements

Admission requirements are the same as for the Master of Arts program (above).

Degree Requirements

45 credits minimum, as follows:

1. At least 12 credits in Communication courses at the 400 and 500 level.
2. At least 15 credits outside the Department of Communication in a coherent substantive area of specialization.
3. 10 credits in COM 600 to produce a professional project in an area of specialization for broadcast or publication.
4. Passage of an oral defense of the project.
5. The remaining credits necessary to meet the 45 credits for the degree should be selected in consultation with the Supervisory Committee.
6. At least 21 credits must be at the 500- or 600-level.
7. Up to 5 credits of COM 594 may count toward total, although COM 594 credits are not required for MC students.

- Up to 3 credits of COM 596 may count toward total. These credits are required for students with assistantships and optional for all others.

Digital Media

The Master of Communication (MC) in Digital Media is a professional degree focused in three concentrations: digital media content creation, management, and policy. 45 credits minimum as follows:

- Three core courses: COM 529 (5), COM 546 (5), and COM 558 (5).
- Students may choose either to complete 45 credits of coursework or to complete 40 credits of coursework (including three core courses) and a final project worth 5 credits. Specific courses should be selected in consultation with the Supervisory Committee.

Native Voices

45 credits, as follows:

- 20 credits in the Department of Communication:
 - 10 credits of 500-level communication courses. This is typically two 500-level seminars.
 - COM 600: 10 credits in documentary research and production. To be taken for completion of the final project.
- 25 credits in *American Indian Studies/Native Voices*: GWSS 443 (5), AIS 501 (5), AIS 502 (5), AIS 503 (5), AIS 504 (5)

Doctor of Philosophy

Admission Requirements

- Minimum 3.00 or B GPA over the two most recent years guarantees consideration; however, GPAs for students admitted have been higher.
- PhD applicants must show proof of completion of a master's degree prior to starting the program, though applicants are commonly working on their master's thesis the year during which they apply.
- Full-time status is strongly encouraged, but domestic U.S. residents who do not receive assistantships can enroll half-time.
- U.S. permanent residents/immigrants (green card holders)*: Applicants who are not native speakers of English must submit TOEFL scores taken within the past two years. Only the following applicants are exempt from the TOEFL requirement: citizens of the United States, Australia, Canada, Ireland, New Zealand, or the United Kingdom and non-U.S. citizens who have received a bachelor's degree or higher from a U.S. institution or from institutions in the countries listed here. Applicants who are not U.S. citizens must also submit a TSE score to be considered for departmental funding. Permanent resident/immigrant status or a degree from the United States does not exempt one from this TSE requirement.

Degree Requirements

Minimum 45 post-master credits, to include:

- Two core courses (COM 500 and COM 501) during the first year of study.
- Two additional methods courses beyond COM 501.
- 5 credits of COM 591 or COM 592
- 3 credits of COM 594 in three different topics, to be taken before the general examinations (up to five credits in five different topics may be taken).
- Up to 3 credits of COM 596 may count toward total. These credits are required for students with assistantships and optional for all others.
- Completion of the general examination. COM 600 credits do not count toward the 45 required post-master credits (unless student is a UW Communication MA).

- Completion of the dissertation (minimum 27 credits in COM 800 over at least three quarters) and final examination. These 27 credits do not count toward the 45 required post-master credits (or 30 required post-master credits for UW Communication MA students).

- Specific courses should be selected in consultation with the Supervisory Committee.

Students who completed their MA in Communication at the UW do not repeat the core courses, and need only 30 post-master credits, which can include COM 600 credits, and 3 credits of COM 594 in three different topics. Such students are required to take two methods courses beyond the minimum methods course requirements for the MA degree. COM 594 credits and additional methods courses beyond the minimum MA requirements taken during MA work may be used to fulfill the COM 594 and methods requirements for the doctoral program, but may not be applied to the 30 post-master credits.

Research Facilities

In addition to the University's research facilities available to all students, the Department of Communication houses a collection of specialized research laboratories, including the Digital Media Lab, Graduate Computer Lab, Observational Research Facility, Instructional Resources Center, and Video Editing Lab.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

COM 201 Introduction to Communication I (5) I&S Introduces students to four core principles that undergird the study and practice of communication - communication literacy, research inquiry, theories and concepts, and community engagement. Principles discussed and developed in the context of international communication, political communication, and communication technology and society.

COM 202 Introduction to Communication II (5) VLPA/I&S Introduces students to four core principles that undergird the study and practice of communication - communication literacy, research inquiry, theories and concepts, and community engagement. Principles discussed and developed in the context of social interaction, rhetoric and critical studies, and communication and culture.

COM 210 Introductory Communication Topics (5, max. 10) Introduction to a specified area of communication scholarship.

COM 220 Introduction to Public Speaking (5) VLPA/I&S Designed to increase competence in public speaking and the critique of public speaking. Emphasizes choice and organization of material, sound reasoning, audience analysis, and delivery.

COM 233 Introduction to Language and Society (5) VLPA, DIV Evans, Wassink Introduces the study of sociolects, the varieties of language that arise from differences in cultural and societal groups, often reflective of power inequalities. Raises awareness of the role that society and the individual play in shaping sociolects via the systematic observation and critical discussion of linguistic phenomena. Offered: jointly with ANTH 233/LING 233; A.

COM 234 PUBLIC DEBATE (5) VLPA/I&S Examines public debate in a democracy by developing a rhetorical perspective of public argument and skills to evaluate debates critically. Develops an understanding of rhetoric, values, audiences, tests of reasoning, and sources of information. Sharpens critical skills and applies them to contemporary controversies in the public sphere.

COM 238 Rhetoric and Popular Culture (5) VLPA Explores the rhetorical dimensions of popular culture (e.g., film, television, music, advertising, and video games) and their important, albeit often tacit, political and social implications. Themes include the ways popular culture shapes civic life, the influence of popular culture on identity, and the relationship between commerce and culture.

COM 270 Interpersonal Communication (5) VLPA/I&S Emphasizes analyzing and understanding communication variables affecting human relationships, such as person perception, feedback, idea development, nonverbal cues. Focus on informal communication settings.

COM 289 Communication Power and Difference (5) I&S, DIV Explores how communication - from face-to-face to mass media messages - reinforces or challenges conceptions of power, privilege, and difference along racial, ethnic, gender, sexual, class, ability, religion, and other important lines. Examines how communication practices, particularly media, shape inequality as well as our understanding of ourselves and the world.

COM 300 Basic Concepts of New Media (5) VLPA/I&S Provides a comprehensive examination of the effects of new, digital media on interpersonal communication, media industries, and media culture. Emphasis on economic, social, political, and aesthetic implications. Provides limited experience with computer-based media. No prior technical computer experience assumed.

COM 301 Navigating Information Networks for Mass Media (5) I&S Builds familiarity with computer-mediated information networks. Introduces and compares network search engines, agents, browsing/viewing tools and retrieval/transfer software for use by reporters and other media workers. Instruction and practice with searching/acquiring information, its analysis and interpretation, illustration, and write-up. No prior computer or network experience assumed.

COM 302 The Cultural Impact of Information Technology (5) VLPA/I&S Utilizing approaches from the history of technology, cultural studies, and literary theory, seeks to analyze the cultural and social impact of information technology. Considers how information technologies impact our relationships with others, our concept(s) of self, and the structure of the communities to which we belong. Offered: jointly with CHID 370.

COM 304 The Press and Politics in the United States (5) I&S Journalists' role in elections and public policy. Relationship between news coverage and political campaigns. Study and analysis of local political newswriting, reporting, and response by local and state political figures. Extensive off-campus experience included. Offered: jointly with POL S 304.

COM 305 The Politics of Mass Communication in America (5) I&S Role of mass audiences in politics from the standpoint of the communication strategies used to shape their political involvement. Topics include: social structure and political participation, political propaganda and persuasion, the political uses of public opinion, and the mass media and politics. Offered: jointly with POL S 305.

COM 306 Media, Society, and Political Identity I&S (5) I&S W. BENNETT Explores how society and culture are both represented in and shaped by communication technologies and media content. Media include film, advertising, news, entertainment television, talk shows, and the Internet. Explores how media represent and affect individual identity, values, and political engagement. Offered: jointly with POL S 306.

COM 318 The Creative Advantage (5) I&S N. RIVENBURGH Draws on research related to cognition, communication, and creativity to train students in the design and application of problem-solving approaches to complex community and organizational challenges. Emphasizes the benefits of diversity and collaboration in the design of innovative solutions.

COM 320 Advanced Public Speaking (5) VLPA/I&S Practice in preparation and presentation of a variety of types of public speeches based on study of their structure and form; emphasis on organization and delivery. Prerequisite: COM 220.

COM 321 Communications in International Relations (5) I&S Looks at communications in relations between international groups and states. Examines the range of functions and roles communication media play in international affairs, global issues, and intergroup relations. Also examines the strategic use of communications by various groups. Offered: jointly with POL S 330.

COM 322 Global Communication (5) I&S Introduction to the history, purpose, channels, content, technologies, policy, and regulation of international communications systems. Issues covered include disparities in media development between post-industrial and developing nations, imbalances in international news and information flow, and the emergence of global communications. Offered: jointly with POL S 329.

COM 329 Rhetoric of Social and Political Movements (5) VLPA/I&S Inquiry into the rhetoric of social and political movements; emphasis on investigation of persuasive discourse; examination of the nonverbal symbols of persuasion.

COM 330 Rhetoric of Science (5) VLPA/I&S Ceccarelli Examines how scientists use rhetoric to communicate with each other and with various publics, and how nonscientists use rhetoric to argue about science and its effects in the public sphere.

COM 331 The Rhetorical Tradition in Western Thought (5) VLPA/I&S Analysis of the major theories that prescribe and describe the use of symbols to change attitudes and behavior. Principal emphasis is placed upon defining the nature and scope of rhetoric and upon analyzing the art's underlying assumptions about human beings as symbol users. Some background in history, philosophy, and literature is desirable.

COM 332 History of Rhetoric (5) VLPA Investigates how rhetoric has been theorized and taught since antiquity. Focuses on key thinkers and texts in the rhetorical tradition. Students learn to describe rhetorical theories of key thinkers, explain how rhetoric was understood and practiced in different historical societies, and explain how beliefs about rhetoric have changed over time.

COM 333 Contemporary Rhetorical Theory (5) VLPA Introduces major Western theories about the relationship between humans and their symbol systems. Emphasizes themes that have preoccupied 20th and 21st Century thinkers on the subject of rhetoric: the public, identity, ethics, difference, the "masses", and persuasion.

COM 334 Essentials of Argument (5) VLPA/I&S Argument as a technique in the investigation of social problems; evidence, proof, refutation, persuasion; training in argumentative speaking.

COM 339 The Business of Media in the Digital Age (5) I&S Neff Examines the production of media within changing social, technological, and economic contexts. Emphasizes how new technologies can change the market for media goods and media experiences and the ways in which mediated production pervades contemporary economic life.

COM 340 History of Mass Communication (5) I&S History and development of communication from prehistoric times; rise of mass media; political and economic context of newspapers, radio, film, and television.

COM 342 Media Structure (5) I&S Industrial organization and culture; consumer and producer decisions; public policy toward media; workforce and unions. Media role in culture and political economy.

COM 343 Effects of Mass Communication (5) I&S Effects of mass communication on individuals and society. Relevant theories applied to research evidence, addressing

such topics as effects of stereotypes, violent and sexual imagery, and persuasive messages on our knowledge, attitudes, and behaviors.

COM 351 Interviewing Principles and Practices (5) VLPA/I&S Interviewing principles and practices, with emphasis on information gathering, selection, and persuasive interviews. Purposes and types of interviews, structure of interviews, and influence of communication patterns on interview outcomes.

COM 359 Writing for Mass Media (5) I&S Training in gathering information through interviews and observation and from written record and other public sources. Practice in organizing and writing this information for presentation in a mass medium such as a newspaper, newsletter, or magazine. Offered: AWSpS.

COM 360 Foundations of Multiplatform Journalism (5) I&S Introduces content creation, content curation, and audience-engagement techniques for journalists.

COM 361 Advanced Multiplatform Journalism (4) I&S Advanced techniques in content creation, content curation, and audience engagement for journalists. Prerequisite: COM 360.

COM 362 Community Journalism: News Lab (5) I&S Content creation and content curation for communication news partners. Prerequisite: COM 361.

COM 363 Entrepreneurial Journalism Practicum (5) I&S Requires students to identify a target audience in order to determine the kinds of multimedia news and feature content that meet informational needs of that audience; to create and distribute that content; and to encourage and assess audience response. Prerequisite: COM 360; COM 361.

COM 364 Journalism in a Diverse Society (5) DIV Examines important cultural roles of journalists in a society that is increasingly diverse. Students examine their own values, apply knowledge of stereotyping, respect for authentic voices of sources, and an understanding of cultural differences in creating journalistic content.

COM 373 Communication in Small Groups (5) VLPA/I&S Discussion as an everyday community activity, with emphasis on the informal cooperative decision-making methods of committee, conference, and roundtable groups.

COM 374 Perspectives on Language (5) VLPA/I&S Study of language and meaning, and survey of several influential modern approaches, including the semantic, general semantic, behavioral, and analytic philosophical. Relates theories of language and meaning to the study of speech communication.

COM 375 Communication Ethics (5) VLPA/I&S Ethical problems in interpersonal and public speech communication. Alternative ways of evaluating and responding to moral problems in a variety of communication situations.

COM 376 Nonverbal Communication (5) VLPA/I&S Reviews the nature of nonverbal communication as part of the human message system. Discusses research on the types of cues that are part of the nonverbal system, reviews some communicative functions allowed by nonverbal cues (e.g., emotional expressions, relational messages, deception, coordination, or interaction), and ties nonverbal communication to language.

COM 381 Content Analysis (5) Introduces content analysis, a research method used in the discipline of communication. Students work in groups to design and execute a content analysis.

COM 382 Social Scientific Approaches to Communication Research (5) I&S Comprehensive introduction to research methods employed in basic and applied communication research, including sample surveys, content analysis, experimentation, and elementary statistics.

COM 389 Race, Gender, and Sexuality in the Media (5) I&S, DIV Introduction to media representations of gender,

race, and sexuality. Offered: jointly with AES 389/GWSS 389.

COM 395 Communication Internship (1-2, max. 4) Faculty-supervised study of communication principles in internship contexts. Readings to aid students in observations of communication concepts combined with individualized reading structured around topics of interest for each student.

COM 401 Telecommunication Policy and Convergent Media (5) I&S Examines contemporary media and telecommunications industries since 1980 and their accelerating convergence. Attention given to economic, policy, and mass use issues. Review of major industry leaders, promising technologies, and new services. Social issues, government initiatives, and new legislation covered for both North American and international markets. Recommended: COM 301.

COM 407 Communication Technology and Politics (5) I&S Employs some core concepts of political communication and theories of democracy to examine the emerging role of information and communication technologies in candidate and issue campaigning; online voting; protest and advocacy movements; law-making and electronic governance in the United States and internationally. Offered: jointly with POL S 451.

COM 411 Political Communication Seminar (5, max. 10) I&S Contemporary topics studying how communication affects citizen engagement with public life. Offered: jointly with POL S 454.

COM 414 Mass Media and Public Opinion (5) I&S Examines the foundations of the idea of public opinion in a democratic environment and the role of mass communication in the organization, implementation, and control of that opinion. Considers these relationships from the perspectives of societal elites, media, and citizens. Offered: jointly with POL S 452.

COM 417 Political Deliberation (5) I&S Exploration of philosophical and empirical writings on political deliberation in small groups, campaigns, and other public settings. Contemporary deliberative theory. Participation in face-to-face discussions on current issues. Recommended: either COM 273 or COM 373. Offered: jointly with POL S 455.

COM 418 Communications and the Environment (5) I&S Examines the role of mass media in the resolution of environmental problems. Topics include strengths and weaknesses of media coverage, use of media by environmental groups and government agencies, media effects on public opinion, and mass communication and social movements. Offered: jointly with ENVIR 418.

COM 420 Comparative Media Systems (5) I&S Provides students an understanding of policies that shape national communication processes and systems. Uses comparative analysis to identify both similarities and differences among media structures of nations at different levels of development. Primary emphasis on broadcast media. Offered: jointly with JSIS B 419/POL S 468.

COM 423 Communication and Social Change (5) I&S Examines both theory and application involved in using communications media as a tool for addressing political, social, and economic development issues. Utilizes a case study approach to look at localized applications of traditional and new communications tools in the pursuit of sustainable development.

COM 425 European Media Systems (5) I&S Examines media systems in selected countries in Europe and policy issues that link (or divide) members of the European Union and other major media producers. Media studied in context of the contemporary economic, social, political, and cultural milieu in which they operate. Offered: jointly with JSIS A 425.

COM 426 International Media Images (5) I&S Ways in which media construct images of international peoples and events. Develops a set of critical tools for assessing media portrayals of international affairs and cultures.

COM 428 The Media and Peace (5) I&S Investigates the complex relationships among the media, journalistic practice, and our understanding and pursuit of peace. Offered: jointly with JSIS B 428.

COM 431 Rhetorical Criticism (5) VLPA/I&S Study of approaches to rhetorical inquiry that aid in the description, analysis, interpretation, and evaluation of discourse. Applies various critical models to a chosen artifact.

COM 435 Historic American Public Address (5) VLPA/I&S Rhetorical criticism of historical public speeches, essays, and declarations. Includes readings of public texts in their historical and political context to increase understanding of those texts, their rhetorical construction, and the culture from which they arose. Covers the beginnings of the nation to the middle of the twentieth century.

COM 436 Contemporary American Public Address (5) VLPA/I&S Rhetorical criticism of contemporary public messages. Includes reading of public texts in their context to increase understanding of those texts, their rhetorical construction, and the culture from which they arose. Covers mid-twentieth century to the present.

COM 440 Mass Media Law (5) I&S Survey of laws and regulations that affect the print and broadcast media. Includes material on First Amendment, libel, invasion of privacy, freedom of information, copyright, obscenity, advertising and broadcast regulation, and matters relating to press coverage of the judicial system. Offered: jointly with POL S 461.

COM 441 United States Media History (5) I&S Development of mass communication in the United States with emphasis on role of mass media in politics, economics, gender, and race.

COM 442 History of Media Technology and Regulation (5) I&S Impact of pre-1980s media technologies - printing, telecommunications, broadcasting, photography, and more - on individuals and institutions, especially government, business, and the mass media. How laws and policies have changed to govern new media forms.

COM 443 Indigenous Films, Sovereign Visions (5) VLPA/I&S D. HART, L. ROSS Explores fiction, documentary, experimental film, and digital media by indigenous artists from around the world. Focuses on personal, political, and cultural expression. Issues include media and sovereignty movements, political economy, language revitalization, the politics of decolonization, and indigenous aesthetics. Offered: jointly with AIS 443.

COM 444 Public Relations and Society (5) I&S Overview of issues, strategies, and role of public relations professionals in various areas of American society, including media relations, government relations, community affairs, and consumer relations.

COM 445 Journalism and Literature (5) VLPA/I&S Explores the relationship between journalism and fiction writing in the United States. Examines writers who began their careers as journalists and forged a fiction-writing philosophy related to what they learned in journalism. Readings in fiction and journalism.

COM 450 International Communication Law and Policy (5) I&S Examines how several countries and international bodies regulate communication. Specific topics shift with developments in the news, but include some mix of government censorship, libel, privacy, hate speech, advertising, obscenity, protection of children from harmful content, and regulation of new media. Recommended: COM 440.

COM 451 Mass Media and Culture (5) VLPA/I&S Empirical and theoretical framework for analyzing role of mass media in cultural change. Historical and contemporary cases consider ethnic, gender, class, and urban-rural conflicts and cultural roles of sports, elections, and national rituals. Focus on visual electronic media.

COM 452 Crisis Communications (5) I&S Study of the functions of communications professionals during crises.

Covers public relations professionals as advocates for organizations and companies in crisis and the news media as advocates of the mass public. Discussion of cases.

COM 457 Journalism Portfolio (1) I&S Students assemble an online portfolio of academic, professional, and creative work. The portfolio project serves as vehicle for students to engage in self-assessment about their professional and academic growth and to assist them in career planning.

COM 458 Reporting Global Issues (5, max. 10) I&S, DIV Practicum in the journalism that examines or localizes international trends or international developments in one or more of the following subject areas: health, medicine, science, politics, environment, culture, demographics, or business. Focus of course varies by term. Prerequisite: COM 360.

COM 459 Narrative Journalism (5) VLPA/I&S Introduces the rigorous reporting and literary writing techniques of narrative journalism. Concentrates on producing nonfiction narrative articles for publication. Offered: jointly with CHID 459.

COM 460 Special Reporting Topics (4, max. 8) I&S Topics vary. Prerequisite: COM 360.

COM 461 Computer-Assisted Journalism (5) I&S Introduction to computer-assisted journalism and other advanced reporting techniques. Includes hands-on electronic data analysis, exploration of on-line investigative tools, and the fashioning of electronically-retrieved information into news stories. Students examine ethical and technical challenges these tools present to media and society. Prerequisite: COM 360.

COM 463 Copy Editing and Design (5) I&S Focus on editing copy for publications, covering grammar and style, production methods, news criteria, use of wire services, headlines, make-up and design, pagination, and online publication. Prerequisite: COM 360.

COM 464 Opinion Writing (5) VLPA Combines the teaching expertise of a Department of Communication faculty member with the professional expertise of an opinion-writing journalist. Students learn about and practice writing newspaper editorials, columns, and various forms of criticism in order to gain an understanding of the differences between news and opinion content in print journalism. Prerequisite: COM 360.

COM 465 Legislative Reporting (12) I&S Coverage of Washington legislature for a daily newspaper. Selected students live in Olympia, interview legislative delegations, report on committee and floor sessions, and attend and report on gubernatorial and other press conferences.

COM 466 Digital Journalism (5) I&S A. Chan Introduction to digital journalism. Integrates web design, video, still, and sound to develop an Internet Webcast called DIA (Digital Interactive) News. Students serve as sole initiator of DIA news, utilizing journalistic standard of storytelling, video production, and editing and design. Prerequisite: COM 360.

COM 467 Feature Writing (5) VLPA Focuses on the many types of newspaper and magazine articles that do not fall into the category of hard news, including histories and backgrounders, how-to and explanatory, consumer information, statistical pieces, first-person, and participatory. Includes practice in writing these forms. How to market freelance manuscripts. Prerequisite: COM 360.

COM 468 Media Ethics (5) I&S Simpson Explores ethical issues and ethical decision-making as they pertain to journalistic and media practices. Offered: ASP.

COM 469 Intellectual Foundations of American Journalism (5) I&S Examines the thinkers and philosophers who have influenced modern journalism. Studies the main ideas in the development of world thought and their impact on today's journalists. Explores the role communications systems have played in the creation of the world's cultures.

COM 470 Discourse: Analyzing Talk and Texts (5) VLPA/I&S A critical and practical introduction to contemporary

theories/methods in discourse analysis: how verbal communication (together with visual communication) is used in conversational talk and mediated texts to construct identities and relationships; and how power and ideology are reproduced through these everyday social interactions. Offered: jointly with LING 470.

COM 471 Persuasion (5) VLPA/I&S Analysis of the ways in which beliefs, values, attitudes, and behavior are deliberately influenced through communication.

COM 472 Empirical Approaches to Interpersonal Communication (5) I&S Examination of theories and research on the development and deterioration of interpersonal relationships. Emphasis on the nature of interpersonal interaction, the role of language and nonverbal communication in relationships, functional and dysfunctional interaction patterns, and the dynamics of interpersonal networks.

COM 473 Discussion Leadership (3) VLPA/I&S Critical analysis of leadership in committee and conference, with emphasis on the development of speech effectiveness in the cooperative achievement of goals. Prerequisite: COM 373.

COM 474 Communication, Conflict, and Cooperation (5) VLPA/I&S Role of communication in resolving informal conflicts and in facilitating interpersonal and intergroup cooperation. Review of empirical literature. In-class simulations and exercises.

COM 475 Organizational Communication (5) VLPA/I&S Role of communication in organizations, the types of problems arising, and approaches to their resolution. Communication in the human relations and productivity of organizations. Applying communication skills in various organization roles.

COM 478 Intercultural Communication (5) I&S Investigates intercultural communication theory and its application for varying levels of human interaction: interpersonal, intergroup, and international.

COM 480 Communication in Adolescent Environments (5) VLPA/I&S Study of the communication process in youth environments with a primary focus on formal and informal learning. Includes critical analysis of communication in contemporary instructional settings and the development of communication strategies for teaching and learning.

COM 482 Interpersonal Media (5) I&S Examines the relationships and groups formed through digital social media. Focuses on how people manage interactions and identities, develop interpersonal relationships, engage in collaboration and conflict, and develop communities in online environments. Involves both the study and use of network-based computer-mediated systems.

COM 484 Cultural Codes in Communication (5) VLPA/I&S Social and cultural codes in interpersonal communication, with special reference to contemporary American subcultural groups and their communication patterns.

COM 485 Fieldwork in Communication Studies (5) VLPA/I&S Theory and practice of participant observation, intensive interviewing, and discourse analysis in the study of communicative practices. Prerequisite: COM 484.

COM 486 Communication and Culture in Rome: Study Abroad (12) VLPA/I&S Explores the historical and contemporary connections between Rome culture and communication. Through intensive fieldwork abroad, students acquire skills of observation and understanding that can be applied to navigate intercultural experiences and reflect on their influence on various interactions.

COM 488 Race, Gender, and Power in Asian American Media (5) I&S, DIV Examines the cultural, political, and social facets of Asian American media since 1915 within such key issues as racial and sexist stereotypes, white privilege and hegemony, identity, and agency and empowerment. Informed by critical theories of race and ethnicity.

COM 489 Black Cultural Studies (5) I&S, DIV Examines how images of blackness have been (re)constructed

through identity formation and entrenched inequality. Topics include black women's bodies, black men's bodies, blackface minstrelsy, black queer studies, black power, and black hybridities. Offered: jointly with AES 489/GWSS 489.

COM 490 Representing Beyond the Binaries: Mixing Race, Gender, and Sexuality in the Media (5) I&S, DIV *Joseph* Cultural studies approach to examining the mixed formations that race, sexuality, and gender take in the contemporary United States media. Draws upon multi-disciplinary scholarship in examination of the media. Offered: jointly with AES 490/GWSS 486.

COM 491 Publication Design (5) I&S *Rathe* Provides basic theories of design for newspapers, magazines, and their online counterparts. Introduces a computer layout program. Areas of study include typography, photo editing, print production, and the page design process. Stresses journalistic standards of writing, reporting, and ethics. Prerequisite: either COM 359 or COM 360.

COM 492 Re-Conceptualizing Communication and Difference Abroad (6) VLPA/I&S Re-thinking narratives of race, beauty, intelligence, culture, politics, and power while immersed in a new culture. Methodological, theoretical, and epistemological skills that cultural studies scholars use to "read" culture. Interviews, participant observations, and critical examination of newspapers, television programs, billboards, brochures, etc.

COM 493 Visual Communication (5) I&S Introduces basic theories of visual communication as well as the science of how humans see and perceive; also, history and terminology of subject areas such as typography, photography, informational graphics, cartoons, and graphic design. Students create project using current computer design programs.

COM 494 Careers in Communication (1) Helps students prepare for careers in communication. Focuses on identification of key skills, creating an effective resume, articulating interests and experience, doing informational interviews, and creating a professional-style web profile and website. Credit/no-credit only.

COM 495 Special Topics in Communication (2-5, max. 15) Lecture, seminar, and/or team study. Topics vary.

COM 496 Honors Seminar (5) VLPA/I&S Preparation for researching and writing senior honors thesis.

COM 497 Honors Thesis (5, max. 15) VLPA/I&S Researching and writing honors thesis.

COM 498 Independent Research (1-5, max. 10) Work on research projects designed and conducted by undergraduate students.

COM 499 Directed Research (1-5, max. 10) Work on research projects designed by faculty members.

COM 500 Communication Theory Development (5) Covers the philosophy behind theory development, discusses the basic components of theories, and reviews significant theoretical contributions in communication from social scientific and humanistic traditions. Introduces students to the process of conceptualization and theory design through reading and discussion of relevant bodies of communication scholarship.

COM 501 Methods of Inquiry (5) Overviews some of the most important methods of inquiry used to investigate communication phenomena. Includes textual criticism, content analysis, ethnography, experimentation, survey research, and historical approaches. Explores the utility of different methods for investigating research topics, defining and measuring concepts, reading texts, and investigating theories.

COM 502 Communication Scholarship and Public Life (5) Examines potential connections between communication scholarship and government, markets, civil society, and the general public.

COM 507 Interdisciplinary Communication Theory (5) Introduces students to challenges, benefits, and processes of interdisciplinary research. Explores formation of disciplinary boundaries. Considers significant theories that have influenced communication research. Considers how synthetic theoretical arguments are made and how to integrate work from fields with different epistemologies.

COM 509 Collaboration and Scholarship (5) Examines the collaborative research process. Students identify and conceptualize a group project, carry it out, and present findings. Topic varies. Prerequisite: COM 501 or equivalent.

COM 511 Content Analysis (5) Content analysis as a technique for making inferences from texts. Includes quantitative, qualitative, and computer-assisted approaches to analysis.

COM 512 Critical, Social, and Practice-Based Approaches (5) Explores approaches to communication research developed from understandings of human communication as inherently social, grounded in tool-mediated action, and interwoven with power relations. Covers a range of theories that are associated with these approaches, and the implications of these theories for methods of data collection and analysis.

COM 513 Fieldwork Research Methods (5-, max. 10) Methods of fieldwork research in communication studies, with emphasis on participant observation, ethnography, and discourse analysis.

COM 514 Critical Discourse Analysis (5) VLPA Introduction to systematic analysis of linguistic and visual discourse in face-to-face and mediated talk and texts; critical examination of the reproduction of power, control, and ideology through linguistic and related semiotic practices of everyday life.

COM 515 Rhetorical Criticism (5) History and method of rhetorical criticism. Application of critical standards to various rhetorical artifacts.

COM 516 Descriptive and Analytic Communication Research Methods (5) Development of the historical approach to communications research. Study of historical methods, bibliography, and criticism.

COM 517 Survey Research (5) Faculty-directed project in survey research in which basic principles of survey design, including sampling, observation, measurement, data analysis, and data interpretation, are all applied. Prerequisite: elementary statistics or permission of instructor.

COM 518 Cultural Studies Methods (5) Explores the history and methods of cultural studies. Introduces major debates in the field. Applies cultural studies methods to various artifacts.

COM 519 Visual Cultural Studies Methods (5) Explores the history and methods of visual culture. Introduces major debates in the field. Applies visual cultural studies methods to various artifacts.

COM 520 Statistical Methods in Communication (5) Reviews the steps taken in social scientific research on communication, with emphasis on the conceptualization, operationalization, and analysis of quantifiable variables. Highlights understanding of computer application of univariate and bivariate statistics, focusing on both parametric and nonparametric tests.

COM 521 Advanced Statistical Methods in Communication (4) Discusses complexities in quantitative research on communication. Focus on multivariate data design and analysis, including multiple and logistic regression, ANOVA and MANOVA, and factor analysis. Prerequisite: COM 520.

COM 527 Global Communication Research Methods (5) Methodological issues particular to the design or analysis of research that deals with data from different countries, cultures, or sub-cultures. Prerequisite: COM 501 or equivalent.

COM 528 Designing Internet Research (5) Focuses on designing Internet research, assessing the adaptation of

proven methods to Internet tools and environments, and developing new methods in view of particular capacities and characteristics of Internet applications. Legal and ethical aspects of Internet research receive ongoing consideration.

COM 529 Research Strategy and Business Practice (5) Empowers students to resolve business debates with empirical findings. Students learn to match research method to question, design valid instruments of data collection, use software to test significance of differences, construct graphs following principles of infosthetics, and ensure persuasiveness of data by defending against common research criticisms. Offered: WSp.

COM 530 Philosophical Issues in Rhetorical and Communication Theory (5) Survey of selected philosophical controversies among speech communication theorists, and analysis of one philosopher's approach to communication. Topics include paradigm descriptions of communication, rhetoric and knowledge, linguistic analysis and communication, hermeneutics and dialogue.

COM 531 Rhetoric in Society (5) Selected works of major rhetorical theorists such as Aristotle, Cicero, Augustine, Campbell, Whately, Perelman, and Burke. Examines how rhetorical themes are responsive to and symptomatic of societal conditions and values.

COM 532 Classical Rhetoric (5) Development of the classical tradition in rhetorical theory, criticism, and pedagogy from the sophists to Augustine; analysis of the contributions of major figures and works to that tradition.

COM 534 Studies in Contemporary Rhetoric (5) Critical analysis of theories of twentieth-century rhetoric.

COM 535 Critical Theory Applications in Communication (5) Major approaches in critical theory: Marxism, psychoanalysis, structuralism, and semiology. Synthesizes these approaches by viewing the "cultural studies" tradition. Assesses critical theory through empirical study of network television in the United States and the United Kingdom.

COM 536 Leadership Through Story and Communities (5) *Crofts* Considers how digital media have amplified key tenets of classical leadership scholarship, challenged more traditional models of communication, and facilitated the ability to create and connect to communities and networks in new forms of outreach and meaningful engagement. Credit/no-credit only. Offered: W.

COM 538 Theories and Criticism of Communication Technologies (5) Potential of the computer for use in behavioral science. Prerequisite: elementary programming, elementary statistics.

COM 539 Theories of Technology and Society (5) *Foot, Howard, Neff, Parks* Provides a theoretical foundation for study in the area of communication technology and society by examining different contemporary theories of the social, political, and cultural implications of technological change. Takes a broad view of theories of communication innovations, tools, and technologies - including historical, critical, and comparative approaches.

COM 540 The Rhetoric of Science (5) Examines selected topics in the rhetoric of science, underscoring the interplay of language, situation, culture, and prior tradition in the quest for exact knowledge of the natural world. Scrutinizes scientific communication in intradisciplinary, interdisciplinary, and extradisciplinary contexts.

COM 542 Readings in Communication History (5) Selected readings on the history of communication.

COM 543 Research Seminar in Historic and Contemporary Communication (5) Topical research seminar in historic and contemporary communication.

COM 545 Development of Mass Communication (5) Institutions of mass communication. Political and social roles.

COM 546 Narratives and Networks in Digital Media (5) Students create their own channel and network engagement strategy; understand key communication and social

changes facilitated by digital media through networks; practice creating powerful narrative through storytelling as a primary method of influence and persuasion; and describe and assess characteristics of networks and their role in sustaining engagement. Offered: A.

COM 547 Telecommunications Policy and Convergent Media (5) Structures and policies governing the functioning of communication technologies and data flow: United States and international perspectives. Interdisciplinary approach.

COM 548 Economics of Digital Communication (5) Critically examines the impact of the Internet and digital technologies on the economy. Focus includes third world countries as well as the United States and other industrialized countries.

COM 549 Mass Communication Process and Effects (5) Analytic approach to conceptualization and research in the field since 1900.

COM 550 European Union Information Society Policy (5) Giffard Analysis of European Union policy and regulatory documents relating to cultural, economic, political, social, and technological aspects of the new information society, including efforts to promote transborder flows of television programs in Europe.

COM 551 Political Communication (5) Surveys classic works and new directions in political communication, including functionalist, structuralist, constructivist, network, and comparative approaches, reflecting a range of methods. Examines political organizing, electoral and legislative processes, civic (dis)engagement, media and politics, public deliberation and opinion formation, political identity and discourse. Offered: jointly with POL S 551.

COM 552 Social Construction of News (5) Beam Examines social, political, economic, technological, and cultural influences on the news. Identifies constraints on journalists and explores how those constraints shape the news and information that journalists and media organizations produce.

COM 553 Public Opinion and Communication (5) Conceptual and methodological approaches to public opinion and communication as historical and behavioral phenomena. United States and international perspectives.

COM 554 Discourse and the Politics of Resistance (5) Examines how disciplines theorize and empirically study discourse in the politics of resistance. Examines the discursive turn in U.S. and European "new" social movement theory. Ranges across disciplines, such as political sociology, cultural anthropology and human geography, to discover ways in which discourse is conceptualized and studied for its role in seeding social change. Offered: jointly with POL S 567.

COM 555 Political Deliberation (5) Gastil Exploration of deliberative theories of democracy and research on political discussion in campaigns, face-to-face meetings, on-line forums, and informal conversations. Presents different uses and understandings of deliberation and its role in democratic governance. Recommended: COM 577; POL S 551/COM 551. Offered: jointly with POL S 558.

COM 556 Political Communication Research Practicum: Community, Communication, and Civic Engagement (5) Overview of the research process, including literature review, hypothesis generation, data gathering, empirical analysis, and writing for publication Topics vary with instructor, but generally address questions of how communication affects democracy and citizen engagement in national or international contests. Offered: jointly with POL S 594.

COM 557 Government and Mass Communication (5) Legal problems of mass communication, institutions, and media operations.

COM 558 Law and Policy (5) Examines the existing frameworks that govern how organizations and end users approach free expression, intellectual property, privacy, se-

curity, and advertising. Provides students with practical guidance for applying these frameworks to news, entertainment, social media, and digital media environments. Offered: WSP.

COM 559 Media and Foreign Policy (5) The role of communications media in how nations interact. The media as source, actor, and catalyst in international affairs. Interdisciplinary focus.

COM 561 Regional Communication Systems (5) Communication as a factor in economic, sociocultural, and political relations among nations of a region. Focus varies with specialization of instructor. Consult graduate secretary for details. Interdisciplinary focus.

COM 562 International Communication Systems (5) International communications and contemporary issues that affect the functioning of global communication systems. Interdisciplinary focus.

COM 563 Black Cultural Studies (5) Takes a critical approach to studying media representations of blackness. Drawing upon traditions in African studies and cultural studies, students engage through theory and practice by presenting on academic works, historicizing events, and unpacking cultural texts.

COM 564 Media, Myth, and Ritual (5) Douglas Examines the way media operate in a secular society with many of the characteristics that traditionally have been imputed to spirituality and religion. Analyzes media's mythological and ritualistic function in society by taking an interdisciplinary approach informed by religious studies, cultural studies, journalism, and communication theory.

COM 565 Mass Media Structure (5) Research on the structural aspects of mass communication.

COM 566 Discourse and Sex/uality (5) Seminar-based analysis of discourse and social construction of eroticism/desire in face-to-face/mediatized talk and texts; examination of the reproduction of power, control, and ideology through the linguistic and semiotic realization of sex/uality. Offered: jointly with GWSS 566.

COM 567 Gender, Race, and Communication (5) Analysis of the role of media in the construction of reality, production processes, and their influence on media representation of women and people of color. Offered: jointly with GWSS 589.

COM 568 Mobile Communication and Digital Media (5) Explores impact of mobile technology on social, political, civic, and business spheres. Strategizes how to make "mobile" an integrated part of a broader media strategy.

COM 569 Communication Strategies in Virtual Worlds and Games (5) Analyzes potential configurations made possible by interactivity and simulation in virtual worlds and games. Explores applications of this communication medium to education, literacy, and business.

COM 570 Organizational Communication (5) Examination of social scientific theory and research on communication in organizations. Topics include quantitative and qualitative approaches to process of organizational communication, function and structure of macro networks, superior-subordinate relationships, and the role of communication in organizational change, development, and effectiveness.

COM 571 Theories of Technology and Society (5) Foot, Howard, Neff, Parks Provides a theoretical foundation for study in the area of communication technology and society by examining different contemporary theories of the social, political, and cultural implications of technological change. Takes a broad view of theories of communication innovations, tools, and technologies - including historical, critical, and comparative approaches.

COM 576 Interpersonal Communication (5) Social scientific research and theory on the role of communication in developing and maintaining interpersonal relationships. Nature of interpersonal communication, relationship change

processes, interpersonal control through communication, and personal communication networks.

COM 577 Communication in Small Groups (5) Reviews major small group communication theories and the history of research on small groups. Topics include structuration, democratic decision making, symbolic convergence, and the influence of personality, gender, and ethnicity on group communication. Involves students in original research projects on communication in small group settings.

COM 578 Intercultural Communications (5) Manusov, Rivenburgh Focuses on the nature of communication between different cultures, including the processes as they occur on sojourns, immigration, negotiations, and conversations across national boundaries. Specific topics include identity formation and expression, intercultural relationships, stereotyping, prejudice, and group affiliation.

COM 580 Nonverbal Communication (5) Reviews primary theories and research on nonverbal communication. Focus on developmental and social aspects of nonverbal cues, including review of communicative functions served by nonverbal channels. Topics include paralinguistic systems, relational messages, deception, acquisition of cue use, and emotional expression. Emphasizes research methods and influences of culture and context.

COM 581 Social Production and Distribution of Digital Content (5) Hosein Explores theoretical and applied analysis of "user-generated" digital and distribution, as well as their economic cultural impact. Examines specific issues related to monetization and messaging, particularly in storytelling, advertising, campaigning, advocacy, and entertainment.

COM 582 Communication Education Research (5) Communication in instructional environments. Nature of instructional communication, paradigms for instructional communication research, quantitative and qualitative approaches to instructional communication, verbal and nonverbal classroom interaction.

COM 583 Multimedia Storytelling (5, max. 15) Uses videos, photos, audio, and text to communicate through narratives that can be accessed by a worldwide audience via social media distribution.

COM 584 Ways of Speaking (5) Theory and literature of the ethnography of communication, with special emphasis on the descriptive-comparative approach to culturally patterned styles of communicative conduct. Offered: jointly with ANTH 584.

COM 585 Strategic Digital Platform Fundamentals (5) Examines the framework of social media applications. Introduces terminology, history, and evolution of website development and content management systems; elements of effective website design; and project management techniques needed to organize digital assets, allocate resources, and meet deadlines. Students gain a solid understanding of legacy and emerging technologies.

COM 586 Advanced Content Creation, Curation, and Optimization (5) Covers writing for the web and search engine optimization techniques. Explores the integration of social hooks, APIs, and introductory web programming. Students work to produce or redesign a website, complete with content plan, audience analysis and assumptions, and promotion plan. Prerequisite: COM 585.

COM 587 Business Fundamentals in Digital Communications (5) Focuses on business fundamentals within digital communications. Covers marketing and sales; finance and accounting (including ROI); and implementation. Students apply what they learn by building a business plan to gain understanding of the underlying issues facing business to develop relevant strategies and tactics in order to leverage the opportunities and challenges that digital media presents.

COM 588 Digital Media Branding and Marketing (5) Critically examines the role of advertising, marketing, and other promotional efforts in establishing the branding of digital

media companies. By using communication theory to analyze successful cases of established and start-up digital media companies, participants identify practicable and effective strategies for brand building and enhancement.

COM 589 Global Digital Media Law, Policy, and Ethics (5) Examines the legal, social, political, and policy environments of digital media laws, policies, and ethics around the world. Offers a comparative perspective, which prepares digital media managers to expand into other markets outside their home bases.

COM 590 Selected Readings (1-5, max. 10) Selected readings assigned by faculty.

COM 591 Independent Research (1-5, max. 10) Research projects designed and led by students with faculty supervision.

COM 592 Directed Research (1-5, max. 10) Student participation in faculty-directed research projects.

COM 593 Communication Internship (1-5, max. 15) Provides students an opportunity to connect their scholarship with communities outside academia by engaging in a project that uses communication theory to inform practical work.

COM 594 Professional Proseminar (1, max. 6) Helps students develop a range of professional competencies. Focuses on a particular topic such as computer-assisted research, technology in the classroom, obtaining funding for research, writing for academic publication, career choices after graduate school, and ethics in research and teaching.

COM 595 Public Speaking Pedagogy (1, max. 5) Content and effective teaching skills for public speaking course. Emphasizes the rhetorical tradition, grading speeches, and facilitating oral critiques. Required for all COM 220 TAs; recommended for those who want to teach COM 220. Only 3 credits count toward degree. Credit/no-credit only.

COM 596 Communication Pedagogy (1, max. 3) Development of effective teaching and professional skills. Emphasizes interactive teaching, leading discussions, lecturing, planning courses, evaluating resource materials, grading and evaluation, teaching philosophies, and effective classroom management and communications. Required of all graduate students who accept teaching assistantships. Credit/no-credit only.

COM 597 Special Topics in Communication (3-5, max. 15)

COM 600 Independent Study or Research Project (*-) Prerequisite: permission of Supervisory Committee chairperson. Credit/no-credit only.

COM 700 Master's Thesis (*-)

COM 800 Doctoral Dissertation (*-)

Comparative History of Ideas

B102 Padelford

Comparative History of Ideas is an interdisciplinary program that draws on a wide variety of disciplines within the College of Arts and Sciences to examine the interplay of ideas and their cultural, historical, and political contexts. The program encourages its students to engage thoughtfully in critical intellectual inquiry and reflection. Emphasis is on the significance of students being actively in the world; understanding the social, cultural, and political forces that shape lives and identities; and their role in transforming our world.

UNDERGRADUATE PROGRAM

Adviser

B102D Padelford, Box 354300

(206) 543-2097

chid@uw.edu

The Comparative History of Ideas program offers the following programs of study:

- The Bachelor of Arts degree with a major in comparative history of ideas
- A minor in comparative history of ideas

Bachelor of Arts

Suggested First- and Second-Year College Courses: Introductory courses in history, philosophy, English, comparative literature, ethnic and gender studies, American Indian studies, and other areas of the humanities and social sciences.

Department Admission Requirements

Students in good academic standing may declare this major after meeting with an adviser.

Major Requirements

60 credits as follows:

1. CHID 101 (2 credits)
2. Gateways to CHID (10 credits)
3. Cultural and historical engagements (5 to 10 credits). Students choose from three options: CHID study abroad program; local/global engagements; or encounters across cultures. Must be chosen with guidance of program adviser.
4. Ideas in the world (5 credits). Must be chosen with guidance of program adviser.
5. Power and difference (5 credits). Must be chosen with guidance of program adviser.
6. CHID 390 (5 credits)
7. Senior thesis/capstone project (CHID 491 and CHID 493) (10 credits)
8. Remaining 13-18 credits chosen from among approved electives (300 level or above).
9. At least half the credits presented for the major must be at the upper-division level.
10. Minimum 2.50 GPA in courses presented for the major.
11. Students may expand the senior project to 15 credits (CHID 492). The 5 optional senior project credits are in addition to the 60 credits required of all CHID majors.

Minor

Minor Requirements: 30-35 credits as follows:

1. Gateways to CHID (5 credits)
2. Cultural and historical engagements (5-10 credits). Students choose from three options: CHID study abroad program; local/global engagements; or encounters across cultures. Must be chosen with guidance of program adviser.
3. Ideas in the world (5 credits). Must be chosen with guidance of program adviser.
4. Power and difference (5 credits). Must be chosen with guidance of program adviser.
5. CHID 390 (5 credits)
6. One upper-division CHID course (5 credits)

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The program encourages students to adopt nuanced perspectives on their position relative to texts, cultures, societies, and historical periods. Program graduates have gone on to postgraduate studies in the humanities and social sciences, as well as professional training and careers in a wide variety of fields including law, administration and public policy, medicine, education, journalism, new media, and film.
- *Instructional and Research Facilities:* Computer workstations for students in B102 Padelford and in C101 Padelford.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* CHID undergraduates participate in a variety of educational experiences outside the classroom. Students interested in the opportunity to integrate theory with practice while making connections to organizations outside the University may sign up for CHID 399. Additionally many CHID study abroad programs incorporate an "engaged community learning" project, which provides an opportunity for students to apply their analytical skills and understanding of the historical and cultural context to a close participation in the work of local organizations. The diversity of these community efforts allows students to engage their particular interests through participation in social welfare organizations, grassroots community groups, after-school programs, health clinics, theater and other performing arts groups, as well as video and other visual arts projects.
- *Department Scholarships:* See CHID website for information and deadlines

Of Special Note: CHID also sponsors two undergraduate journals: *interSections*, which features senior theses, research papers, seminar papers, and essays addressing subjects within the arts, humanities, and social sciences; and *The Anthology Project*, which is dedicated to providing a forum where students can discuss and reflect on experiences abroad.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

CHID 101 Introduction to the Comparative History of Ideas (2) Provides a methodological, curricular, and intellectual introduction to comparative history of ideas. Teaches the importance of interdisciplinary inquiry in research and provides models for how to formulate, undertake, and present interdisciplinary research projects. Offered: AWSp.

CHID 110 The Question of Human Nature (5) VLPA/I&S Considers the relationship between the individual and his/her culture. Traces the evolution of the notion of human nature in Europe and the United States and compares this tradition with representations of the human being from other cultural traditions.

CHID 205 Method, Imagination, and Inquiry (5) VLPA Examines ideas of method and imagination in a variety of texts, in literature, philosophy, and science. Particularly concerned with intellectual backgrounds and methods of inquiry that have shaped modern Western literature. Offered: jointly with ENGL 205.

CHID 207 Introduction to Intellectual History (5) I&S Ideas in historical context. Comparative and developmental analysis of Western conceptions of "community," from Plato to Freud. Offered: jointly with HSTCMP 207.

CHID 210 The Idea of the University: Ways of Learning, Exploring, and Knowing (5) I&S Considers different ways of learning, exploring, and knowing in the context of the historical development, social context, and impact of universities in general and of the University of Washington in particular. Includes reflective workshops on choosing areas of study (majors) in collaboration with Undergraduate Advising.

CHID 222 BioFutures (5) I&S/NW Explores key legal, ethical, cultural, scientific, and commercial aspects of the rapidly changing world of biotechnology and bioinformatics. Specifically asks how new discoveries in biology encourage us to rethink issues of ownership, communication, geography, identity, and artistic practice.

CHID 230 Introduction to Disability Studies (5) I&S, DIV J. WOIAK Introduces the field of disability studies. Focuses on the theoretical questions of how society predominantly understands disability and the social justice consequences. Examines biological, social, cultural, political, and economic determinants in the framing of disability. Offered: jointly with DIS ST 230/LSJ 230.

CHID 250 Special Topics: Introduction to the History of Ideas (5, max. 15) I&S Examines a different subject or problem from a comparative framework. Satisfies the Gateways major/minor requirement. Offered: AWSp.

CHID 260 Re-Thinking Diversity (5) I&S, DIV Bushnell Considers the notion of diversity from many scholarly perspectives and from personal engagements. Critically engages historical thinking about diversity and examines contemporary issues such as racism, sexism, and the cultural politics of difference.

CHID 270 Special Topics (5, max. 15) I&S Each special topics course examines a different subject or problem from a comparative framework.

CHID 280 Indigenous Encounters: Politics, Culture, and Representation in Latin America (5) I&S, DIV Garcia Explores the cultural and political transformations advanced by indigenous groups and their advocates in Latin America. Examines the concept of indigeneity, the cultural politics of indigenous mobilization, and the challenges of political economic models based on resource extraction and dispossession. Offered: jointly with JSIS A 280.

CHID 298 Pre-Departure Seminars (2) I&S Prepares students to participate in CHID international programs. Prerequisite: students must be accepted to an international program prior to registration. Credit/no-credit only. Offered: AWSpS.

CHID 309 Marx and the Marxian Tradition in Western Thought: The Foundations of Modern Cultural Criticism I (5) I&S Critically examines the formation of modern Western culture, politics, and society through an historical analysis of the work of Karl Marx and the thinkers, artists, and activists who assimilated and transformed Marxian concepts from the late nineteenth century to the present. Offered: jointly with HSTCMP 309.

CHID 314 The Psychoanalytic Revolution in Historical Perspective (5) I&S Genesis and evolution of Freudian theory in context of the crisis of liberal-bourgeois culture in central Europe and parallel developments in philosophy, literature, and social theory. Emergence and division of the psychoanalytic movement. Transformation of psychoanalysis in British, French, and especially American cultural traditions. Offered: jointly with HSTCMP 314.

CHID 319 Nietzsche and the Nietzschean Legacy in Western Thought: Foundations of Modern Cultural Critique II (5) I&S Critically examines the formation of modern Western politics, society, and cultures through a historical analysis of the thought of Friedrich Nietzsche and the thinkers, artists, and activists who assimilated and transformed the Nietzschean perspective during the twentieth century. Offered: jointly with HSTCMP 319.

CHID 332 Disability and Society (5) I&S Concentrates on contemporary issues in disability studies, focusing on the

thematic frameworks of rights, identities, values, and science/medicine. Recommended: DIS ST 230/LSJ 230/CHID 230. Offered: jointly with DIS ST 332/LSJ 332.

CHID 350 Women in Law and Literature (5) VLPA/I&S, DIV Representations of women in American law and literature. Considers how women's political status and social roles have influenced legal and literary accounts of their behavior. Examines how legal cases and issues involving women are represented in literary texts and also how law can influence literary expression. Offered: jointly with GWSS 350.

CHID 370 The Cultural Impact of Information Technology (5) VLPA/I&S Utilizing approaches from the history of technology, cultural studies, and literary theory, seeks to analyze the cultural and social impact of information technology. Considers how information technologies impact our relationships with others, our concept(s) of self, and the structure of the communities to which we belong. Offered: jointly with COM 302.

CHID 380 Theories in the Study of Religion (5) I&S C. NOVETZKE, J. WELLMAN Provides a variety of approaches to the study of religion centered on examining the relationship between religion and modernity in the tradition of post-enlightenment, Euro-American scholarship. Examines theories of religion across disciplines: history, anthropology, sociology, Marxism, feminism, postmodernism, political theology, and Freudian psycho-analytical theory. Offered: jointly with JSIS C 380.

CHID 390 Colloquium in the History of Ideas (5) I&S Garcia, Thurtle, Toews Basic theoretical issues in the comparative history of ideas as a disciplined mode of inquiry; examination of representative historical figures and problems. Primarily for majors.

CHID 399 Internship (5, max. 10) Off-campus engagement with a local, national, or international organization, in an apprenticeship or internship capacity. Supervised by on-site field supervisor and Comparative History of Ideas faculty member.

CHID 417 Enter the Dragon: Seminar on World Cultures Through the Asian Martial Arts (5) I&S Novetzke Examines how the martial arts have preserved religious, cultural, and philosophical aspects of the world areas of their origin, as well as the new cultures and international communities that have adopted and reinvented their practices and philosophies, including India, China, Japan, Korea, Brazil, and Euro-America. Offered: jointly with JSIS B 417.

CHID 430 Topics in Disability Studies (1-5, max. 15) I&S Theoretical, critical, analytical, or comparative examination of an issue or issues in Disability Studies. Topics vary. Prerequisite: either DIS ST/CHID/LSJ 230, DIS ST 332, DIS ST 433, or DIS ST 434. Offered: jointly with DIS ST 430/LSJ 430.

CHID 433 Disability Law, Policy, and the Community I&S (5) I&S, DIV Addresses the history of legal rights of disabled people, U. S. disability policy, and the role of community activism and other forces in policy development and systems change. Introduces the existing social service system that affects disabled people. Recommended: LSJ 230/CHID 230/DIS ST 230. Offered: jointly with DIS ST 433/LSJ 433.

CHID 434 Civil and Human Rights Law for Disabled People (5) I&S, DIV Brown Expands knowledge of civil and human rights for disabled people. Examines the American perspective (ADA) as well as various international models including the United Nations' International Human Rights treaties as they relate to disabled people. Recommended: LSJ 230/CHID 230/DIS ST 230. Offered: jointly with DIS ST 434/LSJ 434.

CHID 442 Roma Eterna (5) VLPA/I&S Explores the historical layers of meaning in the artifacts and monuments of Rome to reflect on its transformation over time as a symbol of the human aspiration for both temporal order and spiritual and aesthetic transcendence. Specific periods considered for reading and daily site visits include Ancient Rome;

Imperial Rome; Medieval Rome; Renaissance Rome; Baroque Rome; Romanticism, The Grand Tour and the Risorgimento; and Fascist Rome.

CHID 444 Eye and Mind (5) VLPA/I&S/NW P. THURLE Investigates life as an emergent phenomenon across the disciplines of biophilosophy, art, art history, literary criticism, and information studies with an emphasis on interdisciplinary methods. Addresses key issues in phenomenology, social theory, contemporary bioart, and complexity studies.

CHID 459 Narrative Journalism (5) VLPA/I&S Introduces the rigorous reporting and literary writing techniques of narrative journalism. Concentrates on producing nonfiction narrative articles for publication. Offered: jointly with COM 459.

CHID 461 Democracy and Development in Central and Eastern Europe: Study Abroad (5) I&S Smith Examines the relationship between democratization, economic development, and social transformation in Central and Eastern Europe. Offered on CHID study abroad programs in Central and Eastern Europe. Offered: ASpS.

CHID 470 CHID Study Abroad (1-5, max. 15) I&S For participants in study-abroad program. Specific course content varies.

CHID 471 Europe Study Abroad (5, max. 15) VLPA/I&S For participants in study-abroad program. Specific course content varies.

CHID 472 Latin America Study Abroad (5, max. 15) I&S For participants in study-abroad program. Specific course content varies.

CHID 473 Africa Study Abroad (5, max. 15) I&S For participants in study-abroad program. Specific course content varies.

CHID 474 Asia Study Abroad (5, max. 15) I&S For participants in study-abroad program. Specific course content varies.

CHID 475 East Asia Study Abroad (5, max. 15) I&S For participants in study-abroad program. Specific course content varies.

CHID 476 South Pacific Study Abroad (5, max. 15) I&S For participants in study-abroad program. Specific course content varies.

CHID 477 Middle East Study Abroad (5, max. 15) I&S For participants in study-abroad program. Specific course content varies.

CHID 480 Special Topics: Advanced Study of the History of Ideas (5, max. 15) I&S Examines a different subject or problem from a comparative framework with an interdisciplinary perspective. Satisfies the Gateways major/minor requirement. Offered: AWSp.

CHID 484 Colonial Encounters (5) I&S History of European colonialism from the 1750s to the present, with an emphasis on British and French colonial encounters. Offered: jointly with HSTCMP 484.

CHID 487 Culture, Politics, and Violence in Latin America (5) I&S, DIV Garcia Examines notions of "otherness" and the power to label as central to understanding inequality, human rights, and social struggle. Uses academic texts, films, documentaries, historical fiction, plays, and testimonials to interrogate the complexities of violence and social justice in Latin America, one of the most unequal regions in the world. Offered: jointly with JSIS A 485.

CHID 488 Encountering Animals: Ethics, Culture, and Politics (5) I&S Garcia Explores some ethical, political, and cultural questions regarding non-human animals and invites student to engage in debates about companion animals, the industrial food complex, zoos, and links between race, class, gender, sexuality, and species.

CHID 490 Research Seminar (5) VLPA/I&S Intensive readings in specific topic. Students complete individual research projects. Satisfies the CHID senior thesis require-

ment for students who declared the CHID major prior to Summer 2014. Prerequisite: CHID 390.

CHID 491 Senior Thesis (5-) I&S Critical and methodological issues. Required of candidates for an Honors degree.

CHID 492 Senior Thesis (-5-) I&S Critical and methodological issues. Required of candidates for an Honors degree.

CHID 493 Senior Thesis (-5) I&S Research and writing of thesis under supervision of a faculty member. Required of candidates for an Honors degree.

CHID 495 Close Readings in Theory (1-5, max. 15) I&S Close readings of a specific work, author, artist, or body of work.

CHID 496 Focus Groups (1-2, max. 4) Credit/no-credit only.

CHID 497 Peer Facilitators (5, max. 20)

CHID 498 Special Colloquia (1-5, max. 20) I&S Each colloquium examines a different subject or problem from a comparative framework.

CHID 499 Undergraduate Independent Study or Research (1-5, max. 10) Supervised independent study for students who wish to pursue topics not available in regular course offerings.

Comparative Literature

B-531 Padelford

Comparative literature works across national and regional boundaries to explore the relationships among multiple literary traditions. Comparative literature also focuses on the relationship of literature to the other arts and to fields of knowledge such as philosophy, anthropology, history, and media or cultural studies.

UNDERGRADUATE PROGRAM

Adviser

B-534 Padelford, Box 354338

(206) 685-1642

tcoop@uw.edu

Comparative Literature offers the following programs of study:

- Bachelor of Arts with a major in comparative literature
- Bachelor of Arts with a major in comparative literature (cinema studies)
- Minor in comparative literature (literature minor only)

The literature option includes core course requirements in literary analysis (C LIT 300), literary theory (C LIT 400), and regional literatures (C LIT 320, C LIT 322, C LIT 323).

The cinema studies option is structured around two series of required core courses devoted to film theory and film history.

Bachelor of Arts

Suggested First- and Second-Year College Courses: Courses in foreign languages, classics, history, philosophy, literature, and writing. Sufficient preparation in a foreign language (completion of second year or higher) to enable the student to take a 300- or 400-level literature or national film course by the senior year.

Department Admission Requirements

Completion of C LIT 250, C LIT 251, or C LIT 252; minimum 2.00 overall GPA; completion of one course fulfilling either College of Arts and Sciences English composition requirement or the W (writing) requirement (5 credits).

Cinema Studies: Same as above, plus completion of C LIT 270, C LIT 271, or C LIT 272.

Major Requirements

Literary Studies Option: 50 credits

1. C LIT 250, C LIT 251, or C LIT 252 (5 credits).
2. C LIT 400 (5 credits).
3. Three differently-numbered courses from among C LIT 320, C LIT 321, C LIT 322, or C LIT 323; C LIT 360, C LIT 361, or C LIT 362. At least one must come from each series (15 credits).
4. One 300-level cinema studies course (5 credits).
5. One additional course in comparative literature at the 300 or 400 level (5 credits).
6. Remaining (15 credits) to be earned in 300- and 400-level literature courses from among the offerings of Comparative Literature and the following participating departments: Asian Languages and Literature, Classics, English, Germanics, Near Eastern Languages and Civilization, Romance Languages and Literature, Scandinavian Studies, and Slavic Languages and Literatures.
7. One course in the program must focus on literature written before 1800.

Cinema Studies Option: 50 credits

1. 15 credits from cinema studies core courses, with at least one course in film theory and one course in film history (C LIT 301, C LIT 302, C LIT 303, C LIT 310, C LIT 311, C LIT 312, C LIT 313).
2. 10 credits from C LIT core requirements (C LIT 400, and one course from C LIT 320, C LIT 321, C LIT 322, C LIT 323).
3. One national cinema course (5 credits).
4. Remaining credits to be earned in recommended 300- and 400-level cinema elective courses offered by Comparative Literature or any UW department. See departmental website for list of cinema elective courses.
5. A maximum of 5 credits of internship (C LIT 491) may be applied toward the cinema studies option with approval of the faculty internship coordinator.

Minor

Minor Requirements: 30 credits to include C LIT 250, C LIT 251, or C LIT 252; C LIT 400; and two differently-numbered courses from among C LIT 320, C LIT 321, C LIT 322, and C LIT 323; and the remaining credits in upper-division literature courses offered through Comparative Literature and the following participating departments: Asian Languages and Literature, Classics, English, Germanics, Near Eastern Languages and Civilization, Romance Languages and Literature, Scandinavian Studies, and Slavic Languages and Literatures.

A minor is not available for the cinema studies option.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The study of comparative literature provides training in the analysis and critique of varied kinds of social texts and discourses. It stresses the centrality of historical and cross-cultural awareness for effective interpretation of both verbal and visual texts. Students earning the degree in comparative literature may pursue advanced work at the MA and PhD. level in language and literature programs, or allied curricula in film studies, philosophy, intellectual history, and cultural studies. They may aim for degrees in education, specializing in language arts, foreign language teaching, or both. Comparative literature majors may also find jobs in fields where liberal arts skills, such as strong writing ability and fluency in foreign languages, are valued. Cinema studies majors

often seek positions associated with film production and distribution.

- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements. With Distinction (Departmental Honors, by invitation). See adviser.
- *Undergraduate Research, Internships, and Service Learning:* See adviser for internship information.
- *Department Scholarships:* Some financial support available for student film projects.
- *Student Organizations/Associations:*
 - Film Club, film@uw.edu
 - UW Film Colloquium, filmcol@uw.edu

GRADUATE PROGRAM

Graduate Program Coordinator

B531 Padelford, Box 354338

(206) 543-7542

clitgrad@uw.edu

The Department of comparative literature offers a program of study with faculty members from the following participating departments: Asian Languages and Literature, English, French and Italian Studies, Germanics, Near Eastern Languages and Civilization, Scandinavian Studies, Slavic Languages and Literatures, Spanish and Portuguese Studies, and Gender, Women, and Sexuality Studies. Study leads to a Master of Arts or Doctor of Philosophy degree. Students concentrate on graduate courses in comparative literature and specialize in two or more national literatures of major interest to them, studied in the original language. With permission, a PhD. aspirant may choose as a third area of study a field outside of literature (e.g., philosophy, religion, art, political thought). On receiving the advanced degree, the student is qualified for teaching and research in comparative and general literature, as well as the language and literature of specialization.

Master of Arts

Admission Requirements

Bachelor of Arts degree in Comparative Literature, English, or any other literature, or equivalent background; advanced reading knowledge in one language other than English.

Degree Requirements

45 credits, as follows:

1. *Coursework:* Minimum 45 quarter credits at the 400 and 500 level, of which at least 25 must be at the 500 level. Three courses must be taken in comparative literature. Remaining credits must include study in two or more literatures with at least three courses in each of two literatures.
2. *Language Requirements:* Advanced reading knowledge in at least one language other than English and a basic reading knowledge of a second, demonstrated before starting to write the MA essay. Language competence is attested either by exams or by completion of satisfactory coursework in the language.
3. *Essay:* Prepared after completion of coursework, under supervision of two faculty members.
4. *Study Abroad:* Students are encouraged to study abroad by participating in exchange programs offered through the individual language and literature departments or through the UW's Office of International Programs and Exchanges.

Doctor of Philosophy

Admission Requirements

Master of Arts degree in Comparative Literature, English, or any other literature, or equivalent background; advanced reading knowledge in two languages other than English.

Degree Requirements

90 credits, as follows:

1. **Coursework:** Minimum 90 postbaccalaureate degree credits at the 400 and 500 level of which at least half in each section of the program must be at the 500 level. Credits must include: (1) at least 30 credits in comparative literature courses; (2) 30 credits in the literature of major interest to the student; (3) 20 credits in the student's minor field (or, if more than one minor field is chosen, at least 15 credits in each); (4) 10 elective credits chosen from any area of the student's choice. One of two minor fields may be extra-literary.
2. **Language Requirements:** Advanced reading knowledge in two languages other than English and a basic reading knowledge of a third, demonstrated before PhD. examinations are administered. Language competence is attested either by examinations or by completion of satisfactory coursework in the language.
3. **General Examination:** The general examination requires one quarter and is taken after completion of the 90-credit course requirement and language requirements. The examination, taken within three quarters of completion of coursework, consists of the following two sections: (1) eight-hour written examinations in each of the following three areas: (a) a period exam in the student's primary national literature; (b) comparative literature exam; and (c) comparative theory exam; (2) an oral comprehensive examination evaluating the student's overall preparation for dissertation work.
4. **Dissertation:** Dissertation topics are chosen from a broad range of areas including: (1) the comparative study of authors or themes in different languages; (2) issues in the fields of theory of literature and history of criticism; (3) the study of literary authors or themes whose significance transcends national or linguistic boundaries; (4) the study of such phenomena as transmission, reception, and influence.
5. **Final Examination:** Candidates must pass an oral examination devoted to the dissertation and to fields covered by their written exams.
6. **Study Abroad:** Students are encouraged to study abroad by participating in exchange programs offered through the individual language and literature departments or through the UW's Office of International Programs and Exchanges.

Financial Aid

The department awards teaching assistantships annually to qualified students and provides up to five years of support toward the PhD. to students who enter with a B.A. Teaching assistantships can be assigned in comparative literature, cinema studies, or in any of the national literature departments affiliated with Comparative Literature.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

C LIT 200 Introduction to Literature (3/5) VLPA Reading, understanding, and enjoying literature from various countries, in different forms of expression (e.g., dramatic, lyric, narrative, rhetorical) and of representative periods. Emphasis on the comparative study of themes and motifs common to many literatures of the world.

C LIT 210 Literature and Science (5, max. 15) VLPA Introduces the rich and complex relationship between science and literature from the seventeenth century to the present day. Students examine selected literary, scientific, and philosophical texts, considering ways in which literature and science can be viewed as forms of imaginative activity.

C LIT 230 Introduction to Folklore Studies (5) VLPA/I&S Comprehensive overview of the field of folkloristics, focusing on verbal genres, customs, belief, and material culture. Particular attention to the issues of community, identity, and ethnicity. Offered: jointly with SCAND 230.

C LIT 240 Writing in Comparative Literature (5, max. 15) C Comparative approach to literature and a workshop in writing comparative papers in English. Emphasis on cross-cultural comparison of literary works. Readings in English with an option to read selected texts in the original languages. Offered: AWSp.

C LIT 250 Introduction to Comparative Literature: Literature and Culture (5, max. 15) VLPA/I&S Study of literature in its relation to culture. Focuses on literature as a cultural institution, directly related to the construction of individual identity and the dissemination and critique of values.

C LIT 251 Introduction to Comparative Literature: Themes (5) VLPA Reading and analyzing literature based upon rotating themes such as love, sex, and murder, haunted houses, and dreams and memory. Selections drawn from European, English, and American literature, not limited to period and genre.

C LIT 252 Introduction to Comparative Literature: Genres (5) VLPA Reading and analyzing literature based upon rotating genres such as sci-fi, detective fiction, romance, love, poetry, and comedy. Draws from world literature.

C LIT 270 Perspectives on Film: Introduction (5) VLPA Introduction to film form, style, and techniques. Examples from silent film and from contemporary film. C LIT 270, C LIT 271, C LIT 272 are designed to be taken as a sequence, but may be taken individually.

C LIT 271 Perspectives on Film: Great Directors (5) VLPA Introduction to authorship in the cinema. The work of a major director or directors. C LIT 270, C LIT 271, C LIT 272 are designed to be taken as a sequence, but may be taken individually.

C LIT 272 Perspectives on Film: Genre (5) VLPA Introduction to study of film genre. Literary, mythic, and historic aspects of film genre. C LIT 270, C LIT 271, C LIT 272 are designed to be taken as a sequence, but may be taken individually.

C LIT 300 Introduction to Comparative Literature: Forms, Genres, History (5) VLPA Provides an introduction to comparative literary study which examines how literary forms and genres shape our reading of texts; how these forms and genres change over time; and how literary forms and genres manifest themselves in different cultural traditions. Includes theoretical readings and substantial writing.

C LIT 301 Theory of Film: Analysis (5) VLPA Introduction to the analysis of film. Covers major aspects of cinematic form: mise en scene, framing and camera movement, editing, and sound and color. Considers how these elements are organized in traditional cinematic narrative and in alternative approaches.

C LIT 302 Theory of Film: Critical Concepts (5) VLPA Overview of the main conceptual problems in film criticism such as: "What is a film?", "What is the relationship between film and reality?", "Does a film have a language?", "What is the connection between image and sound?" Follows a historical timeline within five individual sections.

C LIT 303 Theory of Film: Genre (5) VLPA Introduction to the history and significance of film genres from the early days of film to the present. Examines a selection of several genres, drawn from a list including western, melodrama, musical, thriller, road odyssey, film noir, and documentary.

Topics include form, ideology, authority, history, innovation, and parody.

C LIT 310 History of Film: 1895-1929 (5) VLPA Film history from its beginnings in the 1890s through the golden era of silent film in the 1920s. Topics include the invention of major film techniques, the creation of Hollywood and the studios, and movements such as expressionism, constructivism, and surrealism.

C LIT 311 History of Film: 1930-1959 (5) VLPA Film history from the introduction of sound through the late 1950s. Focuses mostly on the golden age of the Hollywood studios and on alternative developments after World War II in Italy (Neo-Realism), France (the New Wave), and Japan.

C LIT 312 History of Film: 1960 - 1988 (5) VLPA Covers the vast changes in filmmaking since 1960. Topics include the continuing influence of the French New Wave, the New German Cinema of the 70s and the "New Hollywood" of the 70s, American independent film of the 80s, and the resurgence of Chinese filmmaking since 1980.

C LIT 313 History of Film: 1989-Present (5) VLPA Addresses the latest trends in international filmmaking typically with an emphasis on world cinema and issues of globalization and diaspora. Sometimes taught in conjunction with the Seattle International Film Festival.

C LIT 315 National Cinemas (3-5, max. 15) VLPA Examines the cinema of a particular national, ethnic or cultural group, with films typically shown in the original language with subtitles. Topics reflect themes and trends in the national cinema being studied.

C LIT 320 Studies in European Literature (5, max. 15) VLPA Examination of the development of European literature in a variety of genres and periods. Possible areas of study include literature from romantic fiction of early nineteenth century through great realist classics of second half of the century or from symbolism to expressionism and existentialism.

C LIT 321 Studies in Literature of the Americas (5, max. 15) VLPA Emphasizes connections between twentieth century literature of the United States and Canada and current literature of Latin America. Emphasizes that, despite obvious differences, much is shared in terms of culture and national sensibility across the two continents.

C LIT 322 Studies in Asian and Western Literatures (5, max. 15) VLPA Topics designated by individual instructors.

C LIT 323 Studies in the Literature of Emerging Nations (5, max. 15) VLPA, DIV Novels and short stories, from Africa, the Middle East, and South Asia. Discusses relationship of Western literary genres to an oral literary tradition, as well as issues like colonialism, gender relations, narrative technique, native and non-native languages.

C LIT 330 The European Fairy Tale (5) VLPA An introduction to folktales and literary tales from various traditions and periods. A discussion of their origin, special characteristics, dissemination, and relevance to the contemporary reader.

C LIT 331 Folk Narrative (5) VLPA Survey of various genres of folk narratives studied in performance contexts to reveal their socio-cultural functions in a variety of milieux. Theory and history of folk narrative study, taxonomy, genre classification, and interpretative approaches. Recommended: either SCAND 230 or C LIT 230. Offered: jointly with SCAND 331.

C LIT 334 Immigrant and Ethnic Folklore (5) VLPA/I&S Survey of verbal, customary, and material folk traditions in ethnic context. Theories of ethnic folklore research applied to the traditions of American communities of Scandinavian, Baltic, or other European ancestry. Recommended: either SCAND 230 or C LIT 230. Offered: jointly with SCAND 334.

C LIT 350 Themes in World Literature: Parents and Children (5) VLPA World literature, from the Renaissance to modern times, based upon the theme of "parents and children." Selections drawn from European, English, and

American literature, not limited to period and genre. Focus upon the motive of generational conflict.

C LIT 352 Themes in World Literature: Death and Transfiguration (5) VLPA Theme of death, transfiguration, and new life in world literature. Selections from Tolstoy, D. H. Lawrence, Celine, E. M. Forster, and other major writers.

C LIT 357 Literature and Film (3-5, max. 10) VLPA The film as an art form, with particular reference to the literary dimension of film and to the interaction of literature with the other artistic media employed in the form. Films are shown as an integral part of the course. Content varies.

C LIT 360 Topics in Ancient and Medieval Literature (5) VLPA Explores topics in literature and cultures of the ancient and medieval worlds across national and regional cultures, such as particular movements, authors, genres, themes, or problems.

C LIT 361 Topics in Early Modern Literature (5) VLPA Explores topics in literature and cultures of the early modern world (approximately 1400-1800) across national and regional cultures, such as particular movements, authors, genres, themes, or problems.

C LIT 362 Topics in Modern Literature (5) VLPA Explores topics in literature and cultures of the modern world (approximately 1800-present) across national and regional cultures, such as particular movements, authors, genres, themes, or problems.

C LIT 371 Literature and the Visual Arts (5) VLPA Focuses on specific theoretical problems. Examines the relationship between text and image in a variety of art forms including poetry, novels, paintings, photography, essays, comic strips, film, and advertisement. Readings, in English, from a wide variety of national literatures.

C LIT 375 Images of Women in Literature (5, max. 15) VLPA Comparative study of the ways women's image, social role, and psychology have been portrayed by writers of various nationalities and literary periods. Selection of theme varies from quarter to quarter. Works are read in English translation.

C LIT 376 Violence, Myth, and Memory (5) VLPA/I&S, DIV Benitez, Sears Explores how images and ideas of power, violence, and global modernity circulate in films and novels, memories and discourses about U.S. relations with Vietnam, the Philippines, and Indonesia. Topics include foundational myths, colonial and post-colonial encounters, historiography and narrative, and nationalist and ethnic identity formations. Offered: jointly with JSIS A 376.

C LIT 396 Special Studies in Comparative Literature (3-5, max. 10) VLPA Offered by visitors or resident faculty. Content varies.

C LIT 397 Special Topics in Cinema Studies (3-5, max. 10) VLPA/I&S Varying topics relating to film in social contexts. Offered by resident or visiting faculty.

C LIT 400 Introduction to Theory and Criticism (5) VLPA A selection of major theoretical statements in the history of literary theory and criticism, with texts drawn from such fields as literary studies, aesthetic theory, film studies, philosophy, and cultural studies.

C LIT 410 Studies in Literary History (5, max. 15) VLPA Introduction to a major figure or movement associated with the development of literary history. Through the study of one aspect of literary history students gain a thorough understanding of a particular point of view, while exploring the breadth of contemporary approaches to literature.

C LIT 421 Studies in Connections: Literature and Other Disciplines (5, max. 15) VLPA Examines the links between literature and other disciplines or art forms. Literature and history, literature and philosophy, literature and music, literature and the visual arts are all appropriate topics. Selection of focus depends on instructor.

C LIT 422 Studies in Genre (5, max. 15) VLPA Major genres of world literature: poetry, fiction, drama. Readings in English from a wide selection of national literatures.

C LIT 423 East European Film (5, max. 15) VLPA Crnkovic Studies major East European film makers who left their countries at some point in their careers. Compares East European and Western production of those directors who worked partially in the West. Offered: jointly with SLAV 423.

CLIT 424 The Epic Tradition (5) VLPA Clauss, Levaniouk Ancient and medieval epic and heroic poetry of Europe in English: the Iliad, Odyssey, and Aeneid; the Roland or a comparable work from the medieval oral tradition; pre-Greek forerunners, other Greco-Roman literary epics, and later medieval and Renaissance developments and adaptations of the genre. Choice of reading material varies according to instructor's preference. Offered: jointly with CLAS 424.

C LIT 430 Readings in Folklore (5) VLPA Exploration of theoretical and methodological issues in folklore studies through independent reading of journal articles published during the last five years. Recommended: either SCAND 230 or C LIT 230. Offered: jointly with SCAND 430.

C LIT 431 The Northern European Ballad (5) VLPA Integrative study of the Northern European Ballad, with an emphasis on texts, performance, context, history, theory, genre classification, and interpretive approaches. Offered: jointly with SCAND 431.

CLIT 432 Technology and Culture in the Making of Contemporary Empires (5) I&S Benitez, Rodríguez-Silva Explores the struggles that shaped organization of the U.S. empire at the turn of the twentieth century, focusing on how empire's material, cultural, and ideological boundaries were drawn. Topics include race, gender, and class as colonial formations; technologies of imperial governance such as public health, citizenship and territory; and popular culture. Offered: jointly with JSIS D 432.

CLIT 441 Literature and the Holocaust (5) VLPA, DIV Examines fiction, poetry, memoir, diaries, monuments, film, and pop culture from several languages and cultural milieus, with emphases on English and Hebrew. Topics include survivor testimony, shaping of collective memory, the second generation, Holocaust education and children's literature, gender and the Holocaust, and fantasy and humor as responses to catastrophe. Offered: jointly with NEAR E 441.

C LIT 474 Scandinavian Auteurs (5, max. 10) VLPA Nestingen Studies the body of work of Scandinavia's auteur filmmakers. Introduces the theory and history of auteur cinema, with special attention to Scandinavian filmmakers' contribution. Offered: jointly with SCAND 470; AWSp.

C LIT 490 Directed Study or Research (1-5, max. 10) Individual study of topics in comparative literature by arrangement with the instructor and the Comparative Literature office.

C LIT 491 Internship (1-5, max. 5) Supervised experience in local businesses and other agencies. Open to upper-division comparative literature and cinema studies majors. Recommended: 25 credits of C LIT courses.

C LIT 493 Comparative Literature Honors Seminar (5, max. 15) VLPA Special topics in comparative literature. Required of Honors students in comparative literature.

C LIT 495 Honors Thesis (5) VLPA Preparation of an Honors thesis under the direction and supervision of a faculty member.

C LIT 496 Special Studies in Comparative Literature (3-5, max. 15) VLPA Offered occasionally by visitors or resident faculty. Content varies.

C LIT 497 Special Topics in Cinema Studies (3-5, max. 10) VLPA Varying topics in cinema studies. Offered by resident or visiting faculty.

C LIT 500 The Theory of Literature I: The Literary Text (5, max. 15) An investigation into the nature of literature in contrast to other forms of writing and into essential features of literature such as genres, imagery, modes of communication, and structure.

C LIT 501 The Theory of Literature II: History of Literature (5, max. 15) An exploration of topics of literary history such

as periods, traditions, the writing of literary history, and literary history in contrast to other histories.

C LIT 502 The Theory of Literature III: Special Topics (5, max. 15) Offerings vary to cover topics such as individual theorists, theoretical movements, or the intersection of literary theory with other disciplines or arts (psychoanalysis, structuralism, ethics, aesthetics).

C LIT 507 History of Literary Criticism and Theory I (5, max. 15) A general introduction to the major issues in the history of criticism followed by the study of the classical theorists, including Plato, Aristotle, Longinus, and the major medieval critics. Offered: jointly with ENGL 507.

C LIT 508 History of Literary Criticism and Theory II (5, max. 15) Literary criticism and theory from the Middle Ages and the Renaissance through the eighteenth century to, but not including, Kant. Offered: jointly with ENGL 508.

C LIT 509 History of Literary Criticism and Theory III (5, max. 15) Literary criticism and theory from Kant's Critique of Judgment to the mid-twentieth century and the work of Northrop Frye. Offered: jointly with ENGL 509.

C LIT 510 History of Literary Criticism and Theory IV (5, max. 15) A study of the major issues in literary criticism and theory since about 1965. Offered: jointly with ENGL 510.

C LIT 511 Literary Translation (5, max. 15) Lectures on principles of translating literary works into readable English. Students present and comment on translations made by them and write seminar papers on problems of translation in theory and practice.

C LIT 516 Colloquium in Criticism (5, max. 15) Recent trends in literary criticism, taught by representatives from various literature departments, covering critical trends such as structuralism, poststructuralism, hermeneutics, reception theory, and sociological approaches to literature.

C LIT 520 Methods and Issues in Cinema and Media Studies (5) Provides a basic grounding in the theory, history, and criticism of film and media studies, and introduces central debates, topics, and methods in the field.

C LIT 530 Cultural Criticism and Ideology Critique I (5, max. 15) A study of the main attempts to come to an understanding of the humanities and the nature of historical interpretation in a cultural context.

C LIT 535 Cultural Criticism and Ideology Critique II (5, max. 15) Offerings vary to cover individual theorists and particular manifestations of cultural criticism and ideology critique.

C LIT 545 Medieval Studies (3/5, max. 15) Literature, intellectual history, and sociology of the Middle Ages, 500-1200. Topics may include "renaissance" of the twelfth century; the educational ideal; rise of universities; philosophical concepts.

C LIT 546 Studies in Renaissance and Baroque (3-5, max. 10) Aspects of Western European literature during the Renaissance and Baroque period. Course content varies.

C LIT 547 Studies in Eighteenth-Century Literature (3-5, max. 10) Examination of various trends in eighteenth-century literature including the Enlightenment, Rationalism, Pre-Romanticism, and Neo-Classicism. Course content varies with instructor.

C LIT 548 Studies in Nineteenth-Century Literature (3-5, max. 10) Examination of various trends in nineteenth-century literature including Romanticism, Realism, Naturalism, and Symbolism.

C LIT 549 Twentieth-Century Literature (3-5, max. 10) Selected movements, schools, and trends of significance in twentieth-century literature of Europe and Americas. Symbolism, surrealism, dada, expressionism, neorealism, existentialism, nouveau roman, and absurd may be considered. Texts in English, French, and German figure most prominently, but Spanish, Italian, Russian, and other materials may be examined. Content and emphasis vary.

CLIT 551 Textual Theory (5) Provides an introduction to the intellectual foundations of textual studies; historical background in disciplines of philosophy and textual criticism, theories of textuality from formalism and New Criticism to poststructuralism, and media-specific analysis; current and emerging concerns in the history of the book, media studies, globally comparative philologies, and digital humanities. Offered: jointly with ENGL 501.

CLIT 570 The Novel: Theory and Practice (3-5, max. 15) Study of the novel as a genre, examining two or more novels of varying national literatures. Course content varies.

CLIT 571 The Lyric: Theory and Practice (3-5, max. 15) Examination of central questions in the study of the lyric genre as approached from an international point of view. Course content varies.

CLIT 573 The Drama: Theory and Practice (3-5, max. 15) Examination of various aspects of the drama as a major literary genre, as approached from international and multilingual points of view. Course content varies.

CLIT 574 Scandinavian Auteurs (5, max. 10) VLPA Nestin-
gen Seminar on auteur filmmakers in Scandinavian cinema, studying specific auteurs' bodies of work, theories of auteur cinema, and the history of auteurism in Scandinavian cinema. Offered: jointly with SCAND 570; AWSp.

CLIT 576 Seminar in East-West Literary Relations (3-5, max. 15) Comparative investigation of literary topics requiring the study of both Eastern and Western documents. Explores parallels and contradictions between the two, in concepts, ideas, and specific topics. A comparative paper on a chosen topic with qualified conclusions is required. Emphasis varies. Prerequisite: at least one East Asian language.

CLIT 590 Master of Arts Essay (5/10, max. 10) Research and writing project under the supervision of a faculty member.

CLIT 596 Special Studies in Comparative Literature (3-5, max. 15) Offered occasionally by visiting or resident faculty. Course content varies.

CLIT 599 Special Seminar or Conference (1-9, max. 30) Group seminars or individual conferences scheduled to meet special needs. Prerequisite: permission of graduate program adviser.

CLIT 600 Independent Study or Research (*-)

CLIT 700 Master's Thesis (*-)

CLIT 800 Doctoral Dissertation (*-)

Computer Science

AC101 Paul G. Allen Center for Computer Science and Engineering

Computer science is the study of information and algorithms within the context of real and abstract computing devices. Computer scientists are interested in such topics as the representation and storage of information; algorithms to access, display, edit, and transform information; programming languages to express algorithms; and hardware and software processors to execute algorithms. These concerns lead to practical developments in computer systems software, such as operating systems and compilers; in application areas, such as artificial intelligence, computer graphics, and computational biology; and also lead to theoretical investigations of computers, algorithms, and data.

UNDERGRADUATE PROGRAM

Adviser

101 Paul G. Allen Center for Computer Science and Engineering, Box 352350

(206) 543-1695

ugrad-advisor@cs.washington.edu

The Department of Computer Science and Engineering offers the following programs of study:

- The Bachelor of Science degree with a major in computer science
- The Bachelor of Science in Computer Engineering degree (see Computer Engineering section)

The core requirements of the two undergraduate majors are similar. The computer science major may be more appropriate for students who want to earn a double major with another College of Arts and Sciences program, who want the additional flexibility of the computer science requirements (the computer engineering major has more required courses and fewer electives), or who may be more interested in the theory, design, and implementation of software systems and applications (for example, the techniques of modern compilers or the algorithms behind computer graphics and animation).

The computer engineering major may be more appropriate for students who are interested in creating and building systems that include both hardware and software components and that must be engineered to meet a variety of cost and performance constraints. The program includes a general foundation in engineering fundamentals to enable interdisciplinary work with other departments in the College of Engineering and the University as a whole.

Bachelor of Science

Department Admission Requirements

Applicants are considered in two groups: Direct Admission and regular admission. Admission is competitive. Completion of minimum requirements does not guarantee admission.

1. *Direct Admission:* Computer Science and Engineering enrolls up to 30 percent of its incoming class directly out of high school, prior to the completion of university-level prerequisites. Freshman applicants to the University listing computer science or computer engineering as their intended major are automatically considered. Competitive applicants have taken calculus and at least one year of laboratory science (preferably physics) upon entering the University. Admission is for autumn quarter only.
2. *Regular Admission*
 - a. *Course requirements:* MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136); at least five credits of Natural World, including one of the following: PHYS 121, CHEM 142/CHEM 145, or BIOL 180 (or any approved science course that requires one of these courses as a prerequisite); CSE 142, CSE 143; and at least five credits of English composition. In addition to any AP credit, at least one calculus or post-calculus mathematics course and one approved Natural World courses must be completed prior to applying to the department.
 - b. Admission is for autumn or spring quarter. Application deadlines are July 1 for autumn quarter and February 1 for spring quarter.

Major Requirements

87-90 credits as follows:

1. *Science (10 credits):* 10 credits from the list of approved natural science courses in the CS&E handbook. Courses

that meet the department's science requirement include PHYS 121, CHEM 142/CHEM 145, and any course in biology, chemistry, physics, earth and space sciences, astronomy, and atmospheric sciences that requires PHYS 121 or CHEM 142/CHEM 145 as a prerequisite.

2. *Mathematics (15-18 credits):* MATH 124, MATH 125, MATH 126, (or MATH 134, MATH 135, MATH 136); MATH 308 or MATH 318 (waived if MATH 136 taken); MATH 390/STAT 390 or MATH 391/STAT 391.
3. *Required Courses (29 credits):* CSE 142, CSE 143, CSE 311, CSE 312, CSE 331, CSE 332, CSE 351.
4. *Senior Electives (minimum of 20 credits):* At least 33 additional credits from courses on the approved CSE electives list in the CS&E handbook, including at least the following:
 - a. Six courses from the CSE Core Courses list in the CS&E handbook of which four courses must be 400-level CSE courses.
 - b. Either one additional course from the CSE Core Courses list or one course from the CSE Capstone list in the CS&E handbook.
5. Minimum 2.0 grade for any course applied to the major. Transfer students must earn a minimum of 24 graded credits toward the major at the UW.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The computer science field has a broad base of private- and public-sector jobs suitable for the Bachelor of Science graduate: systems analyst, systems programmer, applications programmer, technical sales and marketing, and hardware or software engineering specialist. In addition, there are jobs for which graduate education may be appropriate: producers and developers of computer systems, and teachers and researchers. The field is also highly valued for practicing entrepreneurship.
- *Instructional and Research Facilities:* Paul G. Allen Center for Computer Science and Engineering includes more than 20,000 square feet of laboratories, nearly 1,000 computer systems, and more than 50 terabytes of storage. Gigabit connectivity is provided to every desktop by more than 60 miles of data cabling, and wireless access is available throughout the building.

CSE general-purpose laboratories support the diverse set of hardware and software platforms required for a cutting-edge education in the field. CSE special-purpose laboratories provide tailored support for activities such as mobile robotics, computer graphics, digital design, motion capture, embedded systems, laser scanning, educational technology, networking, and artificial intelligence.

The Allen Center is one of the finest computer science and computer engineering facilities in the nation. All of its capabilities are available to all CSE students.

- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Internships and co-op opportunities are available for computer science undergraduates. See www.engr.washington.edu/coop and depts.washington.edu/careers for information.
- *Departmental Scholarships:* CSE has a limited number of scholarships available to current CSE majors. Scholarship information is listed at www.cs.washington.edu/education/ugradscholars/scholarships.html
- *Student Organizations/Associations:* A student chapter of the Association for Computing Machinery (ACM) operates within CSE.

Dance

256 Meany

Dance is part of a liberal arts curriculum and provides students a foundation for future advanced work in dance pedagogy, performance, choreography, dance science, dance studies, or other movement-related fields. Faculty work closely with students to guide them on the educational track that best serves their career goals. Information about the dance major's creative studies and dance studies options, dance minor, dance endorsement, and Master of Fine Arts degree in dance can be found at dance.washington.edu

UNDERGRADUATE PROGRAM

Adviser

256 Meany, Box 351150

(206) 543-9843

danceadv@uw.edu

The Dance Program offers the following programs of study:

- The Bachelor of Arts degree with a major in dance, with options in either creative or dance studies.
- A minor in dance.
- OSPI approved Dance Endorsement

Bachelor of Arts

Program Admission Requirements

Applicants who meet the following requirements are accepted during autumn, winter, and spring quarters on a rolling basis.

1. Minimum 2.00 cumulative GPA.
2. Interview with Dance Program adviser to assess applicant's dance background, goals and interests, time to degree, and preparation for the major to ensure proper placement in dance coursework.
3. *Dance Studies Option*: Admission is competitive and is based on the applicant's capacity to engage in rigorous and independent research and writing with faculty supervision. Applicants complete DANCE 250, submit a Dance Studies application, and submit a writing portfolio of DANCE 250 course assignments.
4. *Creative Studies Option*: Either DANCE 250 or DANCE 251. Applicants must also be currently enrolled in a UW dance technique course (ballet or modern) so faculty can determine demonstration of minimum level of dance skill required to ensure the timely completion of requirements, and to evaluate appropriate level for further dance study.

Major Requirements

Minimum 57-67 credits in dance as follows:

1. *Core Curriculum (20-25 credits)*
 - a. *Gateway Course (5 credits)*: DANCE 250 or DANCE 251. (Students enrolled in the dance studies option must take DANCE 250 as their gateway course.)
 - b. *Dance History (5 credits)*: DANCE 344 or DANCE 345.
 - c. *Cross Cultural Studies (0-5 credits)*: One of DANCE 234, DANCE 250, DANCE 336, DANCE 350, or DANCE 420. (If DANCE 250 is taken as the gateway course, the cross-cultural requirement is satisfied and no other course from the cross-cultural list is required, except for students enrolled in the Dance Studies option, who take DANCE 350 or DANCE 420 in addition to DANCE 250).

d. *Technique (10 credits)*: From approved dance technique courses. See adviser for list of approved technique courses for each option. This requirement may be waived for students pursuing the dance studies option who have professional dance experience or those with a focus on dance form(s) not offered in the dance program curriculum. If the requirement is waived, students need to complete an additional 10 credits of approved electives.

2. Creative Studies Option (47 credits)

- a. *Required Courses (minimum 26 credits)*: DANCE 166, DANCE 242, DANCE 266, DANCE 270 (at least 1 credit), DANCE 271 (at least 1 credit), DANCE 480, DANCE 493, DANCE 494.
- b. *Dance Electives*: At least 3 credits from DANCE 234, DANCE 235, DANCE 251, DANCE 290, DANCE 336, DANCE 350, DANCE 366, DANCE 371, DANCE 420, DANCE 450, DANCE 490, DANCE 499.
- c. *Technique*: 18 credits from the following (12 credits minimum at the 300 level or above; 6 credits minimum in both ballet and modern dance; a maximum of 6 credits in the alternative movement studies series can be counted toward major technique requirements): DANCE 104, DANCE 105, DANCE 106, DANCE 107, DANCE 108, DANCE 109, DANCE 110, DANCE 111, DANCE 112, DANCE 201, DANCE 202, DANCE 203, DANCE 204, DANCE 205, DANCE 206, DANCE 210, DANCE 211, DANCE 212, DANCE 230, DANCE 231, DANCE 232, DANCE 233, DANCE 236, DANCE 237, DANCE 238, DANCE 239, DANCE 241, DANCE 301, DANCE 302, DANCE 303, DANCE 304, DANCE 305, DANCE 306, DANCE 310, DANCE 311, DANCE 312, DANCE 401, DANCE 402, DANCE 403, DANCE 404, DANCE 405, DANCE 406.

3. Dance Studies Option (37 credits)

- a. *Required Courses (9 credits)*: DANCE 350 or DANCE 420, DANCE 415, and DANCE 416.
- b. *Dance Electives (minimum 17 credits)*: At least 17 credits from the following: DANCE 166, DANCE 234, DANCE 235, DANCE 242, DANCE 251, DANCE 266, DANCE 270, DANCE 271, DANCE 290, DANCE 336, DANCE 344 (if not taken as part of core curriculum), DANCE 345 (if not taken as part of core curriculum), DANCE 350, DANCE 366, DANCE 414, DANCE 420, DANCE 450, DANCE 480, DANCE 490, DANCE 493, DANCE 494, and DANCE 499.
- c. *Approved Electives (minimum 11 credits)*: Approved elective courses based on individual interests and decided in conjunction with Dance Program adviser and faculty.

Minor

Minor Requirements: Minimum 25 credits to include 10 credits from DANCE 100, DANCE 101, DANCE 166, DANCE 234, DANCE 235, DANCE 242, DANCE 250, DANCE 251, DANCE 270 (max. 3), DANCE 271 (max. 3), DANCE 290, DANCE 336, DANCE 344, DANCE 345, DANCE 350, DANCE 410, DANCE 414, DANCE 420, DANCE 490, DANCE 493, DANCE 494, DANCE 499; and 15 credits from DANCE 102, DANCE 103, DANCE 104, DANCE 105, DANCE 106, DANCE 107, DANCE 108, DANCE 109, DANCE 110, DANCE 111, DANCE 112, DANCE 201, DANCE 202, DANCE 203, DANCE 204, DANCE 205, DANCE 206, DANCE 210, DANCE 211, DANCE 212, DANCE 230, DANCE 231, DANCE 232, DANCE 233, DANCE 236, DANCE 237, DANCE 238, DANCE 239, DANCE 241, DANCE 301, DANCE 302, DANCE 303, DANCE 304, DANCE 305, DANCE 306, DANCE 310, DANCE 311, DANCE 312, DANCE 324, DANCE 401, DANCE 402, DANCE 403, DANCE 404, DANCE 405, DANCE 406.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: The Dance Program curriculum provides a balance between

academic rigor and artistic development and serves as a basis for a broad range of career choices in dance related and other fields demanding strong communication skills, creativity, commitment, and the ability to work collaboratively and independently. Majors are encouraged to supplement their dance studies with coursework in other disciplines that provide a foundation for later specialization in dance ethnology, dance history and criticism, performance art, education, movement therapy, or movement science.

- *Instructional and Research Facilities*: Three spacious and well-equipped dance studios in Meany Hall. A video and sound editing facility. Use of Meany Hall and the Meany Studio Theatre for Dance Program performances.
- *Honors Options Available*: With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Dance Endorsement*: dance.washington.edu/dance-program-endorsement.
- *Department Scholarships*: See adviser.
- *Research, Internships, and Service Learning*: See adviser.
- *Student Organizations/Associations*: Dance Student Association

GRADUATE PROGRAM

Graduate Program Coordinator

255 Meany, Box 351150

206-543-5594

uwdance@uw.edu

The UW Dance Program offers graduate study leading to a Master of Fine Arts degree that prepares dance artists (who have had a minimum of eight years professional performance experience) for careers in higher education. The full two-year program begins mid June and includes summer quarter study. MFA candidates are supported in the development of a scholarly dimension to their creative work in dance. MFA candidates receive a tuition waiver and earn a monthly stipend in exchange for working as a teaching assistant in the Dance Program. For more extensive information visit: dance.washington.edu/graduate-programs

Master of Fine Arts

Admission Requirements

1. A letter of interest, resume, and writing sample
2. An undergraduate degree from an accredited institution
3. Minimum eight years of professional performing experience
4. Ability to demonstrate movement skills at a professional level in at least one idiom, performance or website demonstrating performance range and ability, in person interview for final candidates
5. Three letters of reference verifying accomplishments in the professional dance arena and readiness for graduate study in dance
6. Neither a foreign language nor the Graduate Record Examination is required.
7. Application deadline is October 15. September 15 deadline for foreign applicants. Online application procedures available at www.grad.washington.edu/admissions/

Degree Requirements

Minimum 72 credits, to include:

During the full two-year program, a student is expected to enroll full-time (minimum 10 credits/quarter, including 9 credits during summer quarter). A student must complete at least 72 credits in order to earn the degree, 40 of which are in required courses.

1. *Required Coursework*: DANCE 510 (3, 12 total), DANCE 515 (3), DANCE 516 (3), DANCE 520 (3), DANCE 521 (3), DANCE 530 (2, total 4), DANCE 531 (3, total 6), DANCE 595 (3)
2. *Coursework or Competency*: Students must have taken the following courses as an undergraduate, or have mastered their content through practical experience, or complete them during their two years in the program: DANCE 493 (5), DANCE 544 (5), DANCE 545 (5), DANCE 590 (5).
3. *Coursework of Interest (not required)*: DANCE 420 (3), DANCE 535 (3), DANCE 536 (3), DANCE 550 (3), PHIL 445 (5) or PHIL 446 (5)

Financial Aid

All graduate students receive tuition waivers and teaching assistant stipends.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

DANCE 100 Understanding Dance (5) VLPA Introduces the aesthetics and creative processes in dance and choreography. Pays attention to how dance is practiced in social arenas, popular entertainment, and concert settings. Includes independent field trips to local dance settings. Offered: AWP.

DANCE 101 Dance and the American Experience (5) VLPA Investigates shared, conflicting, and shifting notions of the "American experience" as expressed in 20/21st century American dance. Investigates real, imagined, and idealized portrayals of the American experience as enacted on the concert stage, in film, and on television. Engages students in critical discourse on issues of identity in American society. Offered: AWP.

DANCE 102 Introduction to Dance (2-5, max. 10) VLPA Introduces dance as an art form. Lectures in dance appreciation. Studio experience in various dance forms: may include ballet, modern dance, musical theatre/jazz, and dance composition. Includes attendance at outside events. Offered: AWP.

DANCE 103 Introduction to Dance (2-5, max. 10) VLPA Introduces dance as an art form. Studio experience in various dance forms. May include ballet, modern dance, musical theatre/jazz, and dance composition. Includes attendance at outside events. Prerequisite: DANCE 102.

DANCE 104 Modern Technique (1-8, max. 12) VLPA Beginning-level technique. Development of basic modern dance movement and terminology. Prerequisite: either DANCE 102 or DANCE 103. Offered: A.

DANCE 105 Modern Technique (1-8, max. 12) VLPA Beginning-level technique. Development of basic modern dance movement and terminology. Prerequisite: either DANCE 103 or DANCE 104. Offered: W.

DANCE 106 Modern Technique (1-8, max. 12) VLPA Beginning-level technique. Development of basic modern dance movement and terminology. Prerequisite: either DANCE 104 or DANCE 105. Offered: Sp.

DANCE 107 Ballet Technique (1-8, max. 12) VLPA Beginning-level technique. Development of basic ballet technique and terminology. Prerequisite: either DANCE 102 or DANCE 103. Offered: A.

Prerequisite: either DANCE 102 or DANCE 103. Offered: A.

DANCE 108 Ballet Technique (1-8, max. 12) VLPA Beginning-level technique. Development of basic ballet technique and terminology. Prerequisite: DANCE 107. Offered: W.

DANCE 109 Ballet Technique I (1-8, max. 12) VLPA Beginning-level technique. Development of basic ballet technique and terminology. Prerequisite: either DANCE 107 or DANCE 108. Offered: Sp.

DANCE 110 Jazz Technique I (1-4, max. 8) VLPA Introduction to jazz technique. Prerequisite: either DANCE 102 or DANCE 103. Offered: A.

DANCE 111 Jazz Technique I (1-4, max. 8) VLPA Introduction to jazz technique. Prerequisite: DANCE 110 or permission of instructor. Offered: W.

DANCE 112 Jazz Technique I (1-4, max. 8) VLPA Introduction to jazz technique. Prerequisite: DANCE 111 or permission of instructor. Offered: Sp.

DANCE 166 Dance Composition I (5) VLPA Introduction to the principles of dance composition through improvisation.

DANCE 201 Ballet Technique II (1-8, max. 12) VLPA Advanced-beginning level. Continued development of all beginning areas. Expansion of ballet vocabulary. Prerequisite: either DANCE 108 or DANCE 109. Offered: A.

DANCE 202 Ballet Technique II (1-8, max. 12) VLPA Advanced-beginning level. Continued development of all beginning areas. Expansion of ballet vocabulary. Prerequisite: DANCE 201. Offered: W.

DANCE 203 Ballet Technique II (1-8, max. 12) VLPA Advanced-beginning level. Continued development of all beginning areas. Expansion of ballet vocabulary. Prerequisite: either DANCE 201 or DANCE 202. Offered: Sp.

DANCE 204 Modern Dance Technique II (1-8, max. 12) VLPA Advanced-beginning level technique. Continued development of all beginning areas and expansion of movement vocabulary. Prerequisite: either DANCE 105 or DANCE 106. Offered: A.

DANCE 205 Modern Dance Technique II (1-8, max. 12) VLPA Advanced-beginning level technique. Continued development of all beginning areas and expansion of movement vocabulary. Prerequisite: DANCE 204. Offered: W.

DANCE 206 Modern Dance Technique II (1-8, max. 8) VLPA Advanced-beginning level technique. Continued development of all beginning areas and expansion of movement vocabulary. Prerequisite: either DANCE 204 or DANCE 205. Offered: Sp.

DANCE 210 Jazz Technique II (1-4, max. 8) VLPA Intermediate-level jazz technique. Continued development of beginning areas. Expansion of movement vocabulary. Prerequisite: DANCE 112. Offered: A.

DANCE 211 Jazz Technique II (1-4, max. 8) VLPA Intermediate-level jazz technique. Continued development of beginning areas. Expansion of movement vocabulary. Prerequisite: DANCE 210. Offered: W.

DANCE 212 Jazz Technique II (1-4, max. 8) VLPA Intermediate-level jazz technique. Continued development of beginning areas. Expansion of movement vocabulary. Prerequisite: either DANCE 210 or DANCE 211. Offered: Sp.

DANCE 230 Alternative Movement Studies (1-3, max. 9) VLPA Introduction to an alternative approach to movement study. Topics vary and may include pilates, yoga, Feldenkrais, or other somatic practices.

DANCE 231 Folk-Social Dance Forms (1-3, max. 12) VLPA Studio course in folk dance and social dance forms. Topics vary, and may include salsa, ballroom, or swing. Prerequisite: one year of previous dance experience.

DANCE 232 Intermediate Alternative Movement Studies (1-3, max. 9) VLPA Study of an alternative approach to movement at the intermediate level. Topics vary and may

include pilates, yoga, Feldenkrais, or other somatic practices.

DANCE 233 Advanced Alternative Movement Studies (1-3, max. 9) VLPA Study of an alternative approach to movement at the advanced level. Topics vary and may include pilates, yoga, Feldenkrais, or other somatic practices.

DANCE 234 World Dance and Culture (3/5, max. 11) VLPA/I&S Presents selected dance idioms as they relate to ethnicity in their performance, aesthetics, and history. Topics vary. May have studio component.

DANCE 235 Integrated Dance: Training and Composition (1-3, max. 9) VLPA/I&S Investigates and explores ways of teaching and creating dance suitable for diverse participants with a broad range of physical and conceptual abilities. Addresses composition and movement technique utilized by integrated dance. May culminate in performance in faculty dance concert.

DANCE 236 Salsa and Latin Dance (2-3, max. 12) VLPA J. MCMAINS Offers instruction in salsa and other Latin dances, including meringue, bachata, and cha cha cha. Students learn both solo (shine) steps and partnered turns. Primarily focuses on studio practice. Includes some reading and writing assignments and an outing to a salsa club.

DANCE 237 Ballroom Dance (2-3, max. 12) VLPA J. MCMAINS Provides instruction in ballroom dances (e.g. waltz, foxtrot, rumba, quickstep, samba, cha cha). Focuses on American style social dancing with particular attention to techniques for leading and following. Primarily focuses on studio practice. Includes reading and writing assignments, historical/cultural significance of ballroom dance, and an outing to social ballroom dance.

DANCE 238 Swing Dance (2-3, max. 12) VLPA J. MCMAINS Provides instruction in swing dancing. Includes: East Coast Swing, Charleston, Lindy Hop, Balboa, and West Coast Swing. Primarily focuses on studio practice. Uses reading, writing, and other assignments to contextualize the history and social significance of the dances.

DANCE 239 Tango (2-3, max. 12) VLPA J. MCMAINS Provides instruction in tango dancing. Focuses on milongero and salon style Argentine tango. Introduces tango Nuevo, tango vals, and milonga. Primarily focuses on studio practice. Includes some reading and writing assignments, introduction to tango dance and music history, and an outing for social dancing.

DANCE 241 Intermediate Folk and Social Dance Forms (2/3, max. 12) VLPA Studio course in folk dance and social dance forms at the intermediate level of instruction. Topics include salsa and Latin dance, ballroom, tango, or swing dance. Prerequisite: either DANCE 231, DANCE 236, DANCE 237, DANCE 238, or DANCE 239.

DANCE 242 Music in Relation to Dance (3) VLPA Moore Provides students with music skills necessary to the areas of dance pedagogy, performance, choreography, dance analysis/criticism, and production. Includes an introduction to music theory, compositional and rhythmic analysis, music for dance class, and training on music/sound editing equipment. Offered: W.

DANCE 250 Cross-Cultural Dance Studies (1-5, max. 8) VLPA/I&S J. MCMAINS Gateway course for dance major. Examines dance as a universal activity and expression of cultural identity. Offers a cross-cultural and historical view of a variety of theatrical, vernacular, and sacred dance forms, and investigates the myriad ways that dance functions across societies. Offered: AW.

DANCE 251 The Creative Process (5) VLPA Salk Explores the creative process of some of the major artists of the last century, with a particular emphasis on dance. Hones critical thinking, analytical skills, and research-based writing. Studio exploration, lectures, and discussions covering approaches to artistic creation, critical thinking, and research. Offered: Sp.

DANCE 266 Dance Composition II (3-5, max. 10) VLPA Dance composition in relation to music. Emphasis on solos and small groups. Prerequisite: DANCE 166. Offered: W.

DANCE 270 Dance Performance Activities (1-3, max. 12) VLPA *Bracilano* May include performance or choreography in Dance-program produced concerts under faculty supervision. Credit/no-credit only.

DANCE 271 Dance Production Crew (1-3, max. 12) VLPA Supervised dance crew experience in dance program produced concerts. Credit/no-credit only.

DANCE 290 Forces and Figures in American Jazz Dance (3) VLPA/I&S Addresses multi-cultural influences that American vernacular dance and music contributed to the development and presentation of musical theatre, dance, film and stage traditions in American popular entertainment. Examines how the trajectories of the African Diaspora impacted developments in these distinct arenas of the American entertainment industry.

DANCE 301 Ballet Technique III (1-8, max. 12) VLPA Intermediate level. Expansion of ballet vocabulary. Prerequisite: DANCE 203. Offered: A.

DANCE 302 Ballet Technique III (1-8, max. 12) VLPA Intermediate level. Expansion of ballet vocabulary. Prerequisite: DANCE 301. Offered: W.

DANCE 303 Ballet Technique III (1-8, max. 12) VLPA Intermediate-level. Expansion of ballet vocabulary. Prerequisite: DANCE 302. Offered: Sp.

DANCE 304 Modern Dance Technique III (1-8, max. 12) VLPA Intermediate-level technique. Expansion of movement vocabulary. Prerequisite: DANCE 206. Offered: A.

DANCE 305 Modern Dance Technique III (1-8, max. 12) VLPA Intermediate-level technique. Expansion of movement vocabulary. Prerequisite: DANCE 304. Offered: W.

DANCE 306 Modern Dance Technique III (1-8, max. 12) VLPA Intermediate-level technique. Expansion of movement vocabulary. Prerequisite: DANCE 305. Offered: Sp.

DANCE 310 Jazz Technique III (2, max. 8) VLPA Advanced-level jazz technique. Styles vary. Prerequisite: DANCE 212. Offered: A.

DANCE 311 Jazz Technique III (2, max. 8) VLPA Advanced-level jazz technique. Investigation of jazz styles such as Afro-Caribbean, Luigi, and musical theatre. Prerequisite: DANCE 310. Offered: W.

DANCE 312 Jazz Technique III (2, max. 8) VLPA Advanced-level jazz technique. Investigation of jazz styles such as Afro-Caribbean, Luigi, and musical theatre. Prerequisite: either DANCE 310 or DANCE 311. Offered: Sp.

DANCE 324 Partnering Techniques (1-2, max. 6) VLPA Studio course in partnering techniques used in social dance and contemporary dance practices, or classical dance. Prerequisite: intermediate level technique.

DANCE 336 Integrated Dance: History, Methodology, and Praxis (3, max. 9) VLPA/I&S Investigates and practices ways of teaching and creating dance suitable for diverse participants with a broad range of physical and conceptual abilities. Addresses the history, background, and varying practices of integrated dance.

DANCE 344 Topics in Dance History (3-5, max. 10) VLPA/I&S E. COOPER Covers topics in Western theatre dance history from Renaissance court dance through the twentieth century. Examines developments and stylistic trends in ballet and modern dance in cultural/historical/political context. Includes assigned readings and primary source materials. In-depth analysis of dances on video guides a discussion of form, content, interpretation, and critical reception.

DANCE 345 Contemporary Dance History (3-5) VLPA/I&S J. SALK Examines the development of social and performance-based dance from the beginning of the 20th century to the present with particular emphasis on major inter-

national stylistic trends, cultural influences, and principal artists and their work.

DANCE 350 Dance/Performance Ethnography (3) VLPA/I&S J. MCMAINS Explores theoretical and practical experience in dance and performance ethnography, ethnology, and oral history. Introduces theories and methods of ethnographic fieldwork, ethnographic writing, and ethnologic analysis. Focuses primarily on dance. Also discusses methods and theories applicable to other physical practices such as music, theatre, sports, and performance arts. Offered: jointly with ANTH 349.

DANCE 354 Laban Movement Analysis (5) VLPA Introduction to the movement theories of Rudolph Laban and his proteges. Coursework includes effort/shape, space harmony, and an introduction to Labanotation. May include collaboration with other disciplines. Prerequisite: DANCE 166.

DANCE 366 Dance Composition III (3-5, max. 10) VLPA Dance composition in relation to production, including elements of technology. Emphasis on larger group works. Prerequisite: DANCE 166. Offered: Sp.

DANCE 371 Choreographic Workshop (2-5, max. 12) VLPA Performing experience for students in pieces choreographed by faculty members and guest choreographers.

DANCE 401 Ballet Technique IV (1-8, max. 12) VLPA Advanced level. Includes expansion of ballet vocabulary. Prerequisite: DANCE 303. Offered: A.

DANCE 402 Ballet Technique IV (1-8, max. 12) VLPA Advanced level. Advanced level. Includes expansion of ballet vocabulary. Prerequisite: DANCE 401. Offered: W.

DANCE 403 Ballet Technique IV (1-8, max. 12) VLPA Advanced level. Advanced level. Includes expansion of ballet vocabulary. Prerequisite: DANCE 402. Offered: Sp.

DANCE 404 Modern Dance Technique IV (1-8, max. 12) VLPA Advanced technical skills applied to longer dance sequences. Includes expansion of movement vocabulary. Prerequisite: DANCE 306. Offered: A.

DANCE 405 Modern Dance Technique IV (1-8, max. 12) VLPA Advanced technical skills applied to longer dance sequences. Includes expansion of movement vocabulary. Prerequisite: DANCE 404. Offered: W.

DANCE 406 Modern Dance Technique IV (1-8, max. 12) VLPA Advanced technical skills applied to longer dance sequences. Includes expansion of movement vocabulary. Prerequisite: DANCE 405. Offered: Sp.

DANCE 410 Chamber Dance Production (3, max. 18) VLPA H. WILEY Focuses on the restaging, rehearsal, and performance of significant choreography from the modern dance canon. Readings, viewings, and oral history provide context for works being staged. Culminates in a professional public performance. Credit/no-credit only. Offered: S.

DANCE 414 Dance Research Symposium (1) VLPA J. MCMAINS Introduces students to contemporary dance research through lecture series featuring invited guest speakers. Credit/no-credit only.

DANCE 415 Research Methods I (3) VLPA J. MCMAINS Surveys theoretical modes of inquiry in current dance scholarship. Offered: Sp.

DANCE 416 Research Methods II (3) VLPA E. COOPER Focuses on designing an original research project, conducting research, and writing a scholarly paper suitable for presentation at an undergraduate research conference. Practice in conference presentation. Prerequisite: DANCE 415. Offered: A.

DANCE 420 Dance Aesthetics (3) VLPA/I&S Woody Philosophical investigation of the expressive elements of dance. Reading and discussion of the concepts of beauty, style, and aesthetic theory.

DANCE 450 Dance Internship (1-6, max. 6) VLPA Supervised internship experiences at pre-approved off-site lo-

cation in the performing arts/non-for profit arts sectors. Credit/no-credit only. Offered: AWSpS.

DANCE 480 Senior Seminar (3) VLPA H. WILEY Provides a synthesis of experiences in the Dance Program with a focus on current and future individual interests and the transition to post-graduate life. Includes guest lecturers in dance professions. Offered: W.

DANCE 490 Special Studies in Dance (1-3, max. 12) VLPA Special studies designed to address contemporary and historical concerns in the field of dance.

DANCE 493 Anatomy for Dance (3-5) VLPA/NW H. WILEY Anatomy of the musculoskeletal system and its applications in dance movement. Offered: A.

DANCE 494 Dance Teaching Methodologies (3-5) VLPA J. SALK Introduction to dance pedagogy, including educational theory, motor learning, and biomechanical principles and music as it relates to the teaching of dance. Prerequisite: DANCE 242, DANCE 493, and a minimum of one quarter of ballet and/or modern technique at the 300 level or above. Offered: W.

DANCE 499 Undergraduate Independent Study (*, max. 10)

DANCE 510 Chamber Dance Production (3, max. 18) Wiley Focuses on the restaging, rehearsal, and performance of significant choreography from the modern dance canon. Readings, viewings, and oral history provide context for works being staged. Culminates in a professional public performance. Credit/no-credit only. Offered: S.

DANCE 514 Dance Research Symposium (1) McMains Introduces students to contemporary dance research through lecture series featuring invited guest speaker. Credit/no-credit only.

DANCE 515 Dance Research Methods (3) McMains Survey of theoretical modes of inquiry in current dance scholarship. Offered: Sp.

DANCE 516 Research Methods II (3) McMains Focuses on designing an original research project, conducting research, and writing a scholarly paper suitable for publication in a juried journal or conference presentation. Practice in conference presentation. Offered: S.

DANCE 520 Dance in Higher Education (3) Wiley Discussion, writing, and observation of dance in higher education. Offered: A.

DANCE 521 Dance Administration (3) Cooper Readings and discussion relating to dance administration in college and professional settings. Topics include: curricular development, university governance, development of curriculum vitae and teaching portfolio, preparation for tenure and promotion, and current issues related to dance as a performing art within the university structure.

DANCE 530 Graduate Dance Composition (2, max. 6) Addresses creative process, directing, and critical analysis in dance composition. Alternate years: focus on interdisciplinary collaborative projects. Offered: A.

DANCE 531 MFA Concert Production (3, max. 9) Public performance of MFA choreography. On alternate years this is a collaborative concert between MFA choreographers and artists working in another discipline. Offered: Sp.

DANCE 536 Integrated Dance: History, Methodology, and Praxis (3, max. 9) VLPA/I&S Koch Investigates and practices ways of teaching and creating dance suitable for diverse participants with a broad range of physical and conceptual abilities. Addresses the history, background and varying practices of integrated dance.

DANCE 544 Topics in Dance History (3-5, max. 10) Cooper Covers topics in Western theatre dance history from Renaissance court dance through the twentieth century. Examines developments and stylistic trends in ballet and modern dance in cultural/historical/political context. Includes assigned readings and primary source materials.

In-depth analysis of dances guides a discussion of form, content, interpretation, and critical reception.

DANCE 545 Contemporary Dance History (3-5) *Salk* Examines the development of social and performance-based dance from the beginning of the twentieth century to the present with particular emphasis on major international stylistic trends, cultural influences, and principal artists and their work.

DANCE 550 Dance Performance Ethnography (3) *McMains* Theoretical and practical experience in dance and performance ethnography, ethnology, and oral history. Introduces theories and methods of ethnographic fieldwork, ethnographic writing, and ethnologic analysis. Focuses on dance methods and theories. Also discusses methods and theories applicable to other physical practices such as music, theatre, sports, and performance art. Offered: jointly with ANTH 549; W.

DANCE 570 Dance Production Seminar (3) Surveys the process of dance production from audition to performance. Managing design, technology, and personnel to support the creative process from conceptual stages to production. Offered: S.

DANCE 590 Dance Teaching Methodologies (3-5) *Salk* Introduction to dance pedagogy with an emphasis on motor learning skills and biomechanics. Practical teaching experience. Offered: W.

DANCE 595 Master's Project (3) Project in area of interest developed in consultation with faculty adviser and supported by elective courses. Full faculty approval of proposed project by end of first year. Formal presentation, appropriate to project's content, presented to full faculty during second year. Project culminates in the teaching of an undergraduate dance course.

DANCE 600 Independent Study or Research (*-)

Digital Arts and Experimental Media

207 Raitt

The processes of inquiry encompassing imagination, exploration, discovery, and reflection are universal among artists, scholars, scientists, and engineers. All seek to uncover new knowledge through innovations that improve our lives and communicate new ways of understanding ourselves and the universe. The Center for Digital Arts and Experimental Media (DXARTS) is a creative research convergence zone for intrepid artists and scholars who are pioneers of an unfolding new era in the arts.

The DXARTS program embraces an expansive range of arts practice, theory, and research across multiple disciplines. The center is home to its own undergraduate and graduate degree programs, but welcomes into its facilities and courses many who are not directly affiliated with one of these programs. Faculty and students at DXARTS may focus their work in a particular area of experimental arts (digital video, digital media art, computer music and sound art, computer animation, design computing, mechatronics, and so on), or they may pursue areas of creative research that have no media allegiance overlapping with and drawing from several or many different areas. Whatever the case, artists and scholars working at DXARTS engage in teaching, learning, and research within the synergistic, multidisciplinary setting of the center's labs, studios, and classrooms.

A common thread running through all of the work at DXARTS is the implicit maxim that to discover new knowledge we must challenge all assumptions. DXARTS is a place where the ideas and outcomes of creative arts research are in an ongoing state of becoming.

UNDERGRADUATE PROGRAM

Adviser

207 Raitt Hall, Box 353414

206-221-6085

dxarts@uw.edu

The DXARTS program offers the following program of study:

- The Bachelor of Fine Arts degree with a major in digital arts and experimental media

Bachelor of Fine Arts

Program Admission Requirements

Admission is once a year. Application, normally during the sophomore year, is made during winter quarter for admission in spring. Admission is competitive. A minimum 2.50 GPA guarantees consideration, but the GPA of accepted applicants is normally considerably higher.

All applicants, regardless of background and proposed course of study, are expected to show a significant level of computing skill and general technology literacy.

Students must enroll in DXARTS 200 autumn quarter. Based on performance in DXARTS 200, students are selected to continue in DXARTS 201 winter quarter. Students enrolled in DXARTS 201 are eligible to submit an application and supplemental materials to be considered for admission spring quarter. Supplemental materials include an electronic portfolio, a statement of interest in the program, and a proposed course-of-study plan. For details, see the program's website. Students must complete the following prior to application:

1. CSE 142
2. PHYS 114 or PHYS 121
3. MUSIC 120
4. ART H 203
5. Mathematics proficiency through the pre-calculus level. Proficiency may be demonstrated by completion of MATH 120 or equivalent, a minimum score of 68% on the UW Advanced Mathematics placement test, a minimum score of 2 on the mathematics AP exam, or completion of a college-level calculus course.

Major Requirements

In addition to the courses required for admission as described above, major requirements include the following:

1. 64-74 credits of DXARTS courses, as follows:
 - a. DXARTS 202 (5 credits)
 - b. Three quarters of DXARTS 400 (9 credits total)
 - c. DXARTS 461, DXARTS 462, DXARTS 463 (15 credits)
 - d. Completion of one of the following four DXARTS sequences (15 credits): DXARTS 441, DXARTS 442, DXARTS 443 (3D Motion and Graphics); DXARTS 451, DXARTS 452, DXARTS 453 (Video); DXARTS 471, DXARTS 472, DXARTS 473 (Mechatronics).
 - e. Completion of a third core sequence as listed above or one of the following fundamentals courses dealing with a third content area (5 to 15 credits): DXARTS 440, DXARTS 450, DXARTS 460, or DXARTS 470.
 - f. Senior thesis in the form of 15 credits of DXARTS 491, DXARTS 492, and DXARTS 493, including the completion and exhibition of a B.F.A. thesis project that is a significant and original contribution both aesthetically and technically.
2. 20-30 credits in additional DXARTS courses, or courses from a list of approved electives in other areas, to bring total major credits to 94. See department website or advising office for a list of approved electives.

3. A minimum 2.0 grade in all DXARTS courses counted toward the major. A cumulative GPA of 2.50 in all DXARTS courses and approved electives.

4. For complete information about the B.F.A. program visit the program's website.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The program goal is to create opportunities for entering artists to discover and document new knowledge and expertise. Unlike other B.F.A. degrees, which offer initial professional studio art education, this B.F.A. is primarily a pre-graduate, research-oriented degree, signifying that an individual is professionally qualified to investigate fundamental problems in the nature and practice of digital arts and experimental media. Graduates are prepared to pursue original creative and technical research in the field and contribute to the development of knowledge and its consequences in society and culture.
- *Instructional and Research Facilities:* DXARTS houses extensive laboratories and advanced research studios with state-of-the art computing, imaging, sound, networking, mechatronics, and electronics equipment to support a wide range of experimental art.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Some areas of research and professional opportunities within DXARTS include digital video art, computer music composition, website design and programming, 3D animation, motion graphics design, user interface design, sound design, interactive media production, multimedia art, electronic stage and set design, authoring of electronic online publications, special effects design, virtual environment design, sound art, and installations art (in galleries, public, and virtual spaces).
- *Department Scholarships:* Limited in number with competitive application processes. Please see adviser for details.
- *Student Organizations/Associations:* None.

GRADUATE PROGRAM

Graduate Program Coordinator

207 Raitt Hall, Box 353414

206-543-4218

dxarts@uw.edu

Doctor of Philosophy

The goal of doctoral education in Digital Arts and Experimental Media is to create opportunities for artists to discover and document new knowledge and expertise at the most advanced levels higher education can offer. While creating new art is at the center of all activities in the program, the DXARTS Ph.D. is a research-oriented degree requiring a substantial commitment to graduate-level study and reflection. The Ph.D. degree prepares artists to pursue original creative and technical research in digital arts and experimental media and to pioneer lasting innovations on which future artists and scholars can build.

Admission Requirements

1. Master's degree or equivalent in a discipline or field related to the proposed doctoral work.
2. Portfolio of artistic work.
3. Statement of purpose

4. Competence in computing, general technology literacy, and skill and imagination in the applicant's areas of interest.
5. One copy of the Graduate School's Application Form
6. One sealed official transcript from each collegiate institution attended.
7. A digitally-based portfolio of artistic work including any other documentation that can help the admissions committee make its evaluations. The portfolio should be thoughtfully organized in a digital format (CDROM, DVD, URL, etc.) that best represents the applicant's work. Non-digital supplemental materials should be included in the index on the digital portfolio.
8. A complete curriculum vitae and narrative biography
9. Three letters of recommendation from instructors or professors familiar with the applicant's academic qualifications
10. International applicants must submit TOEFL and TSE scores

Degree Requirements

90 credits, to include:

1. Prior to the general examination, which concludes Phase Two of the program, six quarters of full-time study (minimum of 10 credits per quarter). DXARTS 500 is required every quarter.
2. 60 credits of DXARTS approved courses (not including DXARTS 800 credits). At least 30 of the credits earned must be at the 500 level. At least 30 must be in graded 400- and 500-level courses.
3. Minimum 3.00 GPA in DXARTS courses.
4. General examination
5. Final project - a substantial and original contribution in both artistic and technical domains. At least 27 credits of DXARTS 800 over a period of at least three quarters before taking the final doctoral examination.
6. Two-part final examination. Registration as a doctoral student is required during the quarter the examination is taken.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

DXARTS 198 Digital Arts Seminar (1-5, max. 10) VLPA Topics vary and are announced during the preceding quarter. Taught by UW faculty and visiting artists, engineers, scientists, and humanities scholars.

DXARTS 200 Digital Art and New Media: History, Theory, and Practice (5) VLPA Provides a historical and critical overview of artists and scientists pioneering the digital arts. Discusses important digital media issues from aesthetics, creative strategies, emerging trends, and socio-cultural aspirations.

DXARTS 430 Algorithmic Processes in the Arts (5) VLPA Basics of computer programming and algorithmic thinking in digital arts. Emphasis on experimental art forms where building of custom software is integral to realizing an artistic vision.

DXARTS 450 Digital Video Foundations (5) VLPA Foundations of experimental film and video art production. Emphasis on research and critique of historical and contemporary experimental film and video art, as well as conceptual and technical experimentation in art-making with the moving image. Introduction to digital video: preproduction, production, and postproduction. Students work individually and in small teams.

DXARTS 451 Experiments in Video Art I (5) VLPA Introduces real-time video software for the creation of immer-

sive installations, multimedia performance, and video art. Workshops demonstrate advanced compositing, multi-channel video, time delay, and live-image processing. Students explore the intersections of experimental video and contemporary art through individual projects, discussions, and critiques.

DXARTS 452 Experiments in Video Art II (5) VLPA Students work on individual projects while exploring such research topics as robotic camera motion, computer vision, interactivity, and video integration with physical I/O systems. Prerequisite: DXARTS 451. Offered: W.

DXARTS 460 Digital Sound (5) VLPA Foundations of digital sound for digital arts applications. Project-based course focused on creating experimental sound compositions. Overview of the history of electronic music and analysis of important works from its cannon. Acoustics, psychoacoustics and digital sound theory. Digital signal processing and recording techniques. Multi-track, recording, editing, mixing, and mastering using Digital Audio Workstations (DAW). Offered: Sp.

DXARTS 461 Digital Sound Synthesis (5) VLPA Introduction to software sound synthesis techniques. Project-based course focused on creating experimental sound compositions framed by context of the Western Art Music Tradition. Includes acoustics and psychoacoustics; virtual synthesizers; wavetable synthesis; additive synthesis; ring, amplitude, and frequency modulation synthesis; granular synthesis; and noise and subtractive synthesis. Offered: jointly with MUSIC 401; A.

DXARTS 462 Digital Sound Processing (5) VLPA Introduction to digital sound processing techniques. Project-based course focused on creating experimental sound compositions framed by context of the Western Art Music Tradition. Includes digital effects; delay lines; introduction to digital filtering; FIR and IIR filters; reverberation; virtual-room acoustics and sound location; time-domain transformation of sound; and granulation and time stretching. Prerequisite: DXARTS 461/MUSIC 401. Offered: jointly with MUSIC 402; W.

DXARTS 463 Advanced Digital Sound Synthesis and Processing (5) VLPA Advanced sound processing and synthesis techniques. Includes sound time warping; analysis-synthesis techniques; linear predictive coding; the phase vocoder; frequency-domain sound transformations; introduction to physical modeling. Prerequisite: DXARTS 462/MUSIC 402. Offered: jointly with MUSIC 403; Sp.

DXARTS 470 Sensing and Control Systems for Digital Arts (5) VLPA Covers basic electronics for integrating sensors and actuators into art installations and performance. Includes real-time systems programming and design using simple software tools for controlling video and audio as well as hardware tools for data I/O to control electromechanical and sensing devices.

DXARTS 471 Mechatronic Art, Design, and Fabrication I (5) VLPA Part one of three-quarter studio sequence exploring mechatronic art systems. Includes mechanics, electronics, software, advanced fabrication methods and real-time audio/video processing. Offered: A.

DXARTS 472 Mechatronic Art, Design, and Fabrication II (5) VLPA Part two of three-quarter studio sequence exploring mechatronic art systems. Includes mechanics, electronics, software, advanced fabrication methods and real-time audio/video processing. Prerequisite: DXARTS 471. Offered: W.

DXARTS 490 Special Topics in Digital Arts and Experimental Media (3-5, max. 15) Taught by UW faculty and visiting artists, engineers, scientists, and humanities scholars.

DXARTS 491 Senior Thesis I (5-) VLPA Introductory course of the senior thesis sequence. Includes weekly seminars, selection of a thesis topic, and contract with an appropriate faculty adviser. Majors and senior standing only. Offered: A.

DXARTS 492 Senior Thesis II (-5-) VLPA Second course of the senior thesis sequence. Majors and senior standing only. Prerequisite: DXARTS 491. Offered: W.

DXARTS 495 DXARTS Production Studio (3-15, max. 30) VLPA Intensive, large-scale, collaborative, experimental media-based art projects. Examples include major interactive art installations, cinematic works, live computer music performances, and mechatronic or telematic collaborations. Topic vary.

DXARTS 499 Undergraduate Research (1-5, max. 12) Supervised independent work on projects and research. Offered: AWSpS.

DXARTS 500 Research Studio (3, max. 30) Covers recent advances and current trends in digital arts and experimental media research. Students discuss and demonstrate their own ongoing research and creative projects. In-depth examination of new artwork and research by pioneering figures in the field. Prerequisite: DXARTS graduate student.

DXARTS 505 Research Techniques in Digital Arts (3) Digital arts research resources; structuring and strategizing research as part of artistic development; standards for writing and publishing; ethics and approach to technology transfer, and issues such as patenting. Prerequisite: DXARTS doctoral student.

DXARTS 517 Psychology of Audio and Visual Perception in the Arts (5) Processes behind sound and image perception, with emphasis on cognition and practical applications for artists. Includes cross-modal theory and synaesthesia. Prerequisite: DXARTS graduate student.

DXARTS 528 Real-Time Digital Image Processing (5) Theory, aesthetics, and practice of real-time video manipulation/performance systems. Theory and high-level programming of image synthesis and processing.

DXARTS 552 Advanced Topics in Digital Video (5) Covers recent advances and current trends in digital video research. May include in-depth examination of new artwork and research by faculty, students, and visiting professionals. Prerequisite: DXARTS 450; and either DXARTS 451 or DXARTS 452.

DXARTS 565 Spectral Modeling of Sound (5) Theory and practice of sound modeling in the spectral domain. Custom-designed software for spectral modeling and re-synthesis. Implementation of spectral tools for spectral analysis, transformation, and synthesis. Emphasizes the development of new software tools and the production of experimental sound compositions. Prerequisite: DXARTS 463.

DXARTS 567 Sound in Space (5) Theory and practice of spatial sound. Spatial hearing mechanisms. Stereo microphone techniques. 3D sound field capture and reconstruction using first and high order ambisonics. VBAP, WFS, and other advanced sound spatialization techniques. Introduction to aural architecture and spatial audio composition with emphasis on the production of experimental sound pieces and installations. Prerequisite: DXARTS 463.

DXARTS 569 Real-time Digital Sound Processing (5) Introduction to real-time digital sound processing techniques. Includes: foundation of real-time systems; integration; reactive environments in performance and installation work; interfaces; communication protocols (MIDI, TCP); feature detection; pitch tracking; transient detection; time-domain processing techniques; frequency-domain processing techniques; algorithmic processes. Prerequisite: DXARTS 463.

DXARTS 571 Telematic Art I (5) Focuses on the production of artworks that make use of real-time information networks. Topics include Internet art, database-driven art, and telematic installation art. Prerequisite: either DXARTS 470, DXARTS 473, or permission of instructor.

DXARTS 598 Advanced Topics in Digital Arts and Experimental Media (3-5, max. 21) Covers recent advances and current trends in digital arts and experimental media re-

search. Various topics may include in-depth examination of new art work and research by faculty, students, and visiting professors.

DXARTS 600 Independent Study or Research ([1-9]-) Credit/no-credit only.

DXARTS 800 Doctoral Dissertation (*-) At least 27 hours of dissertation credit is required for the award of a Ph.D. in Digital Arts and Experimental Media. No more than 10 credits may be taken in any quarter, except summer. Credit/no-credit only.

Drama

101 Hutchinson

Theatre reflects the most compelling and complex issues of the human experience. It invites innovative understanding, collaborations, and dialogue and in turn creates community through the unique shared social experience of live performance. For artists and scholars it demands curiosity, invention, the courage to take risks, as well as practical application and the discipline required to succeed in any field.

The School of Drama offers courses of study which transforms artists and scholars into innovative and courageous poised-to- become creative leaders and engaged global citizens.

Through mastering skills and techniques applicable to any group endeavor, and acquaintance with established and innovative performance traditions and theories, students of theatre employ intellectual and creative rigor and develop entrepreneurial skills. This approach enables them to develop their own authentic, original voices and visions and engage the complexities, gravity, and joys of our world.

UNDERGRADUATE PROGRAM

Adviser

129 Hutchinson Hall, Box 353950

(206) 543-4204

uwdrama@uw.edu

The School of Drama offers the following program of study:

- The Bachelor of Arts degree with a major in drama

Bachelor of Arts

The Bachelor of Arts in Drama teaches the history, theory, methods, and techniques of the art of theatre. Students who study drama discover their individual creative voices that make them unique and engaged global citizens.

At its core, the undergraduate program in drama instills creative and critical thinking skills, promotes collaboration and academic rigor, and provides practical experiences in creative enterprise.

Suggested First- and Second-Year College Courses: See department admission requirements below.

Department Admission Requirements

DRAMA 201 and DRAMA 251; one of the following: DRAMA 210, DRAMA 211, DRAMA 212, DRAMA 213; one of the following: DRAMA 290, DRAMA 291, DRAMA 292; and a minimum 2.50 GPA for the four courses.

No audition is required to enter the program.

Major Requirements

65-70 credits as follows:

1. DRAMA 201, DRAMA 251, DRAMA 252, DRAMA 302, DRAMA 371, DRAMA 372, DRAMA 373, DRAMA 401 (36 credits)

2. Three courses from DRAMA 210, DRAMA 211, DRAMA 212, DRAMA 213 (12 credits)
3. Two courses from DRAMA 290, DRAMA 291, DRAMA 292 (2 credits)
4. One choice/special studies course from DRAMA 365, DRAMA 416, DRAMA 494, or other adviser-approved course (5 credits)
5. One of the options shown below (10-15 credits)
 - a. *General Drama:* 10 credits of approved 300- or 400-level DRAMA electives
 - b. *History, Theory, and Criticism Option:* No longer accepting students - pending elimination
 - c. *Performance Option (15 credits)*
 - i. DRAMA 466 (2 credits)
 - ii. One course from DRAMA 351, DRAMA 352, DRAMA 352 (4 credits)
 - iii. One course from DRAMA 451, DRAMA 452, DRAMA 453, DRAMA 454, DRAMA 455, DRAMA 456, DRAMA 457 (3-4 credits)
 - iv. 300- or 400-level DRAMA electives (to reach 15 credits)
 - d. *Design Option (15 credits)*
 - v. One additional course from DRAMA 210, DRAMA 211, DRAMA 212, DRAMA 213 (4 credits)
 - vi. DRAMA 466 (2 credits)
 - vii. One additional course from DRAMA 290, DRAMA 291, DRAMA 292 (1 credit)
 - viii. Advanced design: DRAMA 314, DRAMA 316, DRAMA 414, DRAMA 415, DRAMA 417, DRAMA 418, DRAMA 419, DRAMA 420, DRAMA 421 (3-4 credits)
 - ix. 300- 400-level approved electives (to reach 15 credits)

Continuation Policy

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

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The faculty of the School of Drama considers the optimum preparation for the theatre artist to be comprised of a liberal arts undergraduate major in drama and a graduate conservatory education.

Learning objectives include enriched artistic expression, a foundation for further study, and cultivation of essential life skills: teamwork, communication, critical thinking, and imagination.

Students earning the Bachelor of Arts in drama are prepared to seek employment in the theatre industry, apply for advanced degrees in a specific area of theatre (e.g., MFA in acting or design), or transfer the skills gained through the program to broader career opportunities. Recent graduates have pursued careers in acting, design, directing, technical direction, stage management, dramaturgy, playwriting, literary management, teaching, and in such non-theatre occupations as real estate agent, fund-raiser, public relations staff, politician, librarian, academic counselor, lawyer, nurse, translator of foreign films, admissions counselor, trade show/convention production assistant, talent agent, casting director, music promoter, special events coordinator, tour guide, human resources coordinator, wedding coordinator, aerobics instructor, music promoter.

- *Instructional and Research Facilities:* Rehearsal and performance spaces include the Glenn Hughes Pent-

house Theatre (the first theatre-in-the-round built in the United States), the thrust-stage Floyd and Delores Jones Playhouse, the end-stage Meany Studio Theatre, and the proscenium in Meany Hall. Other spaces include the Cabaret, Studio 201, and Hutchinson 218. School of Drama facilities include a design studio, costume shop, scene shop, and computer labs.

The Drama Library houses reserve books, plays, sound effects, dialect tapes, local audition and job notices, and a special collection of acting editions. Also available are specialized indexes and theatre databases. The librarian assists in the use of reference materials and indexes, bibliographic searches of on-line databases, and offers reference service and bibliographic instruction sessions for groups and individuals.

- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Student participation in all aspects of dramatic art is provided through student productions, and faculty- and student-directed plays drawn from the full range of world dramatic literature and produced throughout the year. The school also produces operas in association with the School of Music

To enhance employability and gain hands-on experience, students are encouraged to participate in internships with regional theatres, and related organizations or businesses. Academic credit may be earned for internships under the course number DRAMA 493. Internship credits count toward drama elective credits to graduate. A resource guide to drama-related internships is available at the drama undergraduate advising website.

Drama students are also encouraged to apply for undergraduate research, leadership, and/or fellowship grants available through the Mary Gates Endowment.

- *Department Scholarships:* School of Drama scholarships are awarded annually every spring for the following academic year to students who have demonstrated academic merit and contributed significantly to the School of Drama. Applications are distributed from the advising office.
 - *Student Organizations/Associations:* The Undergraduate Theater Society (UTS) is a student organization that produces undergraduate theatre works in the Cabaret black-box performance space in Hutchinson Hall. Any UW student may audition for UTS productions. UTS members also participate in annual New Student Orientation and other school events on a volunteer basis.
- A volunteer elected group of drama students, the BA Council, meets regularly with the School of Drama Executive Director and head of the Bachelor of Arts program to discuss issues relative to the undergraduate program.

GRADUATE PROGRAM

Graduate Program Coordinator

101 Hutchinson, Box 353950

(206) 543-0714

uwdrama@uw.edu

The School of Drama offers professional training and scholarly programs leading to the Master of Fine Arts (MFA) and Doctor of Philosophy (PhD) degrees. Areas of study for the MFA degree are acting, stage direction, scene design, lighting design, and costume design. Most students should expect to spend three intensive years completing the requirements for the MFA degree.

The PhD program provides students with training for scholarly research in theatre history, dramatic literature, theory, and criticism. It also hosts the UW's Center for Performance Studies and connects students with related classes on campus.

Master of Fine Arts -- Acting

Admission Requirements

Admission is based on a private audition and interview with the head of the Professional Actor Training Program (PATP).

Applicants should prepare the following:

1. A two-minute monologue from a modern prose play
2. A two-minute Shakespearean verse monologue
3. Approximately 16 bars of a song, a cappella or with auditioner-provided accompaniment
4. Auditioners should also be ready to detail their previous training.

Students who hold (or will hold by the time they enroll) a baccalaureate degree from an accredited institution may apply. Most applicants have undergraduate degrees in theatre, but it is not essential. All applicants must demonstrate outstanding talent to be admitted. The GRE is not required. International applicants must meet the minimum TOEFL and TSE scores and other requirements listed on the Graduate School's website (www.grad.washington.edu/admissions/index.shtml)

Applicants must submit the following to Graduate Programs, School of Drama, University of Washington, Box 353950, Seattle, WA 98195-3950:

1. The School of Drama PATP application form (available for download from the school's website) with the preferred audition date indicated
2. A non-refundable audition fee, payable by check or money order to the School of Drama. Applications postmarked after the deadline must include a late application fee of \$10. This is a separate fee from the one due to the Office of Graduate Admissions.
3. A headshot
4. A current résumé of training and experience in the applicant's field
5. One set of unofficial transcripts
6. A statement of purpose, including educational and professional goals
7. Two letters of recommendation

Degree Requirements

The primary focus of PATP training is to provide actors with the practical tools and sensibilities to become outstanding theatre actors comfortable and effective in all media. During the three-year course of study, every student appears in at least seven productions, two self-written solo shows, an in-depth dialect project, and extensive scene and technique classes.

The program is structured to immerse students in the traditional vocabulary and practices set down by Konstantin Stanislavski and informed by the individual professional experiences of the faculty. The program is also designed to increase the actors' expressiveness through "instrument classes" in voice, speech, dialects, coordination (Alexander Technique), Viewpoints, and Suzuki-based movement. During the three years of study, students become well versed in the established canon of western dramatic literature.

Throughout the year PATP students have opportunities to audition for summer theatre festivals from around the region and country. The program also maintains productive relationships with professional theatres in Seattle and the region such as the Seattle Repertory Theatre, Intiman, Empty Space, ACT, Seattle Children's Theatre, The Guthrie Theatre, and the Oregon Shakespeare Festival.

During the third year, classes and projects focus on career and business. At the end of the third year, students prepare a professional showcase for Seattle, Los Angeles, and New York, and each actor in the program leaves with a professional quality audition reel. All PATP students are evaluated by the acting faculty at the end of each quarter. Students are admitted with the expectation that all graduate, although dismissal is possible given two unsatisfactory critiques.

Required coursework is 90 credits, to include:

1. 36 credits of DRAMA 557
2. 36 credits of DRAMA 558
3. DRAMA 551
4. DRAMA 552
5. DRAMA 553
6. 6 credits of DRAMA 559
7. 9 credits of DRAMA 700

Master of Fine Arts -- Directing

Admission Requirements

The program tends to choose candidates who show evidence of enterprising energy and accomplishment "out in the world," who may have successfully assisted seasoned directors, and who have at least the beginning of a professional and artistic record. While there is always room for the exceptional applicant, it is extremely difficult to gain admission directly out of a BA program with no other credentials. This program accepts only two MFA candidates.

1. All Applicants

- a. Applicants submit the following to Graduate Programs, School of Drama, Box 353950, Seattle WA 98195-3950:

- i. The separate directing application form (available for download from the School's website) and fee, made payable to the School of Drama. This fee is separate from that due to the Office of Graduate Admissions.
- ii. A current résumé of training and experience in the field
- iii. A statement of purpose including educational and professional goals
- iv. Three letters of recommendation
- v. One set of unofficial transcripts
- vi. A directorial analysis of a play or opera chosen from a preselected list

- b. All applicants for graduate study at the UW must also apply to the Office of Graduate Admissions. The GRE is not required for any applicant to this program. International applicants must meet minimum TOEFL and TSE scores and other requirements as listed on the Graduate School's website (www.grad.washington.edu/admissions/faq/international.shtml) and should apply by November 1.

2. Second step for selected applicants: A short list of candidates (12-16) is invited to continue the application process and interview, either in person or via video conferencing.

- a. Candidates interview for 30 minutes with the head of the program
- b. Candidates present a two-minute monologue as a way of revealing, not acting talent but the candidate's knowledge of what it is to speak dialogue, transmit thoughts, and physically relate to space.
- c. Candidates are asked to respond to a two-page questionnaire provided by the School of Drama.

3. *Third step for final short listed applicants:* A small group of four to eight candidates is invited to Seattle to be interviewed in person by a group of faculty. As part of this

interview each candidate conducts a rehearsal of one of three pre-selected scenes with actors provided by the School of Drama. These actors are familiar with the material and are ready to be on their feet. Candidates receive the scene options and any additional information when notified of their selection to this short list.

Degree Requirements

The directing program at the UW School of Drama is a three-year intensive, conservatory program designed to prepare students for successful entry into the professional theatre. Classes and training include work in a range of types and styles of dramatic work, including realistic, non-realistic, classical, and contemporary plays. Directing lab, seminar, Suzuki, and Viewpoints are taken every quarter. Acting process work includes Stanislavski, action theory, Shakespeare, Chekhov, and contemporary realism.

Every quarter each student directs in the classroom, studio, or both. Plays are selected in conjunction with the faculty and the length and nature of the project is determined by each student's pedagogical needs at the time. On occasion directing students serve as assistant directors to members of the faculty and/or visiting artists during their time at the School of Drama.

In the second year, each student directs a workshop production of a full-length play in the school's subscription season. In both the first and second year, each director may also direct in the annual short play festival. In the third year, each student directs a fully produced, full-length play as a thesis in either the winter or spring quarter.

90 credits, to include the following:

1. 14 credits of DRAMA 563
2. 12 credits of DRAMA 567
3. Electives chosen from DRAMA 419, DRAMA 510, DRAMA 560, DRAMA 561, DRAMA 562, and DRAMA 569
4. 9 credits of DRAMA 700

Additional Coursework: After discussions with each student the faculty may advise additional coursework in such areas as Alexander technique, dialects, lighting design, combat, literature, or history of styles and costume.

All students are evaluated by all contact faculty each quarter.

Internships: One quarter of the program is devoted to a professional internship experience. MFA directors may intern either locally, nationally, or internationally during winter or spring quarter of the third year.

Master of Fine Arts -- Design

Admission Requirements

Applicants to the design program must submit a portfolio representative of their work and interview with design faculty. They may mail the portfolio to the School of Drama and interview with a faculty member on the phone or via video conferencing. It is always preferable for applicants to bring the portfolio with them and visit Seattle to interview with design faculty and sit in on graduate design classes. Other required application materials and fees are detailed below.

The program generally accepts two students in each area. While there is always room for the exceptional applicant, it is extremely difficult to gain admission directly out of a BA/BFA program with no other credentials.

Interviews: A personal interview is highly recommended, preferably in Seattle. Interviews are held in Seattle from mid-January to the beginning of March, with a limited number scheduled each week. Interviews are held when possible on Thursday afternoons and applicants are invited to visit classes Thursday morning. Applicants fill out the MFA design application form completely and indicate how and when they plan both to submit their portfolio and to

interview with faculty. Applications must be received by the school before an interview is scheduled.

Portfolios: Portfolio materials need not be matted nor in a presentation case. The portfolio may include hand drafting, renderings, photographs of realized work or of models, costume sketches, and other graphic work or high-quality photocopies of same, blue lines and/or duplicate slides. Work should be presented in chronological order and should demonstrate strong graphic skills (including accurate rendering of the human figure) and the ability to devise effective design solutions to the problems posed by a script. It is particularly desirable for the portfolio to include examples of drawing or painting not intended as theatre design projects: figure drawing, landscape, architectural sketching or lighting, lighting installations, etc. Again, high quality photocopies are acceptable.

For lighting design applicants, the portfolio should include examples of hand or computer drafting, two or more complete projects including a one-page statement of conceptual approach, hook-up, plot, and cue ideas. It should also include samples of set sketches and life drawing.

Application Procedures: For questions about the application procedure, contact the School of Drama's graduate program assistant at (206) 543-0714 or email uwdrama@uw.edu.

The GRE is not required for any applicant. International applicants must meet minimum TOEFL and TSE scores and other requirements as listed on the Graduate School's website (www.grad.washington.edu/admissions/index.shtml)

1. Submit the following to Graduate Programs, School of Drama, Box 353950, Seattle WA 98195-3950:
 - a. Portfolio (or bring to the interview in Seattle)
 - b. The separate design application form (available for download from the school's website) and fee. This fee is separate from the one due to the Office of Graduate Admissions (B below).
 - c. A current résumé of training and experience in the field
 - d. Three letters of recommendation
 - e. A statement of purpose including educational and professional goals
 - f. One set of unofficial transcripts
2. All applicants for graduate study at the UW must also apply to the Office of Graduate Admissions.

Degree Requirements

90 credits, to include:

The MFA program is three years in length. The first year is devoted primarily to studio course and skill building, while realized production designs become a focus of the second and third years. In the third year, students complete a ten-week professional internship before returning to the School of Drama for two quarters with a final thesis project occurring in either of those quarters. The program of study is intended to give the student the skills needed to work productively in his or her area of interest and to help the student develop his or her own individual artistic vision. The design studio is a core class taken each quarter by directors and design students in all disciplines where students are asked to create designs for works for the stage. Other studio and skills courses develop proficiency. Each course of study also requires students to work in the other design disciplines. In addition, professional designers and/or directors working in Seattle are often invited to attend classes and offer critiques or discuss their work, and students regularly assist faculty on outside projects. The costume shop, scene shop, electrics shop, design studio, and light lab are well equipped and staffed by full-time professional production staff.

Scenic Design: Through a rigorous succession of studio assignments and realized production work, students in

scenic design are expected to develop proficiency of expression via drawing and painting, drafting, model building, scene painting, and a working knowledge of scenic and property construction. Production work is emphasized in the second and third years of residency.

Costume Design: Emphasizes the aesthetic as well as intellectual analysis of theatrical or operatic texts and how one turns these impulses into three-dimensional, unified designs. Students have intensive exposure to this process as they are mentored through the production of their designs as well as through classes, which encompass design, construction, graphic skills, and history. Production work in costume design is emphasized in the second and third year of residency.

Lighting Design: The lighting design program focuses on dramaturgical understanding, communication with collaborators, and a rigorous understanding of a lighting design process. The lighting curriculum emphasizes the development of both theoretical/thinking and practical/compositional skills. Production work in lighting may occur in the first year, but is emphasized in the second and third years, and often includes dance.

Doctor of Philosophy

Admission Requirements

Preference is given to applicants with MA/MFA degrees and theatre experience but those who hold a baccalaureate degree from an accredited college or university are eligible to apply. Applicants submit the following materials on line at www.grad.washington.edu/applForAdmiss/

1. An essay or thesis chapter representative of the applicant's best scholarly work
2. Graduate Record Examination (GRE) test scores
3. A current résumé of training and experience in the field
4. A statement of purpose including educational and professional goals
5. Three letters of recommendation.
6. One set of unofficial transcripts

International applications must meet minimum TOEFL and TSE scores and other requirements as listed on the Graduate School's website, (www.grad.washington.edu/admissions/faq/international.shtml)

Degree Requirements

Minimum 110 credits, to include:

Three years of coursework, including a sequence of 16 seminars and annual examinations. These linked courses provide complete preparation in the major issues of historical study and contemporary critical practice. Students also enroll in a minimum of three courses outside the School of Drama and must complete an upper-level reading course in a foreign language. Specific coursework includes DRAMA 571, DRAMA 572, DRAMA 573, DRAMA 575, DRAMA 576, DRAMA 577, DRAMA 581, DRAMA 582, DRAMA 583, DRAMA 585, DRAMA 586, and DRAMA 587, as well as 30 credits of DRAMA 800.

The PhD program hosts the UW's Center for Performance Studies and connects doctoral students with related classes on campus. The sequence of drama seminars reflects the changing needs of students, the developing research of the faculty, and the conditions of contemporary scholarship. Special topics in the history sequence have included Restoration theatre, drama in the Industrial Age, communism and capitalism, and ancient theatre history. Seminars in criticism have included reading, interpretation and performance; mimesis and theatrical representation; the semiotics of theatre; and drama and Marxist theatre theory. Students are encouraged to develop original research in these seminars and to present their work at professional meetings or publish it in academic journals.

The fourth year of the program is devoted to writing a dissertation under the guidance of a faculty adviser. Recent doctoral dissertations have explored semiotics, feminism, American theatre history, contemporary English and German drama, ethnicity, and performance theory.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

DRAMA 101 Introduction to the Theatre (5) VLPA The theatre as an art form with emphasis on the play in production. The role of the various theatre artists: actors, directors, designers, and playwrights. Required attendance at one or more performances. Lecture and discussion groups. For nonmajors. Offered: AWSp.

DRAMA 103 Theatre Appreciation (5) VLPA Covers the art of live theatrical performance. Discussion of how theatre is assembled, who the artists are, what they do, how theatre differs from other media, and how the various genres and styles of performance function, to create a deeper understanding of live performance. Offered: AWSp.

DRAMA 201 Plays and Styles (5) VLPA Introduces theatre practitioners to the principles of play construction, to the process of reading and conceiving plays for production, and to the basic vocabulary of artistic styles through which plays are produced. Offered: AWSp.

DRAMA 210 Theatre Technical Practice (4) VLPA Intensive lecture-laboratory in basic theories, techniques, and equipment of the stage. Technical procedures.

DRAMA 211 Theatre Technical Practice (4) VLPA *Trout* Intensive lecture-laboratory in basic theories, techniques, and equipment of the stage. Costumes.

DRAMA 212 Theatre Technical Practice (4) VLPA Intensive lecture-laboratory in basic theories, techniques, and equipment of the stage. Stage lighting.

DRAMA 213 Introduction to Sound Design for Theatre (4) VLPA Explores the how and why of sound and music for theatre. Includes different uses for audio in plays; choosing sounds and pieces of music; basic editing of music, environments, and effects; designing a cohesive world of sound.

DRAMA 251 Acting (5) VLPA Explores theory and practice of fundamentals of American "method," based on principles of Stanislavsky and their American evolution. Development of basic acting skills through monologue work. Offered: AW.

DRAMA 252 Acting (5) VLPA Explores theory and practice of fundamentals of American "method," based on principles of Stanislavsky and their American evolution. Preparation of audition material and scene work within the context of entire play. Prerequisite: DRAMA 251. Offered: WSp.

DRAMA 259 Performance Practicum (2-6, max. 12) VLPA Special work in various aspects of performance technique.

DRAMA 290 Theatre Technical Practices Laboratory (1-3, max. 3) VLPA Laboratory course involving specific production assignment, either in-shop or in-theatre or both. Offered: AWSp.

DRAMA 291 Theatre Technical Practices Laboratory (1-3, max. 3) VLPA Laboratory course involving specific production assignment, either in-shop or in-theatre or both. Offered: AWSp.

DRAMA 292 Theatre Technical Practices Laboratory (1-3, max. 3) VLPA Laboratory course involving specific production assignment, either in-shop or in-theatre or both. Offered: AWSp.

DRAMA 298 Theatre Production (1-2, max. 9) VLPA Laboratory course for students participating in School of Drama minor productions and projects. Credit/no-credit only. Offered: AWSp.

DRAMA 302 Critical Analysis of Theatre (5) VLPA *Mihaylova* Analyses of plays, based on leading critical traditions. Illustrates variety of approaches to a play, criteria for choosing best approach for a given play, and ways in which criticism aids in understanding dramatic effect, for both reader and practitioner. Prerequisite: DRAMA 201.

DRAMA 303 The Structure of Dramatic Narrative (5) VLPA Examines the nature and structures of storytelling and the dramatic arts through seminal works on the topic and through examples of narrative from different parts of the world. Combines reading and lectures with student presentation skills. No previous performance experience necessary.

DRAMA 314 Introduction to Design for the Performing Arts (3) VLPA Survey of the role of design (scenery, costume, lighting, and sound) in the contemporary performing arts. Consideration of communicative mission and limitations of each of the design areas. Recommended: DRAMA 210; DRAMA 211; DRAMA 212.

DRAMA 316 Theatrical Makeup (2) VLPA Basic principles, with intensive practice in application of makeup for use on proscenium and arena stages.

DRAMA 317 Introduction to Costume Construction (2-5, max. 10) VLPA Introduction to clothing construction techniques applicable to theatrical costumes, fashion design, and textile arts. Includes lectures, demonstrations, and practice lab. Recommended: DRAMA 211; DRAMA 416.

DRAMA 351 Intermediate Acting-Scene Study (4) VLPA Actor-training methodologies of Stanislavsky, Meyerhold, Michael Chekov, and other physically-based approaches. Increases understanding of psychological motivation, concentration, focus of attention, clarity of physical expressiveness. Perform three scenes. Prerequisite: DRAMA 252; one of DRAMA 210, DRAMA 211, DRAMA 212, or DRAMA 213; one of DRAMA 290, DRAMA 291, or DRAMA 292.

DRAMA 352 Intermediate Acting-Verse (4) VLPA Addresses character motivation within classical verse of Shakespeare, Moliere, Racine, etc. Sonnets, monologues, scenes in iambic pentameter and rhyming couplet, exploring rhythm, music, and how these relate to character psychology, motivation. Prerequisite: DRAMA 252; one of DRAMA 210, DRAMA 211, DRAMA 212, or DRAMA 213; one of DRAMA 290, DRAMA 291, or DRAMA 292.

DRAMA 353 Intermediate Acting - Production (4) VLPA Explores the ten-minute play. Focus shifts to full-length play script, developing ensemble playing, sustained concentration, focus of attention, character motivation, and extended through-line. Culminates in public performance. Prerequisite: DRAMA 252; one of DRAMA 210, DRAMA 211, DRAMA 212, or DRAMA 213; one of DRAMA 290, DRAMA 291, or DRAMA 292.

DRAMA 365 Ethnic Studies in Drama (3-5, max. 15) VLPA/I&S *Curtis-Newton* Theatre and plays, post-World War II to the present. Style, content, and context explored. Emphasis on social, political, and economic milieu from which theatre arose. Playwrights studied may include Alice Childress, August Wilson, Lynn Nottage, Percy Mtwa, Luis Valdez, and Maria Fomes. Prerequisite: DRAMA 302.

DRAMA 371 Theatre History I (5) VLPA/I&S Explores the history of European theatre and theatre culture from ancient Greece and Rome, through the High Middle Ages, to the emergence of the first professional theatres in Elizabethan England and Spain in the Golden Age.. Prerequisite: DRAMA 302.

DRAMA 372 Theatre History II (5) VLPA Covers Western European theatre from Italian Renaissance to the late eighteenth century. Beginning with humanism, examines Renaissance beginnings in Italy and its influence, unique practices in England and France, and then theatre of the English Restoration, the European Enlightenment, and revolutions in France and America. Prerequisite: DRAMA 302.

DRAMA 373 Theatre History III (5) VLPA Focuses on major works, forms, and styles of drama in Western European

theatre from the mid-nineteenth century to the present. Explores modern and contemporary theatre from the rise of realism to modernist innovations with reference to cultural contexts, interpretive problems, and dramatic criticism.

DRAMA 374 History of Greek and Roman Theatre (5) VLPA *Johnson* Survey of Classical and Hellenistic Greek and Roman theatre culture, including texts, architecture, iconography, scenic practices, and conventions of performance from the Festival of Dionysus to the bloodsports of the Roman arenas. Prerequisite: DRAMA 302.

DRAMA 377 History of Medieval and Renaissance Theatre (5) VLPA *Johnson* Survey of the rise of theatre from the early liturgical drama through the High Middle Ages to the Reformation and the great flowering of secular drama in Elizabethan England and the Golden Age of Spain. Prerequisite: DRAMA 302.

DRAMA 378 History of European Theatre, Renaissance to Revolution (5) VLPA *Johnson* Survey of the drama, theatre, and theatre culture from the Italian Renaissance through the French Revolution. Examines the rise of court culture, opera, French neo-classicism, as well as the popular media dell'arte. Prerequisite: DRAMA 302.

DRAMA 391 Beginning Technical Practices (1-3, max. 9) VLPA Laboratory course involving specific production assignments, either in-shop or in-theatre, or both. Recommended: DRAMA 290; DRAMA 291; DRAMA 292.

DRAMA 401 Majors Seminar (1, max. 2) VLPA A professional seminar featuring guest artists and career development specialists. Credit/no-credit only. Offered: W.

DRAMA 405 Computer Graphics Systems (3) VLPA Introduction to CAD applications in theatre design and technology. Focus on learning to use general purpose graphics software for CAD. Discussion of available hardware and software. Recommended: DRAMA 420.

DRAMA 406 Digital Cinema Production (3-5) VLPA *Tsao* Explores applied narrative film grammar and cinematic technique. Covers operations of digital cinema equipment including cameras, cinema lighting, and editing software such as Final Cut Studio. Includes lab where students work in a professional motion picture crew structure to implement principles of cinematic narrative and gain experience directing actors on screen. Credit/no-credit only.

DRAMA 410 Advanced Theatre Technical Practices (2-4, max. 20) VLPA Production-related apprenticeship, in the areas of scene construction, scene painting, costume, or lighting. Recommended: DRAMA 210; DRAMA 211; DRAMA 212; DRAMA 418. Offered: AWSp.

DRAMA 414 Scene Design (3, max. 6) VLPA Theory, practice, and rendering of scene designs. Repeat of course involves intermediate designs and models. Prerequisite: DRAMA 210.

DRAMA 415 Stage Costume Design (3, max. 6) VLPA *Trout* Theory, practice, and rendering of costume designs for the theatre. Repeat of course involves intermediate designs. Recommended: ART H 203; DRAMA 211; DRAMA 416 if repeating.

DRAMA 416 History of Western Dress (5) VLPA *Gates* Survey history of Western dress. Emphasis on use of this information by theatrical costume designers. Includes development of costume for drama, ballet, and opera. Prerequisite: DRAMA 302. Offered: A.

DRAMA 417 Stage Costume Patterning and Construction (3, max. 6) VLPA Techniques of costume construction, including study of fabrics; emphasis on creating patterns by draping. Recommended: DRAMA 211; DRAMA 416.

DRAMA 418 Scene Painting (3, max. 6) VLPA Lecture-laboratory with focus on techniques and principles of scene painting. Uses of various media and types of equipment as applicable to varied scenic pieces. Recommended: DRAMA 210.

DRAMA 419 Advanced Stage Lighting Design (3, max. 9) VLPA Development of a working process consistent with

current professional practice. Includes drafting, work-sheets, study of color. Students read plays and develop analytical skills. Recommended: DRAMA 212.

DRAMA 420 Design and Technical Drafting (2, max. 4) VLPA Laboratory and project critique covering stage design graphics and technical drawing; specifically: designer's elevations, ground plans, sections, detail drawing, transposition of design drawing information to technical drawings. Recommended: DRAMA 210.

DRAMA 421 Drawing and Rendering Techniques for the Theatre (2, max. 10) VLPA Weekly figure-drawing laboratories with live model and weekly field trips for laboratories in drawing natural phenomena and architectural detail. Studies in historical drawing styles. Practice in use of several media and techniques of expression. Recommended: DRAMA 210; DRAMA 211.

DRAMA 441 Beginning Playwriting (1-6, max. 12) VLPA Writing exercises and drafts of a one-act play provide first experience in writing for performance. Readings of representative one-act plays introduce genres and writing styles.

DRAMA 451 Advanced Acting - Production Workshop (4) VLPA Improvisation skills. Methodology employed develops one five-minute solo work, using either original or adaptations of non-dramatic texts. Culminates in public showings of the five-minute one-person works.

DRAMA 452 Advanced Acting - Scene Study (4) VLPA Invites actor to create a role. Script reading for action and consequence. Use and employment of five senses to express a character's life, presenting a coherent and alive person to the stage. Culminates in public performance.

DRAMA 453 Advanced Acting - Physical Training (4) VLPA Introduction to physical training methods of Tadashi Suzuki, Kenji Suzuki, and the relationship of their methodologies to Constantin Stanislavsky. Contemporary monologues analyzed for psychological motivation, while exploring the physical analog of "action" as expressed and accessed by the new physical training.

DRAMA 454 Projects in Acting (3, max. 9) VLPA Rehearsal and classroom performance of dramatic literature of various periods and styles.

DRAMA 455 Alexander Technique (3) VLPA *Madden* A practical and theoretical introduction to the Alexander Technique, a psychophysical re-education process developed by F. M. Alexander (1869-1955). Studio application of this work improves physical/vocal coordination, enhances creativity, and clarifies thinking.

DRAMA 456 Topics in Theatre for Youth (3-5, max. 10) VLPA Topics in rehearsal and performance of theatre for young audiences; basic principles and techniques for using drama in the classroom; and creating original work for young audiences.

DRAMA 457 Creating Drama (3-5) VLPA *Frace, Tsao* Covers learning and application of creative methodologies for the theatre artist. Students study established systems of creative development, the use non-dramatic source texts as a foundation for adaptation into dramatic theatre pieces. Emphasizes artistic entrepreneurship, group collaboration, and applied narrative theories.

DRAMA 460 Introduction to Directing (4) VLPA *Curtis-Newton* Student is introduced to the art of the stage director. Recommended: DRAMA 210; DRAMA 211; DRAMA 212; either DRAMA 253 or DRAMA 353; DRAMA 302.

DRAMA 461 Elementary Directing (4) VLPA *Curtis-Newton* Elementary study of the art of the stage director. Recommended: DRAMA 460.

DRAMA 462 Elementary Directing (4) VLPA Elementary study of the art of the stage director. Recommended: DRAMA 461.

DRAMA 466 Stage Management (2-5, max. 15) VLPA *Stewart* Study and practice of stage management. Recommended: DRAMA 210; DRAMA 211; DRAMA 212; DRAMA 290; DRAMA 291; DRAMA 292.

DRAMA 471 History of the English Restoration and Eighteenth Century Theatre (5) VLPA Johnson Examination of the relationship of the physical theatre and the productions that took place within that theatre. Particular emphasis on the text performed, styles of acting, scenic elements, and the critical theories that influenced the theatre of the period. Prerequisite: DRAMA 302.

DRAMA 472 European and American Theatre, Revolution to Modernism: 1780-1920 (5) VLPA Johnson Survey of the drama, theatre, and theatre culture from the French Revolution into the beginnings of Modernism; social and political aspects of theatre, rise of Romanticism, melodrama, and variety entertainment through the nineteenth century to the artistic revolution that paved the way for modern theatre. Prerequisite: DRAMA 302.

DRAMA 473 Modern European Theatre and Drama (5) VLPA Major movements and figures in contemporary European theatre from French absurdism to the present. Prerequisite: DRAMA 302.

DRAMA 475 Modern English Theatre and Drama (5) VLPA Major trends in contemporary English theatre, post-World War II to the present. Performers, dramatists, and designers who shaped the course of the theatre following the "angry young rebellion" of the 1950s. Prerequisite: DRAMA 302.

DRAMA 476 Modern American Theatre and Drama (5) VLPA Major forces shaping modern American theatre, Eugene O' Neill to the present. Leading dramatists, directors, and designers of the post-World War II era. Experiments such as the Federal Theatre Project, Group Theatre, and Living Theatre. Prerequisite: DRAMA 302.

DRAMA 477 The Legacy of Epic Theatre (5) VLPA Traces the historical roots and world-wide influence of epic theatre by studying its plays, performances, ideological aims, and diverse contexts, from its beginnings continuing through to contemporary theater. Prerequisite: DRAMA 302.

DRAMA 478 Women in Theatre (5) VLPA Examines both the inclusion and exclusion of women by the cultural practice of theatre. Has two primary aims: to provide an historical overview of women in playwriting, acting, directing and criticism, and to apply contemporary social issues to the practice, texts, and criticism of the stage. Prerequisite: DRAMA 302.

DRAMA 490 Special Studies in Acting-Directing (1-6, max. 12) VLPA

DRAMA 491 Special Studies in Design-Technical (1-6, max. 12) VLPA

DRAMA 493 Drama Internship (1-6, max. 6) Supervised experiences in an off-campus venue.

DRAMA 494 Special Studies in Theatre and Drama (5, max. 20) VLPA Topics in drama, history, and criticism. See Time Schedule for specific topic. Prerequisite: DRAMA 302.

DRAMA 495 Practicum in Design and Technical Theatre (2-6, max. 15) VLPA Emphasis on developing design and technology problem-solving skills through laboratory and project evaluation.

DRAMA 496 Stage Costume Problems (2, max. 8) VLPA Specific research problems of stage costume design and execution: accessories, masks, wigs, fabric modification, millinery, or construction analysis for specialized costumes. Topics vary. Recommended: DRAMA 211; DRAMA 416.

DRAMA 498 Theatre Production (1-2, max. 9) VLPA Laboratory course for students participating in School of Drama major productions. Credit/no-credit only. Offered: AWSp.

DRAMA 499 Undergraduate Research (1-5, max. 15)

DRAMA 502 Designer-Director Analysis (4) Methods of examining plays to make the collaboration of director and designer productive. Attempts to create a structural whole from visual and verbal approaches to analysis.

DRAMA 510 Design Studio (1-5, max. 40) Korf, Lynch, Trout Design for live performance focused primarily on scenery and costumes. Includes comprehensive investigation of space, form, light, texture, and color in theatre design, interpretation of literary and musical text, understanding of dramatic action, and collaborative communication. Projects include a variety of theatrical and musical genres.

DRAMA 512 Advanced Lighting (1-4, max. 28) Intensive training in lighting design for performance. Includes intermediate and advanced paper projects as well as advanced practical projects. Spans a variety of performance genres and environments.

DRAMA 514 Design and Technical Theatre Colloquium (2, max. 18) Korf, Lynch, Trout Discussion of work in progress or completed in production, centering on the conceptual work of the designer/director on the production and the methods of execution in the shops and on stage. Offered: AWSp.

DRAMA 518 Studies in Historic Design (3) Investigation of artistic principles and modes that influenced the art, architecture, furniture, and decor of selected historic periods.

DRAMA 520 Advanced Theatre Practicum (1-5, max. 15) Professional student internship with professional theatres: scenery, lighting, scene painting, costume, acting, directing, stage management, theatre management. Prerequisite: permission of instructor.

DRAMA 523 Digital Rendering (3) Covers the basics of digital rendering with an emphasis and application on theatre renderings and sketches. Includes methods of collecting visual research, basic, concepts, and the practical use of software applications.

DRAMA 551 Teaching of Acting (1-3, max. 3) Seminar discussion on problems in teaching acting to undergraduate students in DRAMA 251, DRAMA 252, and DRAMA 253. Prerequisite: permission of instructor and being a teaching assistant in acting.

DRAMA 552 Teaching of Acting (1-3, max. 3) Seminar discussion on problems in teaching acting to undergraduate students in DRAMA 251, DRAMA 252, and DRAMA 253. Prerequisite: permission of instructor and being a teaching assistant in acting.

DRAMA 555 Studies in Acting (2-6, max. 18) Individual or group work on special skills for the actor. Topics vary. Prerequisite: admission to the Professional Actor Training Program. Offered: AWSp.

DRAMA 557 Studio I (12, max. 36) Curtis-Newton, Frace, Hafso, Jenkins, Madden, Shahn, Tsao, Zane Skill development in acting, voice, speech, and movement necessary for professional training in acting. Prerequisite: admission to the Professional Actor Training Program. Offered: AWSp.

DRAMA 558 Studio II (12, max. 36) Curtis-Newton, Frace, Hafso, Jenkins, Madden, Shahn, Tsao, Zane Continuation of DRAMA 557. Prerequisite: DRAMA 557 and completion of the first year of the Professional Actor Training program. Offered: AWSp.

DRAMA 559 Studio III (6, max. 18) Curtis-Newton, Frace, Hafso, Jenkins, Madden, Shahn, Tsao, Zane Specialized and individualized work relating to the main curriculum of the third year of the Professional Actor Training Program. Prerequisite: DRAMA 558 and completion of the second year of the Professional Actor Training Program. Offered: AWSp.

DRAMA 560 Managing the Rehearsal and Production Process (2) Introduction to graduate-level directing. Play analysis, research, performance theory, and concept development as it relates to process-acting and rehearsal, design, staging techniques, and production management. Reading and writing assignments augmented by faculty and professional guests in performance, design, production, and dramaturgy.

DRAMA 561 Directing Projects (2-3, max. 12) Rehearsal techniques and staging skills in a variety of spatial configurations. One-act and full-length plays which follow a prescribed sequence. Prerequisite: graduate standing in the directing program.

DRAMA 562 Performance Studio (1-3, max. 12) Performance techniques in specialized areas of importance to the professional director, including stage combat, speech and dialect, mask, physical comedy, improvisation, and puppetry.

DRAMA 563 Seminar in Directing (2, max. 18) Seminar discussion of current productions; focused readings and discussion in specific areas of dramatic literature and problems related to stage direction. Prerequisite: permission of instructor.

DRAMA 564 Theatre Studies: History, Theory, Criticism (3, max. 15) Special topics in history, theory, and criticism.

DRAMA 565 Verse Workshop (4) Techniques necessary to direct and perform plays of Shakespeare, Moliere, and other verse playwrights: scansion and imagery; period and style using verse text; crowd scenes, transformations of time and space, and other staging exercises; direction of scenes or acts from verse plays.

DRAMA 566 Directing for Cinema, Television, and Digital Media I (3) Tsao Covers the applied methodologies of classic narrative film grammar. Includes the role of the director, in standard production structures, script development and analysis, the language of traditional cinematic storytelling, directing the screen actor, editing, post production, and an examination of new digital media technologies.

DRAMA 567 Acting Process (1-3, max. 30) Development of acting skills necessary for the professional director. Emphasis on physical training, playing action, strong internal technique, imagination and clarity of expression.

DRAMA 568 Writing for the Stage (3, max. 6) Focus on adaptation for the stage of non-dramatic sources, such as literature, poetry, history, and contemporary events. Emphasis on structure, dialogue, dramatic action, rhythm, characterization. Writing exercises using fictive and non-fictive sources, biographical sources, and found objects. For MFA Directing students only.

DRAMA 569 Directing/Teaching Apprenticeship (3, max. 6) Assisting faculty or professional guest director in production for the entire rehearsal period, or assisting faculty in performance training.

DRAMA 571 Problems in Theatre History Research (5, max. 10) Johnson, Postlewait Methods and techniques of research, interpretation, and writing in theatre history. Relationship of theatre arts to culture in diverse periods and places.

DRAMA 572 Problems in Theatre History Research (5, max. 10) Johnson, Postlewait Methods and techniques of research, interpretation, and writing in theatre history. Relationship of theatre arts to culture in diverse periods and places.

DRAMA 573 Problems in Theatre History Research (5, max. 10) Johnson, Postlewait Methods and techniques of research, interpretation, and writing in theatre history. Relationship of theatre arts to culture in diverse periods and places.

DRAMA 575 Seminar in Theatre History (5, max. 10) Johnson Specific topics in theatre history, examining the drama of various national, linguistic, and/or religious culture in detail.

DRAMA 576 Seminar in Theatre History (5, max. 10) Johnson Specific topics in theatre history, examining the drama of various national, linguistic, and/or religious culture in detail.

DRAMA 577 Seminar in Theatre History (5, max. 10) Johnson Specific topics in theatre history, examining the drama of various national, linguistic, and/or religious culture in detail.

DRAMA 581 Analysis of Dramatic Texts (5, max. 10) S. MIHAYLOVA Analytic approaches to dramatic materials, concentrating on semiotics, Marxism, feminism, or a related critical theory.

DRAMA 582 Analysis of Dramatic Texts (5, max. 10) S. MIHAYLOVA Analytic approaches to dramatic materials, concentrating on semiotics, Marxism, feminism, or a related critical theory.

DRAMA 583 Analysis of Dramatic Texts (5, max. 10) S. MIHAYLOVA Analytic approaches to dramatic materials, concentrating on semiotics, Marxism, feminism, or a related critical theory.

DRAMA 585 Seminar in Dramatic Theory (5, max. 10) S. MIHAYLOVA Major problems in dramatic theory, such as aesthetics, mimesis, and the nature of theatre.

DRAMA 586 Seminar in Dramatic Theory (5, max. 10) S. MIHAYLOVA Major problems in dramatic theory, such as aesthetics, mimesis, and the nature of theatre.

DRAMA 587 Seminar in Dramatic Theory (5, max. 10) S. MIHAYLOVA Major problems in dramatic theory, such as aesthetics, mimesis, and the nature of theatre.

DRAMA 599 Advanced Studies in Theatre Arts (1-5, max. 20) Independent projects or group study of specialized aspects of theatre arts. Prerequisite: permission of instructor.

DRAMA 600 Independent Study or Research (*-)

DRAMA 700 Master's Thesis (*-)

DRAMA 800 Doctoral Dissertation (*-)

Economics

305 Savery

Economics studies the institutions and arrangements that societies use to create and allocate productive resources and advances our understanding of the choices and behaviors of individuals, households, firms, and other organizations. Its deep intellectual roots, rigorous analytical methods, and powerful ability to explain social phenomena warrant the importance of economics within the social sciences.

UNDERGRADUATE PROGRAM

Advisers

305 Savery, Box 353330

(206) 543-5794

econadv@uw.edu

The Department of Economics offers the following programs of study:

- The Bachelor of Arts degree with a major in economics
- The Bachelor of Science degree with a major in economics

The Bachelor of Arts degree is designed to provide a general background in economics, and is the choice of most departmental majors.

The Bachelor of Science degree requires more mathematics for admission, and its graduation requirements have a more pronounced quantitative emphasis.

Applied fields of study available include money and banking, industrial organization, environmental and natural resource economics, labor economics, public finance, comparative systems and development, international trade, and econometrics.

Bachelor of Arts

Suggested First- and Second-Year College Courses: ECON 200, ECON 201 and MATH 120, MATH 124 or MATH 111, MATH 112. Courses that develop strong analytical and quantitative-reasoning skills.

Department Admission Requirements

1. A minimum of 45 quarter credits completed, including ECON 200, ECON 201; STAT 311; one of the following: MATH 112, MATH 124, MATH 134, or MATH 145; and 5 credits of English composition
2. A minimum cumulative GPA for all prior college work of 2.50; minimum 2.50 GPA for all UW coursework, when applicable.
3. The minimum cumulative GPA for four of the five courses required for entrance (ECON 200, ECON 201; STAT 311; one of the following: MATH 112, MATH 124, MATH 134, or MATH 145) must be at least 2.50 with a minimum 2.0 for each of the five courses required for entrance.
4. A one-page personal statement, typed and double-spaced, responding to the following questions: What are your personal/educational goals, and how do you expect those to be met through an economics major? What background do you bring to the program? Describe any special experiences that would contribute to your studies in the field.
5. Completion of reading comprehension, critical thinking, and writing assessment essay. See department website for details.
6. Application deadline is the second Friday of each quarter (autumn, winter, spring). Admission is competitive. Meeting above criteria does not guarantee admission to the major.

Major Requirements

60 credits as follows:

1. Admission to the major.
2. A minimum 50 credits in economics, including ECON 200, ECON 201, ECON 300, ECON 301, and at least five other upper-division courses in economics at the 400 level, excluding ECON 496, ECON 497, and ECON 499.
3. STAT 311
4. Grades of 2.0 or higher in ECON 300 and ECON 301.
5. One calculus course (MATH 112, MATH 124, MATH 134, MATH 145, or equivalent).
6. Transfer students are required to complete a minimum of 25 upper-division economics credits in residence at the UW.

Bachelor of Science

Suggested First- and Second-Year College Courses: ECON 200, ECON 201 and MATH 120, MATH 124 and STAT 311. Additional calculus preparation during the first year is strongly recommended as MATH 125 and MATH 126 are required for admission. Courses that develop strong analytical and quantitative-reasoning skills.

Department Admission Requirements

1. A minimum of 45 quarter credits completed, including ECON 200, ECON 201; STAT 311, STAT 341, or STAT 390; MATH 124, MATH 125, and MATH 126 (or MATH 134, MATH 135, MATH 136); and 5 credits of English composition
2. A minimum cumulative GPA for all prior college work of 2.50; a minimum GPA of 2.50 for all UW coursework, when applicable.
3. The minimum cumulative GPA for four of the seven courses required for entrance - ECON 200, ECON 201; STAT 311, STAT 341, or STAT 390; calculus at the level of MATH 124, or first calculus course taken - must be at

least 2.50, with a minimum grade of 2.0 for each of the seven courses required for entrance.

4. A one-page personal statement, typed and double-spaced, responding to the following questions: What are your personal/educational goals, and how do you expect those to be met through an economics major? What background do you bring to the program? Describe any special experience that would contribute to your studies in the field.
5. Completion of reading comprehension, critical thinking, and writing assessment essay. See department website for details.
6. Application deadline is the second Friday of each quarter (autumn, winter, spring). Admission is competitive. Meeting the above criteria does not guarantee admission to the major.

Major Requirements

65 credits as follows:

1. Admission to the major.
2. 15 credits in MATH 124, MATH 125, MATH 126 (or equivalent).
3. A minimum of 50 credits in economics, including ECON 200, ECON 201; ECON 300, ECON 301. At least 15 credits of the following theory and methods courses: ECON 400 (or equivalent) or ECON 401, ECON 405, ECON 424, ECON 435 (if taken during or before autumn 2010), ECON 473, ECON 481, ECON 482, ECON 483, ECON 484, ECON 485, ECON 486. Of these, 5 credits should be chosen from either ECON 400 or ECON 401, and another 5 credits should be chosen from ECON 424, ECON 481, ECON 482, ECON 483. Students preparing for graduate work in economics should consider taking both ECON 400 and ECON 401. 15 additional credits should be taken at the 400 level, excluding ECON 496, ECON 497, and ECON 499.
4. Grades of 2.0 or higher in ECON 200, ECON 201, ECON 300, and ECON 301
5. Transfer students are required to complete a minimum of 25 upper-division economics credits in residence at the UW.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* For undergraduates, the role of the Department of Economics is to train students in a rigorous, analytical discipline that advances their problem-solving abilities and their understanding of important public issues.

The Bachelor of Arts program provides the flexibility and social science training to prepare students for employment in a variety of areas. Also, it is excellent preparation for many master's-level graduate programs in other disciplines and for professional schools such as law, business, and medicine.

The Bachelor of Science program is designed to provide undergraduates a rigorous background in economic analysis. This degree is designed for students who plan to do graduate study in economics or who plan to enter certain technically oriented professions, such as actuarial science, demography, financial analysis, or environmental consulting.

- *Honors Options Available:* College Honors (Completion of both Interdisciplinary Honors and Departmental Honors requirements). Departmental Honors (see adviser for requirements or visit www.econ.washington.edu/instruction/undergrad/honorsrequirements.html).
- *Internships, Research, and Service Learning:* Course credit available for internships and research. Visit www.econ.washington.edu/instruction/undergrad/beyond.html.

- **Department Scholarships:** Scholarship opportunities are available for application during spring quarter. See departmental advisers for details. Note: Students must have filed a FAFSA with the University of Washington's Financial Aid Office to be eligible.
- **Study Abroad Opportunities:** The department offers a variety of exchange programs. For more information, visit www.washington.edu/instruction/undergrad/studyabroad.htm.
- **Continuation Policy:** See departmental website for details.
- **Student Organizations/Associations:** The Economics Undergraduate Board (EUB) serves as a liaison between economics students, faculty, and alumni, and also provides services to the general economics undergraduate student body. The EUB provides free tutoring for ECON 200, ECON 201, ECON 300, and ECON 301; holds career seminars and faculty lectures; and publishes the quarterly newsletter, "The Economizer." For more information on these services, as well as others provided by the EUB, visit depts.washington.edu/ecnboard/.

Of Special Note:

- Courses accepted in transfer as ECON 1XX or ECON 2XX cannot be applied to the major requirements unless courses equivalent to ECON 200 and ECON 201 were required as prerequisites. ECON X courses not having these prerequisites may be applied to electives for the degree, but not to the 50-credit economics-course requirement.
- Internship and independent study economics credits do not count toward the required economics credits for the BA or BS degree.

GRADUATE PROGRAM

Graduate Program Coordinator

306 Savery, Box 353330

(206) 685-1384

econadv@uw.edu

The department offers a program of study leading to the Doctor of Philosophy degree. The academic program in economics is designed to develop trained economists for careers in teaching, private industry, government, and international agencies. Frequent seminars led by U.S. and foreign visitors as well as by faculty and students are conducted as an integral element of the department's graduate program.

Doctor of Philosophy

Admission Requirements

Applicants should have completed undergraduate training that includes courses in at least intermediate-level microeconomic and macroeconomic theory. In addition, applicants must have had at least one year of calculus, one term of linear algebra, and one term of statistics. A course in differential equations is strongly recommended. Additional work in calculus, matrix algebra, and probability and statistics is also strongly recommended. An undergraduate major in economics is not required for admission to the graduate program provided that the above prerequisites have been met. All applicants are required to take the General Test of the Graduate Record Examination (GRE).

All international applicants (except those noted below) are required to submit a valid score from one of the following tests to demonstrate spoken English proficiency. The scores noted meet the UW language requirement for international teaching assistants: 26 on the speaking portion of the TOEFLiBT, or 7.0 on the speaking portion of the IELTS, or 70 on the Versant English Test. Applicants who achieve one of these scores are given priority for depart-

mental funding, although students who achieve slightly lower scores may also be considered for funding.

The following international applicants are not required to take a language test to demonstrate spoken English proficiency: (1) Those who have completed, or will complete before starting the graduate program, a bachelor's degree at a regionally accredited U.S. institution. (This exemption does not apply to applicants who have completed, or will complete, only a master's degree at a U.S. institution.) (2) Those who are native English speakers.

The department does not accept admission to a terminal master's (MA) degree. A sequential MA degree is offered for students already enrolled in the PhD program.

Degree Requirements

Minimum 90 credits, to include:

ECON 500, ECON 501, ECON 502, ECON 503, ECON 508, ECON 509, ECON 580, ECON 581, and ECON 582. PhD students are required to pass core examinations in microeconomics and macroeconomics. In addition to this core program, PhD students must take eight other elective field courses in economics at the graduate level. Each PhD student must satisfy the requirements for two fields of specialization. The fields of specialization include advanced macroeconomic theory, advanced microeconomic theory, comparative systems and development, econometrics, finance, health economics, industrial organization, international economics, labor economics, natural resource economics, and public finance.

The doctoral dissertation is the final major requirement for the PhD degree. Each PhD student chooses a dissertation topic and a doctoral Supervisory Committee is appointed. After the dissertation topic has been developed, PhD students take the general examination, an oral defense of the dissertation proposal. When the dissertation is completed, PhD students take the final examination, an oral defense of the completed dissertation. A foreign language is not required. The doctoral program is designed to be completed in four years, although the average is five.

Financial Aid

The principal form of financial aid available to graduate students in economics is a teaching assistantship. A number of such assistantships are available to entering graduate students with promising academic records. A small number of fellowships are also available.

Research and Computing Resources

The department houses a computer laboratory that provides hardware and software for economic modeling, economic estimation, word processing, and other faculty and graduate student research functions. Access is restricted to economics graduate students and faculty. In addition, the Center for Social Science Computation and Research (CSSCR) maintains an extensive library of computer software and data, and offers free consulting services to aid faculty and students with computing problems.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

ECON 200 Introduction to Microeconomics (5) I&S, QSR Analysis of markets: consumer demand, production, exchange, the price system, resource allocation, government intervention. Recommended: MATH 111. Offered: AWSpS.

ECON 201 Introduction to Macroeconomics (5) I&S, QSR Analysis of the aggregate economy: national income, inflation, business fluctuations, unemployment, monetary system, federal budget, international trade and finance.

Prerequisite: ECON 200; recommended: MATH 111. Offered: AWSpS.

ECON 230 Economics of Fisheries and Oceans (5) I&S/NW, QSR C. ANDERSON Examines how and why people and businesses make choices that lead to over-fishing, hypoxic zones, and oil spills in aquatic environments. Applies economic principles to understand how alternative policies might change these decisions, and how distributional effects influence politically feasible solutions. Offered: jointly with FISH 230; Sp.

ECON 235 Introduction to Environmental Economics (5) I&S/NW S. RABOTYAGOV Introduces environmental and natural resource economics. Discusses fundamental economic concepts, including markets and private property. Includes basic tools used in the economic assessment of environmental problems and applies these methods to key environmental issues. Offered: jointly with ENVIR 235/ESRM 235; Sp.

ECON 299 Study Abroad: Economics (3-5, max. 10) I&S Lower-division economics courses taken for which there are no direct University of Washington equivalents, taken through a University of Washington study abroad program.

ECON 300 Intermediate Microeconomics (5) I&S Analysis of decisions by individuals and by firms and of outcomes in factor and product markets. Policy issues and applications. Prerequisite: ECON 200; either MATH 112, MATH 124, MATH 127, MATH 134, or MATH 145. Offered: AWSpS.

ECON 301 Intermediate Macroeconomics (5) I&S Analysis of the determinants of the aggregate level of employment, output, prices, and income of an economy. Policy issues and applications with special reference to current monetary and fiscal policy. Prerequisite: minimum grade of 2.0 in ECON 201; 2.0 in ECON 300. Offered: AWSpS.

ECON 315 Study Abroad: Economics (3-5, max. 10) I&S Upper-division economics courses for which there are no direct University of Washington equivalents, taken through a University of Washington study abroad program.

ECON 382 Introduction to Econometrics (5) NW Applies statistical methods to economic data: estimating economic relationships using regression analysis and testing hypotheses involving economic behavior. Uses econometric software. Open to economics majors only. Cannot be taken for credit if ECON 482 taken previously. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 399 Economics Internship (1-5, max. 10) Academic work completed in conjunction with an economics-related internship. Faculty supervision required. Does not apply toward major. Credit/no-credit only.

ECON 400 Advanced Microeconomics (5) NW Explores the rigorous development of mathematical models used by economists to explain the behavior of consumers, firms, and markets. Topics include comparative statics for consumption theory, duality in production, and decision-making under uncertainty. Prerequisite: minimum grade of 2.0 in ECON 300; MATH 126; recommended: minimum grade of 3.0 in ECON 300.

ECON 401 Advanced Macroeconomics (5) NW Application of mathematics to macroeconomics. Possible topics include economic dynamics and growth, rational expectations, real business cycle models, and New Keynesian approach. Prerequisite: minimum grade of 2.0 in ECON 301; either MATH 126, MATH 129, or MATH 136; recommended: minimum grade of 3.0 in ECON 301.

ECON 402 Microeconomics: Methods and Applications (5) I&S Generalizations and extensions of the course models of competition and monopoly taught in ECON 300. Topics may include: factor markets and effects of monopoly power; game theory and oligopoly theory; decision making over time; uncertainty and under asymmetric information; contracts and incentives. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 403 The Economics of Property Rights (5) I&S Property rights as an economic concept. Delineation of rights as a subject of optimization. Formation of contracts to maximize the value of personal property. Formation of organizations to induce efficient use of resources and minimize losses to public domain. Prerequisite: minimum grade of 2.0 in ECON 300; recommended: two 400-level microeconomics classes.

ECON 404 Industrial Organization and Price Analysis (5) I&S Analysis of firm behavior in imperfectly competitive markets. Topics include monopoly, oligopoly, product differentiation, entry deterrence, and the role of asymmetric information. Game theoretic tools and empirical evidence used to analyze topics. Prerequisite: minimum grade of 2.0 in ECON 300; recommended: ECON 485.

ECON 405 Analytical Framework for Policy and Decisions (5) NW Explores how insights from economics and finance can be used to design policies and formulate strategies to solve important real-life problems. Covers a variety of analytics and computational techniques, particularly those directed toward dynamics, uncertainty, and interactive decision problems. Prerequisite: MATH 307; ECON 301; either ECON 400 or ECON 401; either ECON 382, ECON 424, ECON 482, or ECON 483.

ECON 406 Undergraduate Seminar in Economics (5, max. 10) I&S Provides the undergraduate student an opportunity to apply the tools of economic analysis in a critical examination of theoretical and empirical work. A list of topics is available in the departmental office. Prerequisite: ECON 200.

ECON 409 Undergraduate Seminar in Political Economy (5, max. 10) I&S Seminar in political economy with focus on Marxian and public choice approaches to political economy. Explores the questions raised by each approach, the assumption(s) and testability of hypotheses, and applies these approaches to a number of problems in political economy. Recommended: ECON 300; POL S 270. Offered: jointly with POL S 409.

ECON 415 Study Abroad: Economics (3-5, max. 10) I&S Upper-division economics courses for which there are no direct University of Washington equivalents, taken through a University of Washington study abroad program.

ECON 421 Money, Credit, and the Economy (5) I&S Role of money and the banking system in the United States economy. Relation of money to inflation, interest rates, and business fluctuations. Monetary policy and Federal Reserve System. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 422 Investment, Capital, and Finance (5) I&S Intertemporal optimization: consumption and portfolio allocation decisions of households, investment and financing decisions of firms. Introduction to financial decisions under uncertainty. Portfolio theory, asset pricing, options, and futures. Financial market institutions and efficiency. Prerequisite: minimum grade of 2.0 in ECON 300; either ECON 311, STAT 311, MATH 390, STAT 390, or Q SCI 381.

ECON 423 Topics in Financial Economics (5) I&S Topics of current interest such as regulation of securities markets and valuation of stocks. Allows students to apply tools of economics to real world problems in finance. Prerequisite: minimum grade of 2.0 in ECON 301; ACCTG 215.

ECON 424 Computational Finance and Financial Econometrics (5) NW Covers probability models, data analysis, quantitative, and statistical methods using applications in finance. Prerequisite: minimum grade of 2.0 in ECON 300; either ECON 311/STAT 311, STAT 341, MATH 390/STAT 390, or Q SCI 381.

ECON 425 Topics in Monetary Economics (5) I&S Topics include monetary policy and financial markets, two transmission mechanisms, dynamics of monetary policy, targeting interest rates versus targeting the quantity of money, monetary policy under fixed versus flexible exchange rates, inflation targeting, and practices of central banks, i.e., Fed,

ECB, BOJ and PBOC. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 426 Advanced Financial Economics (5) I&S Provides an introduction to financial derivatives and structured financial products, with emphasis on futures, options, credit derivatives, swaps, economic theory, valuation methods, trading strategies, hedging, and securitization. Emphasizes real world applications and developments in the financial market. Prerequisite: ECON 422; MATH 124.

ECON 431 Government and Business (5) I&S Economic effects of various governmental regulatory agencies and policies. Antitrust legislation as a means of promoting desired market performance. Observed economic effects of policies intended to regulate business practices, control prices, conserve resources, or promote competition. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 435 Natural Resource Economics (5) I&S Survey of the economics of renewable and nonrenewable resources including fisheries, forest, minerals, and fuels. Optimal trade-offs between benefits and costs of resource use, including trade-offs between current and future use. Effects of property rights on resource use. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 436 Economics of the Environment (5) I&S Microeconomic analysis of environmental regulation. The problem of social cost, policy instrument choice, enforcement of regulations, methods for damage assessment, and estimating benefits of environmental improvement. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 437 Economics of Biological Resources (5) I&S Application of economic concepts to biology and biological concepts to economics. Examination of theory of species maximization, parallels in behavior between humans and other biota, animal choices among alternative food sources, games animals play, evidence of risk aversion in animals. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 442 Economics of Human Resource Management (5) Analyzes the relationship between personnel practices and organizational performance. Economic analysis of compensation policy emphasized. Topics include hiring and retention strategies; incentive pay; relative performance evaluation; teams; promotions; seniority; and organization design. Examines human capital accumulation and labor legislation. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 443 Labor Market Analysis (5) I&S Determinants of employment and incomes in the United States: analysis of individual and firm decisions and of equilibrium in the labor market. Topics include decisions to work and retire, education and occupation choices, compensation, discrimination, poverty, unemployment, and unions. Examination of policy issues affecting the labor market. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 444 Topics in Labor Market Analysis (5) I&S In-depth analysis of special topics in the operation of labor markets and public policies affecting incomes and employment. Course content varies by instructor. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 446 Economics of Education (5) I&S Examines formal education as an investment industry, the economics of human capital investment, and competition among government-owned schools and the non-profit sector. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 447 Economics of Gender (5) I&S, DIV Microeconomic analysis of the sources of gender differences in earnings, labor force participation, occupational choice, education, and consumption. Economic theories of discrimination, human capital, fertility, and intrahousehold resource allocation. Economics of the family in developed and developing countries. Prerequisite: minimum grade of 2.0 in ECON 300. Offered: jointly with GWSS 447.

ECON 448 Population and Development (5) I&S, DIV Surveys international economic development, with a focus on

population issues. Topics include demography, poverty and income inequality, fertility choice and sex selection, household production models and intra-household inequality, parental investments in child health and education, including discrimination against girls, and migration and urbanization. Focuses on evidence-based policy and differential impacts on diverse communities within developing societies. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 450 Public Finance: Expenditure Policy (5) I&S Application of normative microeconomic theory to analysis of government expenditures. Rationale for government economic activity, collective choice, public goods, and externalities, income redistribution, public sector pricing, and specific expenditure programs. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 451 Public Finance: Tax Policy (5) I&S Microeconomics of taxation: efficiency, incidence, effect on distribution of income, personal and corporate income taxes, sales and consumption taxes, taxation of property and estates. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 452 Economic Theory as Applied to the Political System (5) I&S Explanation and evaluation of the political system, using elementary economics theory. Topics include alternative voting rules, the political effectiveness of various types of groups, causes and consequences of logrolling, and bureaucratic organizations. Prerequisite: ECON 300. Offered: jointly with POL S 416.

ECON 454 Cost-Benefit Analysis (5) I&S Theory and practice of cost-benefit analysis of public sector projects and policies. Welfare criteria, investment criteria, shadow prices, social discount rate, marginal-willingness-to-pay for non-market goods, social risk, and special topics. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 455 Microeconomics of Public Policy (5) I&S Topics include general equilibrium analysis of efficiency and equity, income and substitution effects, analysis of alternative welfare programs, intergovernmental grants, price discrimination, price controls, rationing, industry regulation, and public goods. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 464 Financial Crisis (5) I&S Causes, effects, and cures for financial crisis traced through history from the Tulip Bubble, to the Great Depression, to the East Asian Crisis of 1997, and beyond. Explores the original work of Fisher, Keynes, Friedman, and Krugman, among others. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 470 Economic History of the Jews (5) I&S Explores the history, economics, and politics of mercantile minorities, the Jews. Topics include the economics of religion, migration, Zionism, Arab-Israeli relations, and Israeli high-tech. Prerequisite: minimum grade of 2.0 in ECON 300. Offered: jointly with JSIS C 470.

ECON 471 International Trade (5) I&S Theory of comparative advantage and different models of international trade. Trade and welfare. Factor mobility and trade flows. Economic integration. Theory and practice of commercial policy. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 472 International Macroeconomics (5) I&S International monetary theory and open economy macroeconomics. Balance of payments and foreign exchange markets. Different exchange rate arrangements and their adjustment mechanisms. Money and international capital movements. Policy issues. The international monetary system. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 473 Topics in International Trade (5) I&S Advanced theory of trade and analysis of government trade policies. International trade and factor mobility. Theory of commercial policy. Prerequisite: minimum grade of 2.0 in ECON 301; ECON 471.

ECON 475 Economics of the European Union (5) I&S Analysis of economic issues relating to the European union. Explores the institutional aspects, the attempt to coordinate social and economic policies - welfare, employment, com-

mercial, fiscal, and monetary - and the economic linkages between the European Union and the rest of the world. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 482 Econometric Theory and Practice (5) NW Applies statistical modeling to empirical work in economics. Focuses on regression analysis; derivations of regression estimators and their properties; and applied computer work in estimating multiple regression models. Prerequisite: minimum grade of 2.0 in ECON 300; either ECON 311/STAT 311, MATH 390/STAT 390, or Q SCI 381; recommended: MATH 124.

ECON 483 Econometric Applications (5) NW Provides opportunity to learn econometric model building for a particular problem while applying the theory learned in various courses to specific economic cases. Estimate, test, and forecast economic models. Extensive use of the computer and econometric programs. Prerequisite: minimum grade of 2.0 in ECON 301; either ECON 311/STAT 311, STAT 341, MATH 390/STAT 390, or Q SCI 381.

ECON 484 Econometrics and Data Science (5) NW Advanced continuation of ECON 482 and ECON 483. Traditional topics: structural modeling, non-linear and logistic regression, the LASSO, and non-traditional topics: regression and classification trees, bagging, boosting, and random forests. Computer based, uses the R language, emphasizing interpretation, not formal proofs. Prerequisite: ECON 482; MATH 126; recommended: ECON 483.

ECON 485 Game Theory with Applications to Economics (5) NW Introduction to the main concepts of game theory: strategy, solution concepts for games, strategic behavior, commitment, cooperation, and incentives. Application to economics oligopoly theory, bargaining theory, and contract theory. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 486 Economics of Information (5) I&S Basic models of decision making and strategic interaction in the presence of imperfect and incomplete information. Information issues in market exchange and in hierarchical settings. Includes adverse selection, moral hazard, signaling, and screening. Prerequisite: minimum grade of 2.0 in ECON 300; may not be taken for credit if credit received for ECON 402; recommended: either ECON 404 or ECON 485.

ECON 490 Comparative Economic Systems (5) I&S Study of resource allocation, growth, and income distribution in capitalist, market socialist, and centrally planned economies. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 491 Issues in Economic Development (5) I&S Examines factors contributing to the economic problems of developing countries and possible solutions. Theory and applications in economic development and international trade. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 492 Macroeconomics of Emerging Markets (5) I&S Examines how the standard macroeconomic models that are used in industrial countries can be modified to help understand the macroeconomic issues facing emerging and developing countries. Covers topics including fiscal policy, inflation targeting, financial market stability, natural resource dependence, and institutional reforms. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 494 Economy of Japan (5) I&S Analysis of the economic growth of Japan since about 1850 to the present. The reasons for rapid industrialization, various effects of sustained economic growth, and significant contemporary issues are investigated. Prerequisite: ECON 201.

ECON 495 Economies in Transition (5) I&S Analysis of the interaction between institutional change and economic performance in the transforming socialist economies. Resources allocation in command economies. Market institutions. Primary focus on empirical comparison of growth, productivity, and social institutions in former socialist economies in Asia, Europe, and Central Asia. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 496 Honors Seminar (5) I&S Honors and other students in high standing have the opportunity to develop research techniques, to pursue topics in breadth and depth, and to apply tools of economic analysis to selected topics in economic theory and current issues of national and international economic policy.

ECON 497 Honors Directed Study (5) Students write their honors thesis on the topic chosen in the Honors Seminar working under the previously arranged supervision of a faculty adviser. Prerequisite: ECON 496

ECON 498 Senior Seminar (5) I&S Advanced undergraduate research in economics. Students formulate some underlying economic issue, organize its study, gather necessary information, and analyze results. Does not satisfy graduation requirement for the major. Prerequisite: ECON 301; one 400-level ECON course; recommended: two 400-level ECON courses.

ECON 499 Undergraduate Research (1-5, max. 10) May not be applied toward an advanced degree.

ECON 500 Microeconomic Analysis I (4) Duality and comparative statics analysis. Consumer and firm behavior. Uncertainty. Prerequisite: permission of instructor.

ECON 501 Microeconomic Analysis II (4) General equilibrium and welfare economics. Introduction to game theory. Prerequisite: ECON 500.

ECON 502 Macroeconomic Analysis I (4) Topics include theories of business cycles, dynamics of price adjustments, consumption theory, dynamic programming, introduction to numerical techniques, and open economy macroeconomics. Prerequisite: permission of instructor.

ECON 503 Macroeconomic Analysis II (4) Rational expectations in macroeconomic models. Dynamic optimizing models under uncertainty. Empirical examination of consumption, asset-pricing, and real business cycles. Prerequisite: ECON 502.

ECON 508 Microeconomic Analysis III (4) Information economics. Prerequisite: ECON 500; ECON 501.

ECON 509 Macroeconomic Analysis III (4) Modern macroeconomic dynamics, presenting a range of approaches based on intertemporal optimization. Representative agent models with special emphasis on the analysis of government policy. More advanced discussion of economic growth. Prerequisite: ECON 502; ECON 503, or equivalent.

ECON 511 Advanced Microeconomic Theory: Selected Topics (3, max. 12) Seminar in advanced microtheory. Selected topics of special interest and significance. Prerequisite: ECON 500; ECON 501.

ECON 512 Advanced Macroeconomic Theory: Selected Topics (3, max. 12) Seminar in advanced macrotheory. Selected topics of special interest and significance.

ECON 515 Special Topics in Mathematical Economics (3, max. 12)

ECON 516 Noncooperative Game Theory (3) Study of both pure game theory and its applications to such problems as oligopoly pricing, non-cooperative bargaining, entry deterrence, reputation phenomena. Focus on game theory as a modeling tool as opposed to a body of known results. Prerequisite: ECON 508.

ECON 518 Contract Theory (3) Basic contract theory models, including hidden action and hidden information models. Current developments in contract theory. Prerequisite: ECON 508; ECON 516, or permission of instructor.

ECON 519 Economics of Contracts and Organizations: Empirics (3) *Shi* Critically reviews empirical literature on contracts and organization. Topics include multi-tasking; incentives and risk sharing; relative and subjective performance evaluation; team production; tournament and promotion; efficiency wage; career concern; relational contracts; asset specificity and asset ownership; complexity, uncertainty, asset ownership; adverse selection. Prerequisite: ECON 518; ECON 582, or permission of instructor.

ECON 520 The Economics of Property Rights (3) Application of standard economic theory to analyze various forms of property rights as constraints of competition; the costs associated with delineation and enforcement of rights; the costs of negotiating and enforcing contracts for right transfers; resource allocation and income distribution implied by different property right and transaction cost constraints. Prerequisite: ECON 500; ECON 501, or permission of instructor.

ECON 523 Emergence of the State (3) Using tools of property rights, industrial organization, and game theory, explores the emergence of the state. Specifies conditions conducive to constitutional rule. Analyzes circumstances amenable to state-promoted exchange as opposed to self-enforced agreements. Prerequisite: ECON 500; ECON 501, or permission of instructor.

ECON 525 Computational Economics (3) Develops a basic understanding of computational techniques used in the economic literature. Demonstrates, with economic examples, when and how these techniques are used and why and how they work. Prerequisite: ECON 580; ECON 581; ECON 582.

ECON 527 Empirics and Theory in Macroeconomics (3) Explores the integration of empirical and theoretical methods central to macroeconomic research. Exposes students to frontier areas of research to help them learn substantive material and transition to conducting their own independent research. Prerequisite: ECON 502; ECON 503; ECON 509; ECON 581; ECON 582; recommended: ECON 584.

ECON 528 Micro Heterogeneity in Macroeconomics (3) Discusses the role of heterogeneity in impulse and propagation of shocks to output, consumption, and asset prices. Covers empirical methods and theoretical models to further our understanding of these topics.

ECON 534 Empirical Industrial Organization (3) Exposes students to the research frontier in empirical industrial organization. Topics include identification in linear models, models of product differentiation, estimation in data-rich environments, static games of imperfect competition, dynamic games of imperfect competition, and computational approaches to large-scale games.

ECON 535 Natural Resource Economics (3) Half of integrated two-course sequence in environmental and natural resource economics. Dynamic optimization. Nonrenewable resource extraction and exploration, including effects of market structure, uncertainty, and taxation. Renewable resources, including fisheries and forests. Prerequisite: ECON 500; ECON 501, or permission of instructor.

ECON 536 Environmental Economics (3) Half of integrated two-course sequence in environmental and natural resource economics. Theory of externalities. Normative and positive analysis of policy instruments for environmental management. Theory and methods of measuring environmental and resource values. Prerequisite: ECON 500; ECON 501, or permission of instructor.

ECON 537 Economic Aspects of Marine Policy (3) Development of pertinent economic concepts and their application to selected topics in marine policy decision making, including maritime policy, OCS oil and gas development, and wetlands management. Prerequisite: SMEA 500 or permission of instructor. Offered: jointly with SMEA 537; W.

ECON 538 Economics of Living Marine Resources (3) Develops pertinent economic concepts and applications for conservation, regulation, and restoration of fisheries and other living resources. Gives special attention to fishery management, including harvest regulation and enforcement, recreational fisheries evaluation, property rights regimes, contemporary issues, and marine protected area management. Offered: jointly with SMEA 538; Sp.

ECON 541 Labor Economics (3) Theoretical and empirical analysis of the labor market, focusing on the time allocation and labor supply decisions of individuals and house-

holds and the determinants of wages and wage differentials.

ECON 542 Labor Economics (3) Theoretical and empirical analysis of the labor market. The determinants of labor supply and demand, human capital investment, the pattern of compensation, employment contracts and incentives, unemployment and labor market dynamics.

ECON 543 Population Economics (3) Analysis of population issues from an economic perspective. Focuses on the study of household behavior in both developed and developing countries. Studies areas including fertility decisions, health and mortality, investment in education, the intra-household allocation of resources, and household structure and marriage. Prerequisite: ECON 501.

ECON 547 Health Policy Economics (3) Applies economic theory to selected topics in healthcare, including information, risk and insurance, industry organization, government regulation, and public health issues. Emphasizes policy implications of these applications. Offered: jointly with HSERV 587.

ECON 550 Public Finance: Expenditure Policy (3) Theory of public finance with emphasis on public expenditures. Social welfare maximization, public goods and externalities, decreasing cost industries, theory of collective choice, second-best analysis. Prerequisite: ECON 500; ECON 501, or permission of instructor.

ECON 551 Public Finance: Tax Policy (3) Theory of public finance with emphasis on taxation. Second-best analysis, optimal taxation, general equilibrium incidence analysis, issues in personal income taxation and corporate income taxation. Prerequisite: ECON 500; ECON 501, or permission of instructor.

ECON 554 Cost-Benefit Analysis (3) Covers the theoretical foundations of cost-benefit analysis using graduate microeconomics. Stresses both the conceptual and practical problems encountered in the subject. Emphasis on problem solving and term project. Prerequisite: ECON 500; ECON 501.

ECON 568 Game Theory for Social Scientists (5) Studies non-cooperative game-theory and provides tools to derive appropriate statistical models from game-theoretic models of behavior. Equilibrium concepts, learning, repeated games and experimental game theory. Prerequisite: MATH 112, MATH 124, or MATH 134; STAT 311/ECON 311 or equivalent. Offered: jointly with CS&SS 568; W.

ECON 571 International Trade Theory (3) Comparative advantage, resource allocation, income distribution, and foreign trade. Different theories of trade, with or without perfect competition and constant returns. International factor mobility. Prerequisite: ECON 500; ECON 501.

ECON 572 International Financial and Monetary Economics (3) Analysis of open economy macro models with emphasis on exchange rates and balance of payments determination. Prerequisite: ECON 502; ECON 503.

ECON 573 International Commercial Policy (3) Analysis of welfare aspects of international trade and factor mobility. Costs and benefits of protection; implications of different government policies. Import competition and response. Prerequisite: ECON 500; ECON 502.

ECON 574 International Macroeconomics (3) Surveys recent developments in international macroeconomics, placing particular emphasis on the dynamic aspects. One sector, multisector, and two-country international models discussed. Fiscal issues treated in depth. Stochastic aspects introduced and related to the literature on international real business cycles. Prerequisite: ECON 509 or equivalent.

ECON 575 International Trade and Macroeconomics (3) Studies how international macroeconomic models with trade microfoundations can shed light on questions in international macroeconomics. Theories are confronted with evidence, and special attention is paid to the roles of pro-

duces entry and exit into markets, and of firm heterogeneity, in shaping aggregate fluctuations and economic policy outcomes.

ECON 580 Introduction to Mathematical Statistics: Econometrics I (5) NW Examines methods, tools, and theory of mathematical statistics. Covers, probability densities, transformations, moment generating functions, conditional expectation. Bayesian analysis with conjugate priors, hypothesis tests, the Neyman-Pearson Lemma. Likelihood ratio tests, confidence intervals, maximum likelihood estimation, Central limit theorem, Slutsky Theorems, and the delta-method. (Credit allowed for only one of STAT 390, STAT 481, and ECON 580.) Prerequisite: STAT 311/ECON 311; either MATH 136 or MATH 126 with either MATH 308 or MATH 309; recommended: MATH 324. Offered: jointly with CS&SS 509/STAT 509; A.

ECON 581 Econometrics II (4) Methods, tools, and theory of econometrics as the basis for empirical investigation in economics. Specification, testing, and use of econometric models with reference to examples in the literature. Prerequisite: either ECON 580, CS&SS 509, or STAT 509.

ECON 582 Econometrics III (4) Methods, tools, and theory of econometrics as the basis for empirical investigation in economics. Specification, testing, and use of econometric models with reference to examples in the literature. Prerequisite: ECON 581.

ECON 583 Econometric Theory I (3) Estimation and testing in linear and nonlinear regression models. Asymptotic theory, bootstrapping. Theoretical developments are reinforced with a variety of empirical examples and applications. Prerequisite: ECON 580, ECON 581, ECON 582 or equivalent.

ECON 584 Econometric Theory II (3) Continuation of ECON 583. Analysis of stationary and nonstationary, univariate, and multivariate time series models. Emphasis on empirical applications. Prerequisite: ECON 583.

ECON 585 Econometric Theory III (3) Econometric issues that arise in applied microeconomic research. Topics range from standard methods to recent developments. Focus varies yearly to reflect interests of instructors and students. Prerequisite: ECON 582 or equivalent.

ECON 586 Advanced Applied Time Series Analysis (3) Time series and empirical macroeconomics with focus on applications of time series analysis to various topics in macroeconomics and finance. Topics include: state-space models and Kalman filter; Markov-switching models and their extensions; Bayesian Gibbs sampling; randomization; and measurement of volatility.

ECON 587 Applied Microeconomics (3) Application of microeconomics methods. Topics include treatment effects, instrumental variables, natural experiments, measurement error, panel data, difference-in-differences, sibling data, regression discontinuity, randomization, and quantile regression. Prerequisite: ECON 582.

ECON 588 Bayesian Econometrics (3) Introduces the Bayesian approach to econometrics, and examines how estimation problems can be recast in a Bayesian light. Emphasizes practical technique. Examines Bayesian methods, standard econometric models, and computational issues.

ECON 589 Financial Econometrics (4) Focuses on statistical modeling of financial time series with an emphasis on modeling volatility and correlation. Topics include statistical properties of asset returns, volatility and correlation modeling, statistical analysis of ultra high frequency time series, and estimation of continuous time models for asset returns. Prerequisite: ECON 583; either ECON 584 or STAT 519.

ECON 590 Analysis of Economies in Transition (3) Applications of economic analysis to the economic problems of transforming socialist economies. Economic institutions. The role of the state. Privatization and the behavior of decentralized organizations. Integration into the world mar-

ket. Prerequisite: micro- and macroeconomic theory and permission of instructor.

ECON 591 Microeconomics of Development (3) Theoretical and empirical analysis of the microeconomics of development. Focuses on the study of household behavior in developing countries and how households respond to missing/imperfect markets. Topics include land access, nutrition and productivity, responses to risks and shocks, credit markets, micro-finance, and program evaluation. Prerequisite: ECON 501.

ECON 592 Development Policy (3) Theoretical and empirical analysis of macroeconomic policies pursued by developing countries. Topics include the determination of exchange rates and relative prices in small economies; the examination of government spending, taxation, banking, trade, and labor market policies; and the evaluation of market-oriented economic reform programs. Prerequisite: ECON 503; recommended: ECON 591.

ECON 593 Topics in Microeconomics of Development (3) Builds on ECON 591, studying a variety of special topics in development economics, including health, education, political economy, behavioral development economics, and environmental economics in developing countries.

ECON 594 Economic Growth (3) Studies various theoretical approaches to the question of why some countries are richer than others using generalizations and extensions of contemporary macroeconomic theory. Discusses the implications of various macroeconomic policies for economic growth. Prerequisite: ECON 502; ECON 503; ECON 509.

ECON 595 Growth and Inequality (3) Introduces the modern tools of macroeconomic analysis, in the context of several research topics in the areas of growth and inequality. Helps prepare students to undertake research of their own.

ECON 596 Research Issues in Microeconomics (3) Provides opportunity to practice research and presentation skills in applied and theoretical microeconomics. Students develop and refine thesis topics under faculty supervision. Maximum of 6 credits allowed in 596, 597, and 598 combined. Credit/no-credit only.

ECON 599 Research Issues in Econometrics (3) For second-year students or above who plan to do research in micro-econometrics or nonparametric and semi-parametric econometrics. Provides a forum for state-of-the-art research and an opportunity for students to practice research and presentation skills in applied and theoretical econometrics. Credit/no-credit only.

ECON 600 Independent Study or Research (*-) Credit/no-credit only.

ECON 601 Internship (1-9, max. 9) Credit/no-credit only.

ECON 602 Teaching Introductory Economics (1) Examines problems encountered in preparing and presenting courses in introductory economics. Credit/no-credit only.

ECON 800 Doctoral Dissertation (*-) Credit/no-credit only.

English

A101 Padelford

The Department of English offers courses in English, American, and related literatures. Courses in literature emphasize techniques of literary analysis; theoretical problems in the interpretation of texts; the social, historical, and political context of literary production and reception; and the pleasures of reading. Most require significant written work and stress critical thinking skills. Courses in language study examine the structural, historical, social, and aesthetic dimensions of English. The creative writing program offers workshops in verse, short story, novel, and expository writing. English majors are exposed to many critical

perspectives, and pursue interests in literary history, critical theory, language studies, and creative writing.

UNDERGRADUATE PROGRAM

Adviser

A2B Padelford, Box 354330

(206) 543-2634

engladv@uw.edu

The Department of English offers the following program of study:

- The Bachelor of Arts degree with a major in English. A creative writing option is also available.

Bachelor of Arts

Suggested First- and Second-Year College Courses: Foreign languages, classics, English history, American history, and philosophy.

Department Admission Requirements

1. Minimum grade of 2.0 in both ENGL 301 and the attached writing link, ENGL 297.
2. Minimum cumulative GPA of 2.00.
3. Minimum cumulative English GPA of 2.50.
4. Students apply to the English Advising Office, A2B Padelford, during the first two weeks of autumn, winter, and spring quarters. Transfer students must be enrolled at the UW before applying.
5. Admission is competitive. Completion of the above requirements does not guarantee admission.

Additional requirements for admission to the creative writing option:

1. Admission to the English major.
2. Completion of ENGL 283 and ENGL 284 or transfer equivalents.
3. Submission of an unofficial transcript and a writing sample of 3-5 poems and 5-10 pages of fiction (preferably a complete story).
4. Students interested in the creative writing option should apply to the Creative Writing Office, B-25 Padelford, during the first three weeks of autumn and spring quarters.
5. Admission is competitive. Completion of the above requirements does not guarantee admission.

Major Requirements

Minimum 55 credits, as follows:

1. Minimum grade of 2.0 in both ENGL 301 and writing link ENGL 297 (10 credits).
2. Minimum grade of 2.0 in ENGL 302 (5 credits).
3. *English Core (15 credits):* At least 5 credits from each of the following categories: (1) theories/methodologies of language and literature; (2) forms/genres/media; (3) histories. A list of approved courses is available from the department advising office or department website: depts.washington.edu/engl/.
4. *English Electives (20 credits):* Must be 200-level or above.
5. At least 15 credits must be in courses focused on pre-1900 literature.
6. Minimum grade of 2.0 in an approved 400-level senior capstone English course (5 credits). List of approved senior capstones available at depts.washington.edu/engl/ugrad/ugbareqs.php.
7. Maximum 15 credits of 200-level courses and maximum 5 credits of creative writing may be applied towards the major.

8. Minimum 25 credits of English at the 200-level or above must be completed in residence at the UW.

The department strongly recommends, but does not require, 5 credits in one of the following English language courses: ENGL 370, ENGL 371, ENGL 373, ENGL 374, ENGL 478, ENGL 479, or LING 200.

Creative Writing Option

Minimum 60 credits, as follows:

1. Minimum grade of 2.0 in both ENGL 301 and writing link ENGL 297 (10 credits).
2. ENGL 283 and ENGL 284 (10 credits)
3. *English Core (20 credits):* At least 5 credits from each of the following categories: (1) theories and methodologies of language and literature; (2) histories of language and literature. A list of approved courses is available from the department advising office or department Website.
4. At least 15 credits must be in courses focused on pre-1900 literature.
5. ENGL 383 and ENGL 384 (10 credits)
6. 10 credits of approved 400-level creative writing courses.
7. Maximum 15 credits of 200-level courses may be applied towards the major.
8. Minimum 25 credits of English at the 200-level or above must be completed in residence at the UW.

Continuation Policy

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

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Good writing, analytical ability, research skills, and broadened perspectives are among the practical accomplishments majors acquire, all of which can be applied to a range of careers, including, but not limited to advertising, business and marketing, law, library science, the media, public administration, publishing, the social services, and teaching.

The undergraduate program of study in English concentrates on developing students' critical and interpretive abilities with regard to literatures written in English. Students become familiar with the critical developments in the study of language and literary forms, including especially understanding the cultural and historical contexts of various forms of literature. Students are, accordingly, asked to cultivate a habit of self-conscious and careful reading of written texts. Honing a successful habit of reading depends on acquiring an early awareness of the broad range of critical and interpretive methods available to readers of literature, as well as comprehending the basic purpose and effects at stake in different reading methods. Finally, students develop the ability to compose effective and persuasive written analyses of texts in a manner that demonstrates comprehension of the complexities or nuances of language, literature, and culture.

- *Instructional and Research Facilities:* Computer labs in Mary Gates Hall for computer-integrated sections.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* The English internship program maintains an active list of over 200 local employers, including publishers, arts organi-

zations, the media, advertising agencies, social service groups, schools, and businesses. Credit is available to declared English majors (ENGL 491).

Department Scholarships:

- English Department scholarships are available to declared English majors enrolled at the UW for at least two quarters with a UW GPA of 3.50 and a UW English GPA of 3.70. Scholarship recipients must enroll for at least two quarters and carry at least 6 credits each quarter during the term of the scholarship. Applications, due in early March, are available in A11 and A2B Padelford.
- Additional scholarships and prizes in creative writing are open to UW English majors only. Applications, due in early March, are available in B25 and A2B Padelford.
- *Student Organizations/Associations:* Bricolage is a student literary arts annual published entirely by UW undergraduates and features the works of University students, faculty, staff, and alumni. Students from all majors welcome. Contact: brico@uw.edu for details.

Of Special Note::

- Students considering teaching English at the secondary level should consult an English adviser regarding coursework for the English Language Arts endorsement required for entry into the Secondary Teacher Education Program (TEP).
- The Department of English offers study abroad opportunities in London and Rome. Students from all majors welcome. See department Website for more information.

GRADUATE PROGRAM

Graduate Program Coordinator

A105 Padelford, Box 354330

(206) 543-6077

englgrad@uw.edu

The Department of English offers a complete program of graduate courses and seminars designed to provide aspirants for the Master of Arts and Doctor of Philosophy degrees with a knowledge of English literature and language and the necessary scholarship for training in literary criticism and theory, literary history, and English-language study, including rhetoric and composition. It is possible to pursue a literature- or language-study emphasis. The Master of Fine Arts program in creative writing emphasizes projects in imaginative writing in fiction and poetry, supported by courses in criticism and literary periods and types. A special degree program, the Master of Arts for Teachers, is offered for English teachers in secondary schools and community colleges and a Master of Arts for Teachers (of English to speakers of other languages) for those interested in teaching English to speakers of other languages. The graduate program permits completion of master's degree requirements in four to six quarters and doctoral degree requirements in five years (including the master's degree). In a typical five-year Ph.D. program, a student is encouraged to complete course requirements (75 credits) during the first three years, the general examination for the doctorate in the fourth year, and the dissertation in the fifth year. Those admitted with a master's degree from another university can complete the doctorate in four years: two years of coursework, exam year, and dissertation year.

Financial Aid

The department annually awards 10 or more new teaching assistantships. To be considered for the following autumn, applicants must submit an assistantship application and supporting materials for admission to the graduate program by January 15. A statement of purpose, three recom-

mentations, the GRE general test, and a critical-writing sample are required [except MAT (ESOL)]. Teaching assistantship applicants who are not native speakers of English must submit as part of their application a score of 290 or better on the Test of Spoken English (TSE) or UW-administered SPEAK test.

Master of Arts

Admission Requirements

Bachelor of Arts degree: Major in English equivalent to that awarded by the UW preferred. Graduate Record Examination general test [GRE (literature in English) subject test recommended]. Three letters of recommendation, statement of purpose, and a critical writing sample.

Degree Requirements

40 credits, to include:

Intermediate-level proficiency in a language other than English. 40 credits, including 30 credits in graduate English seminars. For students continuing to the doctoral program, a 10-credit master's essay. For a terminal master's degree, students may substitute 10 additional credits in graduate English seminars for the master's essay. A maximum of 5 credits may be transferred from an accredited graduate program elsewhere.

Master of Fine Arts

Admission Requirements

Bachelor of Arts degree, Graduate Record Examination general test, three letters of recommendation, statement of purpose, a critical-writing sample, and a creative-writing sample.

Degree Requirements

55 credits, as follows:

20 credits in creative writing, 15 credits in graduate English seminars (5 credits must be from an approved course in criticism), 5 elective credits, 15 thesis credits (including a creative thesis, an M.F.A. essay, and a final oral examination); demonstration of proficiency in a language other than English.

Master of Arts for Teachers

Admission Requirements

Same as for the Master of Arts degree, but usually including prior teaching experience.

Degree Requirements

45 credits, to include:

25 must be in courses numbered 500 or above; including at least one course each in English language or linguistics, rhetoric and/or composition, literary criticism or critical theory, and literature; three courses must have a stated orientation on teaching English; and 5 credits of MAT essay. In addition to the 45 credits, a student with no regular or formal teaching experience is required to complete at least 6 credits of ENGL 601 (Internship); 15 credits may be taken outside the department in courses related to the teaching of English, subject to approval.

Master of Arts for Teachers (of English to Speakers of Other Languages)

Admission Requirements

Bachelor of Arts degree, Graduate Record Examination general test, statement of purpose, three letters of recommendation. Students without training in linguistic method and theory must take LING 400 as a prerequisite for 400-level linguistics courses.

Degree Requirements

45-54 credits, to include:

including ENGL 571, ENGL 572, ENGL 574, ENGL 576; LING 446 or LING 450, ENGL 575 or LING 461; three courses from ENGL 471, ENGL 478, ENGL 479, ENGL 560, ENGL 561, ENGL 562, ENGL 563, ENGL 564, ENGL 567, ENGL 569, ENGL 575, LING 433/ANTH 464, LING 457/PSYCH 457, LING 451, LING 462; one elective course; 3-6 credits of ENGL 570. Intermediate-level proficiency in a language other than English.

Doctor of Philosophy

Admission Requirements

By petition to the Graduate Studies Committee upon completion of the MA degree option in literature. Students with recent master's degrees from other institutions are admitted at the post-master's level following the guidelines for admission to the MA option and must complete two quarters before petitioning the Graduate Studies Committee for admission to the doctoral program. Students transferring with a master's degree from other institutions may be required to submit an equivalent to the master's essay. Students with MFA, MAT, or MAT (ESL) degrees from this University must complete coursework and language requirements for the MA degree option and submit an equivalent to the master's essay.

Graduation Requirements

Minimum 102 credits, to include:

75 graded credits of electives in graduate English seminars. Students with a recent master's degree from another university may count up to 30 credits from their master's program, upon approval of the Director of Graduate Studies. Students with a master's degree from the UW may count up to 40 credits in courses taken before admission to the doctoral program. Fluency in at least one language other than English, plus whatever additional language study the supervisory committee advises. Written examinations for literature emphasis: (1) historical period, (2) specialized field of study, (3) second period, genre, or topic. Written examinations for language emphasis: (1) major approach to English-language study, (2) second approach to language study, (3) textual focus (can be literary period). An oral general examination; 27 credits of ENGL 800 (dissertation); and a final examination based on the dissertation.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

ENGL 101 Writing from Sources I (5) Includes academic reading and graphics from different genres to provide opportunities for noticing lexis and grammar of the genre and specific topic. Students discuss the topic, receiving feedback on their use of structures and lexis, and write short responses to the type of questions that might be asked on exams related to the readings. Focuses on sentence-level issues related to sentence structure and lexis. Limited to student admitted to UW with an English language requirement. Offered: AWSp.

ENGL 102 Writing from Sources II (5) Focuses on reading and analysis of academic texts, such as those found in textbooks, newspaper articles, journal articles, and research reports, used for writing in various rhetorical styles at the paragraph level. Second in the three-course AEP writing sequence. Prerequisite: either ENGL 101 or placement by test score.

ENGL 103 Writing from Sources III (5) Introduces and practices reading, writing, and critical thinking strategies students need to develop researched, organized, and correctly documented papers using academic sources. Intro-

duces library research skills for finding a variety of sources. Third in the three-course AEP writing sequence. Prerequisite: either ENGL 102 or placement by test score. Offered: AWSpS.

ENGL 104 Academic Listening and Speaking (5) Aims to improve students' ability to participate in university course lectures and class discussions. Students respond to lectures, participate in and lead class discussions, and deliver short oral reports. Offered: AWSp.

ENGL 105 English for International Teaching Assistants (5) Develops language production skills, lesson planning and presentation skills, and TA-student interaction skills related to classroom teaching for international teaching assistants. Requires speak exam.

ENGL 108 Writing Ready: Preparing for College Writing (5) Builds writing confidence through frequent informal writing, and introductions to key learning strategies. Includes user-friendly orientation to library and research documents, revision skills, and peer review work central to 100- and 200-level college writing assignments. Offered: A.

ENGL 109 Introductory Composition (5-)

ENGL 110 Introductory Composition (-5) C Development of writing skills: sentence strategies and paragraph structures. Expository, critical, and persuasive essay techniques based on analysis of selected readings. For Educational Opportunity Program students only, upon recommendation by the Office of Minority Affairs.

ENGL 111 Composition: Literature (5) C Study and practice of good writing; topics derived from reading and discussing stories, poems, essays, and plays. Cannot be taken if student has already received a grade of 2.0 or higher in either ENGL 111, ENGL 121, or ENGL 131.

ENGL 115 Writing Studio (2) Supports multilingual students concurrently enrolled in a composition course. Builds academic reading skills in order to analyze complex texts, review, and analyze grammar structures to produce different writing effects. Also assists students to develop critical reflective skills to become better familiarized with the writing and revision process. Credit/no-credit only.

ENGL 121 Composition: Social Issues (5) C Focuses on the study and practice of good writing; topics derived from a variety of personal, academic, and public subjects. Includes a service-learning component allowing students to engage with and write about social issues in applied ways.. Cannot be taken if student has already received a grade of 2.0 or higher in either ENGL 111, ENGL 121, or ENGL 131.

ENGL 131 Composition: Exposition (5) C Study and practice of good writing; topics derived from a variety of personal, academic, and public subjects. Cannot be taken if student has already received a grade of 2.0 or higher in either ENGL 111, ENGL 121, or ENGL 131.

ENGL 182 The Research Paper (5) C Includes study of library resources, the analysis of reading materials, and writing preparatory papers as basic to writing a reference or research paper. Open to all undergraduates. Prerequisite: either ENGL 111, ENGL 121, or ENGL 131.

ENGL 195 STUDY ABROAD (1-5, max. 15) Equivalency for 100-level English courses taken on UW study abroad programs or direct exchanges. General elective credit only; may not apply to major requirements.

ENGL 197 Interdisciplinary Writing/Humanities (5, max. 15) C Expository writing based on material presented in a specified humanities lecture course. Assignments include drafts of papers to be submitted in the specified course, and other pieces of analytical prose. Concurrent registration in the specified course required.

ENGL 198 Interdisciplinary Writing/Social Science (5, max. 15) C Expository writing based on material presented in a specified social science lecture course. Assignments include drafts of papers to be submitted in the specified course, and other pieces of analytic prose. Concurrent registration in specified course required.

ENGL 199 Interdisciplinary Writing/Natural Science (5, max. 15) C Expository writing based on material presented in a specific natural science lecture course. Assignments include drafts of papers to be submitted in the specified course, and other pieces of analytical prose. Concurrent registration in the specified course required.

ENGL 200 Reading Literary Forms (5) VLPA Covers techniques and practice in reading and enjoying literature in its various forms: poetry, drama, prose fiction, and film. Examines such features of literary meanings as imagery, characterization, narration, and patterning in sound and sense. Offered: AWSp.

ENGL 205 Method, Imagination, and Inquiry (5) VLPA Examines ideas of method and imagination in a variety of texts, in literature, philosophy, and science. Particularly concerned with intellectual backgrounds and methods of inquiry that have shaped modern Western literature. Offered: jointly with CHID 205.

ENGL 207 Introduction to Cultural Studies (5) VLPA/I&S Introduces cultural studies as an interdisciplinary field and practice. Explores multiple histories of the field with an emphasis on current issues and developments. Focuses on culture as a site of political and social debate and struggle. Offered: AWSp.

ENGL 210 Medieval and Early Modern Literature, 400 to 1600 (5) VLPA Introduces literature from the Middle Ages and the Age of Shakespeare, focusing on major works that have shaped the development of literary and intellectual traditions of these periods. Offered: AWSp.

ENGL 211 Literature, 1500-1800 (5) VLPA *Coldewey, Remley, Shields, Streitberger* Introduces literature from the Age of Shakespeare to the American and French Revolutions, focusing on major works that have shaped the development of literary and intellectual traditions in these centuries. Topics include: The Renaissance, religious and political reforms, exploration and colonialism, vernacular cultures, and scientific thought. Offered: AWSpS.

ENGL 212 Literature, 1700-1900 (5) VLPA Introduces eighteenth- and nineteenth-century literature, focusing on representative works that illustrate literary and intellectual developments of the period. Topics include: exploration, empire, colonialism, slavery, revolution, and nation-building. Offered: AWSp.

ENGL 213 Modern and Postmodern Literature (5) VLPA Introduces twentieth-century literature and contemporary literature, focusing on representative works that illustrate literary and intellectual developments since 1900.

ENGL 225 Shakespeare (5) VLPA Introduces Shakespeare's career as dramatist, with study of representative comedies, tragedies, romances, and history plays.

ENGL 242 Reading Prose Fiction (5) VLPA Critical interpretation and meaning in works of prose fiction, representing a variety of types and periods.

ENGL 243 Reading Poetry (5) VLPA Critical interpretation and meaning in poems, representing a variety of types and periods.

ENGL 244 Reading Drama (5) VLPA Critical interpretation and meaning in plays, representing a variety of types and periods.

ENGL 250 American Literature (5) VLPA Introduces American culture through a careful reading of a variety of representative texts in their historical contexts.

ENGL 251 Literature and American Political Culture (5) VLPA/I&S Introduction to the methods and theories used in the analysis of American culture. Emphasizes an interdisciplinary approach to American literature, including history, politics, anthropology, and mass media. Offered: jointly with POL S 281.

ENGL 257 Asian-American Literature (5) VLPA Introductory survey of Asian-American literature provides introduction to Chinese, Japanese, Filipino, Korean, Hawaiian, South-Asian, and Southeast-Asian American literatures

and a comparative study of the basic cultural histories of those Asian-American communities from the 1800s to the present.

ENGL 258 Survey of Afro-American Literature (5) VLPA *Butler* A chronological survey of Afro-American literature in all genres from its beginnings to the present day. Emphasizes Afro-American writing as a literary art; the cultural and historical context of Afro-American literary expression and the aesthetic criteria of Afro-American literature. Offered: jointly with AFRAM 214.

ENGL 270 The Uses of the English Language (5) VLPA Surveys the assumptions, methodologies, and major issues of English in its cultural settings. Connects English language study with the study of literature, orality and literacy, education, ethnicity, gender, and public policy.

ENGL 281 Intermediate Expository Writing (5) C Writing papers communicating information and opinion to develop accurate, competent, and effective expression.

ENGL 282 Composing for the Web (5) VLPA Introduces the writing of nonfiction narrative and expository pieces for publication on the web. Analysis and criticism of on-line work.

ENGL 283 Beginning Verse Writing (5) VLPA Intensive study of the ways and means of making a poem.

ENGL 284 Beginning Short Story Writing (5) VLPA Introduction to the theory and practice of writing the short story.

ENGL 285 Writers on Writing (5) VLPA *Bosworth, Kenney, Shields, Sonenberg* Experiencing literature from the inside. Members of the creative writing faculty and other practicing writers discuss their poetry, fiction, and literary nonfiction, literary inspiration, artistic practice, and the writer's life.

ENGL 295 Study Abroad (1-5, max. 30) VLPA Equivalency for 200-level English courses taken on UW study abroad programs or direct exchanges. May not apply to major requirements.

ENGL 297 Intermediate Interdisciplinary Writing - Humanities (5, max. 15) C Expository writing based on materials presented in a specified humanities course. Assignments include drafts of papers to be submitted in the specified course, and other pieces of analytical prose. Concurrent registration in the specified course required. Offered: AWSpS.

ENGL 298 Intermediate Interdisciplinary Writing - Social Sciences (5, max. 15) C Expository writing based on materials presented in a specified social science course. Assignments include drafts of papers to be submitted in the specified course, and other pieces of analytical prose. Concurrent registration in the specified course required. Offered: AWSpS.

ENGL 299 Intermediate Interdisciplinary Writing - Natural Sciences (5, max. 15) C Expository writing based on materials presented in a specified natural science course. Assignments include drafts of papers to be submitted in the specified course, and other pieces of analytical prose. Concurrent registration in the specified course required. Offered: AWSpS.

ENGL 300 Reading Major Texts (5) VLPA Intensive examination of one or a few major works of literature. Classroom work to develop skills of careful and critical reading. Book selection varies, but reading consists of major works by important authors and of selected supplementary materials.

ENGL 301 Introduction to the Study of English Language and Literature (5) VLPA Gateway course designed for English pre-majors and majors. Introduces critical, historical, and theoretical frameworks important to studying the literature, language, and cultures of English. Concurrent registration with ENGL 297 required. Cannot be taken for credit if student has taken ENGL 202.

ENGL 302 Critical Practice (5) VLPA Intensive study of, and exercise in, applying important or influential interpretive practices for studying language, literature, and culture,

along with consideration of their powers/limits. Focuses on developing critical writing abilities. Topics vary and may include critical and interpretive practice from scripture and myth to more contemporary approaches, including newer interdisciplinary practices. Prerequisite: minimum grade of 2.0 in ENGL 197 or ENGL 297; a minimum grade of 2.0 in ENGL 202 or ENGL 301; may not be repeated if received a grade of 2.0 or higher.

ENGL 303 History of Literary Criticism and Theory I (5) VLPA Literary criticism and theory from its beginnings in Plato through the early twentieth century. Philosophical and theoretical grounds for critical practice put forward by philosophers and critics.

ENGL 304 History of Literary Criticism and Theory II (5) VLPA Contemporary criticism and theory and its background in the New Criticism, structuralism, and phenomenology.

ENGL 305 Theories of Imagination (5) VLPA/I&S Survey of theories of imagination since the seventeenth century. Focuses on the uses of the concept in literature, criticism, science, and society.

ENGL 306 Introduction to Rhetoric (5) VLPA Introduces rhetorical theory from the classical period to the present, including an overview of core issues, vocabulary, and concepts in rhetorical theory; a discussion of methods for studying rhetoric, and a consideration of the social importance of studying rhetoric in the contemporary moment.

ENGL 307 Cultural Studies (5) VLPA Overview of cultural studies with a focus on reading texts or objects using cultural studies methods and writing analytic essays using cultural studies methods. Focuses on culture as a site of political and social debate and struggle. Recommended: one 300-level ENGL course in the literary period being studied.

ENGL 308 Marxism and Literary Theory (5) VLPA Introduces Marxist theory and methodology. Explores how and why Marx's writings, Marxist theory, and materialist methods became central to the study of literature and culture over the course of the twentieth century.

ENGL 309 Theories of Reading (5) VLPA Investigates what it means to be a reader. Centers on authorial and reading challenges, shifting cultural and theoretical norms, and changes in the public's reading standards.

ENGL 310 The Bible as Literature (5) VLPA Introduction to the development of the religious ideas and institutions of ancient Israel, with selected readings from the Old Testament and New Testament. Emphasis on reading The Bible with literary and historical understanding.

ENGL 311 Modern Jewish Literature in Translation (5) VLPA Survey of Jewish experience and its literary expression since 1880. Includes such Yiddish writers as Sholom Aleichem, Peretz, and I. B. Singer; such Israeli writers as Agnon, Hazaz, and Appelfeld; and such writers in non-Jewish languages as Primo Levi and Kafka.

ENGL 312 Jewish Literature: Biblical to Modern (5) VLPA/I&S, DIV A study of Jewish literature from Biblical narrative and rabbinic commentary to modern prose and poetry with intervening texts primarily organized around major themes: martyrdom and suffering, destruction and exile, messianism, Hasidism and Enlightenment, Yiddishism and Zionism. Various critical approaches; geographic and historic contexts. Offered: jointly with JSIS C 312.

ENGL 313 Modern European Literature in Translation (5) VLPA Fiction, poetry, and drama from the development of modernism to the present. Works by such writers as Mann, Proust, Kafka, Gide, Hesse, Rilke, Brecht, Sartre, and Camus.

ENGL 314 Transatlantic Literature and Culture (5) VLPA Explores literatures and cultures produced in the Atlantic world. Emphasizes historical lines of communication and exchange among Atlantic cultures and their literature.

ENGL 315 Literary Modernism (5) VLPA Various modern authors, from Wordsworth to the present, in relation to such major thinkers as Kant, Hegel, Darwin, Marx, Nietzsche, Bergson, and Wittgenstein, who have helped create the context and the content of modern literature. Recommended: either ENGL 230 or one 300-level course in nineteenth- or twentieth-century literature.

ENGL 316 Postcolonial Literature and Culture (5, max. 10) VLPA, DIV Readings of major texts and writers in post-colonial literature and culture. Surveys some of the most important questions and debates in postcolonial literature, including issues of identity, globalization, language, and nationalism. Cultural focus may vary; see professor for specific details.

ENGL 317 Literature of the Americas (5) VLPA, DIV Examines writings by and about people of the Americas, with a focus on intersections of gender, colonialism, race, sexuality, and ethnicity.

ENGL 318 Black Literary Genres (5) VLPA *Ibrahim, Retman* Considers how generic forms have been discussed, distributed, and valued in the larger context of African American, or other African-Diasporic literary studies. Explores how black writers and artists treat the terms and conventions of generic forms in response, and comparison, to their cultural treatment of others. Offered: jointly with AFRAM 318; AWSp.

ENGL 319 African Literatures (5) VLPA *Chrisman* Introduces and explores African literatures from a range of regions. Pays particular attention to writings connected with the historical experiences of colonialism, anti-colonial resistance, and decolonization. Considers the operations of race, gender, nationhood, neocolonialism, and globalization within and across these writings. Offered: AWSp.

ENGL 320 English Literature: The Middle Ages (5) VLPA Literary culture of Middle Ages in England, as seen in selected works from earlier and later periods, ages of Beowulf and of Geoffrey Chaucer. Read in translation, except for a few later works, which are read in Middle English.

ENGL 321 Chaucer (5) VLPA Chaucer's *Canterbury Tales* and other poetry, with attention to Chaucer's social, historical, and intellectual milieu.

ENGL 322 English Literature: The Elizabethan Age (5) VLPA The golden age of English poetry, with poems by Shakespeare, Spenser, Sidney, and others; drama by Marlowe and other early rivals to Shakespeare; prose by Sir Thomas More and the great Elizabethan translators.

ENGL 323 Shakespeare to 1603 (5) VLPA Shakespeare's career as dramatist before 1603 (including *Hamlet*). Study of history plays, comedies, and tragedies.

ENGL 324 Shakespeare After 1603 (5) VLPA Shakespeare's career as dramatist after 1603. Study of comedies, tragedies, and romances.

ENGL 325 English Literature: The Late Renaissance (5) VLPA A period of skepticism for some, faith for others, but intellectual upheaval generally. Poems by John Donne and the "metaphysical" school; poems and plays by Ben Jonson and other late rivals to Shakespeare; prose by Sir Francis Bacon and other writers.

ENGL 326 Milton (5) VLPA Milton's early poems and the prose; *Paradise Lost*, *Paradise Regained*, and *Samson Agonistes*, with attention to the religious, intellectual, and literary contexts.

ENGL 327 English Literature: Restoration and Early Eighteenth Century (5) VLPA Selections from wits and satirists; poems by John Dryden and Alexander Pope; plays by Dryden, William Congreve, and other wits; the great satires of Jonathan Swift, and the first stirring of the novel.

ENGL 328 English Literature: Later Eighteenth Century (5) VLPA Classic age of English prose. Essays, biography, and criticism by Samuel Johnson, Oliver Goldsmith, and others; comedies by Goldsmith and Richard Brinsley Sheridan;

fiction by Henry Fielding and others; poetry by a variety of writers.

ENGL 329 Rise of the English Novel (5) VLPA Study of the development of this major and popular modern literary form in the eighteenth century. Readings of the best of the novelists who founded the form, and some minor ones, from Defoe to Fielding, Richardson, and Sterne, early Austen, and the gothic and other writers.

ENGL 330 English Literature: The Romantic Age (5) VLPA Literary, intellectual, and historical ferment of the period from the French Revolution to the 1830s. Readings from major authors in different literary forms; discussions of critical and philosophical issues in a time of change.

ENGL 331 Romantic Poetry I (5) VLPA Blake, Wordsworth, Coleridge, and their contemporaries.

ENGL 332 Romantic Poetry II (5) VLPA Byron, Shelley, Keats, and their contemporaries.

ENGL 333 English Novel: Early and Middle Nineteenth Century (5) VLPA Studies in the novel in one of its classic phases. Authors include Austen, the Brontës, Dickens, Thackeray.

ENGL 334 English Novel: Later Nineteenth Century (5) VLPA Studies in the novel as it passes from a classic format to formats more experimental. Authors include George Eliot, Thomas Hardy, Joseph Conrad, and others.

ENGL 335 English Literature: The Age of Victoria (5) VLPA Literature in an era of revolution that also sought continuity, when culture faced redefinition as mass culture and found in the process new demands and creative energies, new material and forms, and transformations of old ones. Readings range from works of Tennyson, Browning, Arnold, Shaw, to Dickens, Eliot, Hardy.

ENGL 336 English Literature: Early Twentieth Century (5) VLPA Experiments in fiction and poetry. Novels by Joyce, Woolf, Lawrence, and others; poetry by Eliot and Yeats and others.

ENGL 337 The Modern Novel (5) VLPA The novel on both sides of the Atlantic in the first half of the twentieth century. Includes such writers as Joyce, Woolf, Lawrence, Stein, Hemingway, Faulkner, and others.

ENGL 338 Modern Poetry (5) VLPA Poetry in the modernist mode, including such poets as Yeats, Eliot, Pound, Auden, and Moore.

ENGL 339 English Literature: Contemporary England (5) VLPA Return to more traditional forms in such writers as Bowen, Orwell, Waugh, Cary, Lessing, Drabble.

ENGL 340 Anglo-Irish Literature (5) VLPA Principal writers in English of the modern Irish literary movement - Yeats, Joyce, Synge, Gregory, and O'Casey among them - with attention to traditions of Irish culture and history.

ENGL 341 Studies in the Novel (5) VLPA Explores the workings and evolution of the novel. Introduces the distinct styles and purposes of the novel, such as the romance, the roman-a-clef, realism, naturalism, modernism, and post-modernism.

ENGL 342 Contemporary Novel (5) VLPA Recent efforts to change the shape and direction of the novel by such writers as Murdoch, Barth, Hawkes, Fowles, and Atwood.

ENGL 343 Contemporary Poetry (5) VLPA Recent developments by such poets as Hughes, Heaney, Rich, Kinnell, and Hugo.

ENGL 344 Studies in Drama (5) VLPA Explores the workings and historical development of theatrical practices, including performance and spectatorship more broadly. Possible topics include genres of drama (tragedy, mystery play, melodrama, agitprop); histories of drama (Elizabethan theater, Theater of the Absurd, the Mbari Mbayo club, In-Your-Face Theater_); and theorists of performance and dramaturgy.

ENGL 345 Studies in Film (5) VLPA Types, techniques, and issues explored by filmmakers. Emphasis on narrative, image, and point of view.

ENGL 346 Studies in Short Fiction (5) VLPA The American and English short story, with attention to the influence of writers of other cultures. Aspects of the short story that distinguish it, in style and purpose, from longer fiction.

ENGL 347 Studies in Non-Fiction Prose (5) VLPA Explores the workings and evolution of non-fiction prose, Introduces the distinct styles and purposes on non-fiction prose such as autobiography, biography, personal essay, reflective and meditative writing, social and scientific inquiry, and persuasive writing. Recommended: one introductory literature course.

ENGL 348 Studies in Popular Culture (5) VLPA Explores one or more popular genres (fantasy, romance, mystery) or media (comics, television, videogames), with attention to historical development, distinctive formal features, and reading protocols. May include study of audience, reception histories, or fan cultures.

ENGL 349 Science Fiction and Fantasy (5) VLPA The study of the development of and specific debates in the related genres of fantasy and science fiction literatures

ENGL 350 Traditions in American Fiction (5) VLPA A literary form in which America has found its distinctively American expression. Selected readings among important novelists from the beginnings until 1900, including Cooper, Hawthorne, Melville, Twain, Chopin, James, and Wharton.

ENGL 351 American Literature: The Colonial Period (5) VLPA Responses to the New World and literary strategies in the literature of the colonies and the early republic. Works by Taylor, Edwards, Franklin, and others.

ENGL 352 American Literature: The Early Nation (5) VLPA Conflicting visions of the national destiny and the individual identity in the early years of America's nationhood. Works by Emerson, Thoreau, Hawthorne, Melville, and such other writers as Poe, Cooper, Irving, Whitman, Dickinson, and Douglass.

ENGL 353 American Literature: Later Nineteenth Century (5) VLPA Literary responses to an America propelled forward by accelerating and complex forces. Works by Twain, James, and such other writers as Whitman, Dickinson, Adams, Wharton, Howells, Crane, Dreiser, DuBois, and Chopin.

ENGL 354 American Literature: Early Twentieth Century (5) VLPA Investigates the period of American literary modernism (1900 to WW II). Topics include nationalism, migration, race, gender, and the impact of the visual arts on literary modernism, as well as the relation between modernity/modernization (social, economic, and technological transformation) and modernism (revolution in literary style).

ENGL 355 American Literature: Contemporary America (5) VLPA Works by such writers as Ellison, Williams, O'Connor, Lowell, Barth, Rich, and Hawkes.

ENGL 356 Classic American Poetry (5) VLPA Poetry by Taylor, Whitman, Dickinson, and such others as Poe, Bradstreet, Crane, Robinson. The lineage and characteristics of lyric and epic in America.

ENGL 357 Jewish American Literature and Culture (5) VLPA *Butwin* Examines the literary and cultural production of American Jews from the colonial period to the present time. Considers ways in which American Jews assimilate and resist assimilation while Jewish writers, filmmakers, playwrights, and graphic novelists imitate and alter American life and literature. Offered: jointly with JSIS C 357; AWSp.

ENGL 358 Literature of Black Americans (5) VLPA Selected writings, novels, short stories, plays, poems by Afro-American writers. Study of the historical and cultural context within which they evolved. Differences between Afro-American writers and writers of the European-American tradition. Emphasis varies. Offered: jointly with AFRAM 358.

ENGL 359 Contemporary American Indian Literature (5) VLPA, DIV Creative writings (novels, short stories, poems) of contemporary Indian authors; the traditions out of which these works evolved. Differences between Indian writers and writers of the dominant European/American mainstream. Offered: jointly with AIS 377.

ENGL 360 American Literature and Culture (5) VLPA/I&S American literature and culture in its political and cultural context. Emphasizes an interdisciplinary approach to American literature and culture, including history, politics, anthropology, and mass media.

ENGL 361 American Political Culture: After 1865 (5) VLPA/I&S American literature in its political and cultural context from the Civil War to the present. Emphasizes an interdisciplinary approach to American literature, including history, politics, anthropology, and mass media.

ENGL 362 U.S. Latino/a Literature (5) VLPA Kaup Selected contemporary and historical works by U.S. Latino/a authors. Spans U. S. Latino/a literature from the nineteenth century to the present, tracing its genealogy from a foundational triad of communities - Mexican American, Puerto Rican, and Cuban American.

ENGL 363 Literature and the Other Arts and Disciplines (5, max. 10) VLPA Relationships between literature and other arts, such as painting, photography, architecture, and music, or between literature and other disciplines, such as science. Content varies.

ENGL 364 Literature and Medicine (5) VLPA/I&S How changing concepts of doctor-patient relationship and of body depicted in literary texts affect decisions throughout the human life cycle. Medicine and disease as metaphors for personal experience and social analysis.

ENGL 365 Literature and Discourse on the Environment (5) VLPA Blake, Handwerk Pays attention to verbal expression; forms and genres; and historical, cultural, and conceptual contexts of the natural environment. Focuses on sites, nations, and historical periods. Forms and genres include: nature writing, environmentalist discourses, the pastoral, the sublime, discourses of the city, fiction, poetry, nonfiction prose, dramatic forms, and religious texts. Offered: AWSps.

ENGL 366 Literature and Law (5) VLPA Introduces and explores topics in law and literature, with a focus on the relationship between legal materials and literary or cultural imaginaries. Surveys debates in the field of law and literature or focuses on a specific problem, genre, or historical period.

ENGL 367 Gender Studies in Literature (5, max. 15) VLPA, DIV The study of contemporary approaches to analyzing the gender politics of literature and culture. Examines special topics in the history and development of the major theoretical trends, including the relationship of certain theories of gender to relevant works of literature.

ENGL 368 Women Writers (5, max. 15) VLPA Study of the work of women writers in English and American literature.

ENGL 369 Research Methods in Language and Rhetoric (5) VLPA Introduces research theories and methodological approaches in language and rhetoric. Methods and content focus vary by instructor and may include ethnography, corpus analysis, case study, discourse analysis, rhetorical criticism, and various other qualitative and quantitative research methods.

ENGL 370 English Language Study (5) VLPA Wide-range introduction to the study of written and spoken English. The nature of language; ways of describing language; the use of language study as an approach to English literature and the teaching of English.

ENGL 371 English Syntax (5) VLPA Description of sentence, phrase, and word structures in present-day English. Prerequisite: ENGL 370, LING 200 or LING 400.

ENGL 372 World Englishes (5) VLPA Examines emerging World/New Englishes, and variants of English employed as

a second language in former colonies of the United Kingdom and United States. Explores issues of standardization and the standard in a global perspective. Prerequisite: ENGL 370, LING 200, or LING 400.

ENGL 373 History of the English Language (5) VLPA Evolution of English sounds, forms, structures, and word meanings from Anglo-Saxon times to the present. Prerequisite: either ENGL 370 or LING 200.

ENGL 374 The Language of Literature (5) VLPA Roles of explicitly describable language features in the understanding and appreciation of various verbal forms. Emphasis on literature, but attention also may be given to nonliterary prose and oral forms.

ENGL 375 Rhetorical Genre Theory and Practice (5) Explores the workings and evolution of rhetorical genres as they emerge from and shape recurring social situations. Focuses on the relationship between form and content, and how the typified rhetorical features and linguistic styles of genres are related to specific purposes, activities, relations, and identities.

ENGL 376 Introduction to Middle English Language (5) VLPA Moore Explores the language and culture of the Middle English period in England (1100-1500). Examines Middle English texts, the cultural importance of written material, the shifting roles of literacy in early England, the relationship to French and Latin, the regional dialects of English in the period, and manuscript culture. Offered: AWSp.

ENGL 378 Special Topics in Theories/Methods (5, max. 15) Introduces and explores a specific area of theory or method as it has influence the production, practice, or study of literature, language, and culture in English.

ENGL 379 Special Topics in Forms/Genres/Media (5, max. 15) Introduces and explores a specific area of form, genre, or media as it has influenced the production, practice, or study of literature, language, and culture in English.

ENGL 380 Special Topics in Histories (5, max. 15) Introduces and explores a specific area of history as it has influenced the production, practice, or study of literature, language, and culture in English.

ENGL 381 Advanced Expository Writing (5) C Concentration on the development of prose style for experienced writers.

ENGL 382 Writing for the Web (5, max. 10) C Writing substantial web essays on topics of current concern. Extensive analysis and criticism of on-line essays. Prerequisite: ENGL 282.

ENGL 383 The Craft of Verse (5) VLPA Intensive study of various aspects of the craft verse. Readings in contemporary verse and writing using emulation and imitation. Prerequisite: ENGL 283; ENGL 284.

ENGL 384 The Craft of Prose (5) VLPA Intensive study of various aspects of the craft of fiction or creative nonfiction. Readings in contemporary prose and writing using emulation and imitation. Prerequisite: ENGL 283; ENGL 284.

ENGL 385 Modernism/Modernity (5) Introduces and explores the genealogy, character, and consequences of the modern for textual production and reception. Addresses competing conceptions of modernism and periodizations of modernity, including: preoccupations with novelty/the new; narratives of historical development; temporality; constructions of high and low culture; intersections between aesthetics and politics; and transnationalism.

ENGL 395 Study Abroad (1-5, max. 30) VLPA Relates major works of literature, literary theory and criticism, or creative writing to the landscape and activities of their settings for students in UW English Department study abroad programs. Equivalency for upper-division English coursework taken on a UW study abroad program or direct exchange.

ENGL 407 Special Topics in Cultural Studies (5) VLPA Advanced work in cultural studies.

ENGL 411 Introduction to the Folktale Among Literate Peoples (3) VLPA Techniques of classification, geographic-historical distribution, theories of origin and interpretations, and related areas of investigation of the oral prose folk narrative of literate peoples.

ENGL 422 Arthurian Legends (5) VLPA Medieval romance in its cultural and historical setting, with concentration on the evolution of Arthurian romance.

ENGL 430 British Writers: Studies in Major Authors (5, max. 15) VLPA Concentration on one writer or a special group of British writers.

ENGL 431 Topics in British Literature (5, max. 15) VLPA Themes and topics of special meaning to British literature.

ENGL 440 Special Studies in Literature (3/5, max. 10) VLPA Themes and topics offering special approaches to literature.

ENGL 442 The Novel: Special Studies (5, max. 10) VLPA Readings may be English or American and drawn from different periods, or they may concentrate on different types - gothic, experimental, novel of consciousness, realistic novel. Special attention to the novel as a distinct literary form. Specific topic varies from quarter to quarter.

ENGL 443 Poetry: Special Studies (5, max. 10) VLPA A poetic tradition or group of poems connected by subject matter or poetic technique. Specific topics vary, but might include poetry as a geography of mind, the development of the love lyric, the comic poem.

ENGL 444 Dramatic Literature: Special Studies (5, max. 10) VLPA Study of a particular dramatic tradition (such as expressionism or the absurd theatre) or character (the clown) or technique (play-within-a-play, the neoclassical three unities). Topics vary.

ENGL 451 American Writers: Studies in Major Authors (5, max. 15) VLPA Concentration on one writer or a special group of American writers.

ENGL 452 Topics in American Literature (5, max. 15) VLPA Exploration of a theme or special topic in American literary expression.

ENGL 453 Introduction to American Folklore (5) VLPA Study of different kinds of folklore inherited from America's past and to be found in America today.

ENGL 457 Pacific Northwest Literature (5) VLPA Concentrates in alternate years on either prose or poetry of the Pacific Northwest. Prose works examine early exploration, conflicts of native and settlement cultures, various social and economic conflicts. Pacific Northwest poetry includes consideration of its sources, formative influences, and emergence into national prominence.

ENGL 466 Gay and Lesbian Studies (5) VLPA/I&S, DIV Examination of ways gays and lesbians are represented in literature, film, performance, and popular culture and how these representations are interpreted in mainstream, gay/lesbian, and academic writing.

ENGL 470 Theory and Practice of Teaching Literature (5, max. 10) VLPA Reviews the institutional history of English as an academic discipline and the core debates and politics that have shaped the content, teaching, and study of literature and literacy theory. Introduces some theoretical and methodological approaches that inform the teaching of literature.

ENGL 471 Theory and Practice of Teaching Writing (5) VLPA Reviews the research, core debates, and politics that have shaped the practice, teaching and study of writing. Introduces theoretical and methodological approaches that inform the teaching and learning of writing.

ENGL 472 Language Learning (5) VLPA Consideration of how an individual achieves psychological and esthetic grasp of reality through language; relates language development to reading skills, literary interpretation, grammar acquisition, oral fluency, discursive and imaginative writing.

ENGL 473 Current Developments in English Studies: Conference (5) VLPA

ENGL 474 Special Topics in English for Teachers (1-10, max. 10) VLPA

ENGL 475 Colloquium in English for Teachers (1-5, max. 10) VLPA

ENGL 476 Puget Sound Writing Program Institute (10) VLPA Focus on the writing process and the teaching of writing, accomplished through research, writing, reflection, and demonstration of writing instruction. Affiliated with the National Writing Project.

ENGL 477 Children's Literature (5) VLPA An examination of books that form a part of the imaginative experience of children, as well as a part of a larger literary heritage, viewed in the light of their social, psychological, political, and moral implications.

ENGL 478 Language and Social Policy (5) VLPA/I&S, DIV Examines the relationship between language policy and social organization; the impact of language policy on immigration, education, and access to resources and political institutions; language policy and revolutionary change; language rights.

ENGL 479 Language Variation and Language Policy in North America (5) VLPA/I&S, DIV Surveys basic issues of language variation: phonological, syntactic, semantic, and narrative/discourse differences among speech communities of North American English; examines how language policy can affect access to education, the labor force, and political institutions.

ENGL 481 Special Studies in Expository Writing (5) VLPA Individual projects in various types of nonfictional prose, such as biographical sketches, informational reports, literary reviews, and essays.

ENGL 483 Advanced Verse Workshop (5, max. 10) VLPA Intensive verse workshop. Emphasis on the production and discussion of student poetry. Prerequisite: ENGL 383; ENGL 384.

ENGL 484 Advanced Prose Workshop (5, max. 10) VLPA Intensive prose workshop. Emphasis on the production and discussion of student fiction and/or creative nonfiction. Prerequisite: ENGL 383; ENGL 384.

ENGL 485 Novel Writing (5, max. 15) VLPA Experience in planning, writing, and revising a work of long fiction, whether from the outset, in progress, or in already completed draft. Prerequisite: ENGL 384.

ENGL 486 Playwriting (5, max. 10) VLPA Experience in planning, writing, and revising a play, whether from the outset, in progress, or in already completed draft.

ENGL 487 Screenwriting (5) VLPA Students read screenwriting manuals and screenplays, analyze exemplary films, and write synopses, treatments, and first acts of their own screenplays.

ENGL 491 Internship (1-6, max. 12) Supervised experience in local businesses and other agencies. Open only to upper-division English majors. Credit/no-credit only.

ENGL 492 Advanced Expository Writing Conference (1-5, max. 10) Tutorial arranged by prior mutual agreement between individual student and instructor. Revision of manuscripts is emphasized, but new work may also be undertaken.

ENGL 493 Advanced Creative Writing Conference (1-5, max. 10) Tutorial arranged by prior mutual agreement between individual student and instructor. Revision of manuscripts is emphasized, but new work may also be undertaken.

ENGL 494 Honors Seminar (5, max. 10) VLPA Survey of current issues confronting literary critics today, based on revolving themes and topics. Focuses on debates and developments affecting English language and literatures, including questions about: the relationship of culture and history; the effect of emergent technologies on literary

study; the rise of interdisciplinary approaches in the humanities.

ENGL 495 Major Conference for Honors in Creative Writing (5) Special projects available to Honors students in creative writing. Required of, and limited to, Honors students in creative writing.

ENGL 496 Major Conference for Honors (5) Individual study (reading, papers) by arrangement with the instructor. Required of, and limited to, Honors seniors in English.

ENGL 497 Honors Senior Seminar (5) VLPA Seminar study of special topics in language and literary study. Limited to Honors students majoring in English.

ENGL 498 Senior Seminar (5) VLPA Seminar study of special topics in language and literary study. Limited to seniors majoring in English.

ENGL 499 Independent Study (1-5, max. 10) Individual study by arrangement with instructor.

ENGL 501 Textual Theory (5) Provides an introduction to the intellectual foundations of textual studies; historical background in disciplines of philosophy and textual criticism, theories of textuality from formalism and New Criticism to poststructuralism, and media-specific analysis; current and emerging concerns in the history of the book, media studies, globally comparative philologies, and digital humanities. Offered: jointly with C LIT 551.

ENGL 505 Theories of American Literature (5) Examination of selected texts in American Literature, concentrating on the specific problems of interpretation and scholarship characteristic of the study of works in this field.

ENGL 506 Modern and Contemporary Critical Theory (5) Engages ongoing critical conversations that inform English studies, including: language, textual production, disciplinary, the university, capital, nation formation, postcolonialism, the environment, race, gender, class, and sexuality. The historical focus is contemporary, with attention to foundational modern theorists.

ENGL 507 History of Literary Criticism and Theory I (5, max. 15) A general introduction to the major issues in the history of criticism followed by the study of the classical theorists, including Plato, Aristotle, Longinus, and the major medieval critics. Offered: jointly with C LIT 507.

ENGL 508 History of Literary Criticism and Theory II (5, max. 15) Literary criticism and theory from the Middle Ages and the Renaissance through the eighteenth century to, but not including, Kant. Offered: jointly with C LIT 508.

ENGL 509 History of Literary Criticism and Theory III (5, max. 15) Literary criticism and theory from Kant's Critique of Judgment to the mid-twentieth century and the work of Northrop Frye. Offered: jointly with C LIT 509.

ENGL 510 History of Literary Criticism and Theory IV (5, max. 15) A study of the major issues in literary criticism and theory since about 1965. Offered: jointly with C LIT 510.

ENGL 512 Introductory Reading in Old English (5)

ENGL 513 Old English Language and Literature (5, max. 15)

ENGL 514 Middle English (5, max. 15)

ENGL 515 Chaucer (5, max. 15)

ENGL 516 Topics in Medieval English Literature (5, max. 15)

ENGL 517 Sixteenth-Century Literature (5, max. 15)

ENGL 518 Shakespeare (5, max. 15)

ENGL 520 Seventeenth-Century Literature (5, max. 15)

ENGL 522 Topics in the English Renaissance, 1485-1660 (5, max. 15)

ENGL 524 Restoration and Eighteenth-Century Literature (5, max. 15)

ENGL 527 Romanticism (5, max. 15)

ENGL 528 Victorian Literature (5, max. 15)

ENGL 529 Topics in Nineteenth-Century Studies (5, max. 15)

ENGL 531 Early American Literature (5, max. 15)

ENGL 532 Nineteenth-Century American Literature (5, max. 15)

ENGL 533 Modern American Literature (5, max. 15)

ENGL 535 American Culture and Criticism (5, max. 15)

ENGL 537 Topics in American Studies (5, max. 15)

ENGL 540 Modern Literature (5, max. 15)

ENGL 541 Contemporary Literature (5, max. 15)

ENGL 543 Anglo-Irish Literature (5, max. 15)

ENGL 544 World Literature in English (5, max. 15)

ENGL 546 Topics in Twentieth-Century Literature (5, max. 15)

ENGL 550 Studies in Narrative (5, max. 15)

ENGL 551 Studies in Poetry (5, max. 15)

ENGL 552 Studies in Drama (5, max. 15)

ENGL 554 Theories of Structure, Genre, Form, and Function (5, max. 15)

ENGL 555 Feminist Theories (5, max. 15)

ENGL 556 Cultural Studies (5, max. 15)

ENGL 559 Literature and Other Disciplines (5, max. 15)

ENGL 560 The Nature of Language: History and Theory (5)

ENGL 561 Stylistics (5)

ENGL 562 Discourse Analysis (5)

ENGL 563 Research Methods in Language and Rhetoric (5, max. 15) Introduces research theories and methodological approaches in language and rhetoric. Methods and content focus include ethnography, corpus analysis, case study, discourse analysis, rhetorical criticism, and various other qualitative and quantitative research methods.

ENGL 564 Current Rhetorical Theory (5) Prerequisite: teaching experience.

ENGL 567 Approaches to Teaching Composition (1-5, max. 10) Readings in composition theory and discussion of practical classroom applications. Prerequisite: previous experience or concurrent assignment in teaching writing.

ENGL 568 Topics in Composition Studies (5, max. 15) Covers various issues in composition studies including: the history of composition study, contemporary composition theory, basic writing, service-learning pedagogy, engaged scholarship, new media and digital studies, writing assessment, writing across the curriculum, and writing program administration.

ENGL 569 Topics in Language and Rhetoric (5, max. 15)

ENGL 570 Practicum in Teaching English as a Second Language (5, max. 10) Discussion and practice of second-language teaching techniques. Three hours per week teaching required in addition to regular class meetings. Prerequisite: ENGL 571 or permission of instructor. Credit/no-credit only.

ENGL 571 Theory and Practice on Teaching English to Speakers of Other Languages (5, max. 10) Topics include second language reading, aural/oral skills, critical pedagogy, program administration, and language policy.

ENGL 572 Methods and Materials for Teaching English as a Second Language (5) Prerequisite: LING 445 or permission of instructor.

ENGL 574 Research Methods in Second-Language Acquisition (5) Prerequisite: ENGL 572, LING 449, or permission of instructor.

ENGL 575 Pedagogy and Grammar in Teaching English as a Second Language (5)

ENGL 576 Testing and Evaluation in English as a Second Language (5) Evaluation and testing of English language proficiency, including testing theory, types of tests, and

teacher-prepared classroom tests. Prerequisite: ENGL 571 and ENGL 572 or permission of instructor.

ENGL 578 Colloquium in Teaching English to Speakers of Other Languages (5, max. 10) Overview of major issues in second-language acquisition, teaching methodology, and classroom practice with special emphasis on links between theories of language learning and practical aspects of teaching English to speakers of other languages.

ENGL 581 The Creative Writer as Critical Reader (5)

ENGL 584 Advanced Fiction Workshop (5, max. 20) Prerequisite: graduate standing.

ENGL 585 Advanced Poetry Workshop (5, max. 20) Prerequisite: graduate standing.

ENGL 586 Graduate Writing Conference (5)

ENGL 587 Topics in the Teaching of Creative Writing (3/5)

ENGL 590 Master of Arts Essay (5/10, max. 10) Research and writing project under the close supervision of a faculty member expert and with the consultation of a second faculty reader. The field of study is chosen by the student. Work is independent and varies. The model is an article in a scholarly journal. Prerequisite: graduate standing in English.

ENGL 591 Master of Arts for Teachers Essay (5) Research and writing project under the close supervision of a faculty member expert in the field of study chosen by the student within the MAT degree orientation toward the teaching of English, and with the consultation of a second faculty reader. The model is an article in a scholarly journal.

ENGL 592 Graduate English Studies (1-5, max. 10)

ENGL 595 Topics in Teaching Literature (5, max. 15)

ENGL 597 Directed Readings (*, max. 18) Intensive reading in literature or criticism, directed by members of doctoral supervisory committee. Credit/no-credit only.

ENGL 598 Colloquium in English (1-5, max. 10) Lectures and seminars presented by visiting scholars or a range of local scholars relevant to English graduate studies.

ENGL 599 Special Studies in English (5, max. 15)

ENGL 600 Independent Study or Research (*-)

ENGL 601 Internship (3-10, max. 10) Credit/no-credit only.

ENGL 700 Master's Thesis (*-)

ENGL 800 Doctoral Dissertation (*-)

Gender, Women, And Sexuality Studies

B110 Padelford

Gender, Women, and Sexuality Studies is an interdisciplinary field that offers students a cohesive framework for the study of women's and men's lives within historical and contemporary contexts, and from multi-disciplinary, multi-cultural, and international perspectives. As a field of inquiry, gender, women, and sexuality studies challenges traditional scholarship about human societies and fosters the construction of new theoretical and methodological approaches to understanding diverse experiences and realities.

UNDERGRADUATE PROGRAM

Adviser

B110S Padelford, Box 354345

(206) 543-6902

gwssadv@uw.edu

The Department of Gender, Women, and Sexuality Studies offers the following programs of study:

- The Bachelor of Arts degree with a major in gender, women, and sexuality studies
- A minor

Bachelor of Arts

Suggested First- and Second-Year College Courses: GWSS 200, and any of the following: GWSS 206, GWSS 257, GWSS 283, GWSS 290.

Department Admission Requirements

Any student with a cumulative GPA of at least 2.00 can declare this major at any time.

Major Requirements

Minimum 58 credits, as follows:

1. GWSS 200 or equivalent, and one additional GWSS 200-level course (10 credits)
2. GWSS 300 (5 credits)
3. One course in feminist theory. GWSS 455 recommended for those planning to pursue graduate study. (5 credits)
4. One upper-division course focusing on transnational perspective. See adviser for list of eligible courses. (5 credits)
5. GWSS 497 (fieldwork) (minimum 3 credits)
6. Additional gender, women, and sexuality studies upper-division credits. 15 credits must be graded and only 10 credits from variable credit courses (GWSS 495, GWSS 496, GWSS 497, GWSS 499) can be applied toward this requirement. (25 credits)
7. Senior capstone, GWSS 494 (5 credits)
8. Minimum 25 credits applied toward the major must be completed in residence at the UW Seattle campus.

Minor

Minor Requirements: 30 credits as follows:

1. GWSS 200 or equivalent; and one additional GWSS 200-level course (10 credits)
2. GWSS 300 (5 credits)
3. Additional upper-division (300-400 level) credits in gender, women, and sexuality studies. Minimum 10 credits must be graded. Maximum 5 credits from variable credit courses (GWSS 495, GWSS 496, GWSS 497, and GWSS 499) can be applied toward this requirement. (15 credits)

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* A Bachelor of Arts in gender, women, and sexuality studies helps students prepare for careers in human, health, legal, or civil service, as well as in the private sector. Some gender, women, and sexuality studies graduates develop careers that focus directly or indirectly on women and women's issues. Many others move into careers that entail understanding the dynamics of gender, race, class, and sexuality. Such positions exist in politics, business, education, government, medicine, and the arts. Recent graduates of gender, women, and sexuality studies have found employment in public agencies, community ser-

vices, health services, private businesses, and legal firms.

- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Students intern in local agencies or businesses to develop skills in an area of specialization appropriate to their area of interest. For lists of these opportunities, see adviser.
- *Department Scholarships:* None offered.
- *Student Organizations/Associations:* Students can join the National Women's Studies Association (NWSA).

GRADUATE PROGRAM

Graduate Program Coordinator

B110 Padelford, Box 354345

(206) 543-6900

gwss@uw.edu

The Department of Gender, Women, and Sexuality Studies offers graduate training leading to the Doctor of Philosophy degree in interdisciplinary gender, women, and sexuality studies as well as in a chosen discipline. A master's degree may be awarded to students in the doctoral program, but the department does not offer a terminal master's degree. The core faculty represent the following disciplines: anthropology, American Indian studies, cultural studies, economics and development, English, history, international studies, psychology, queer/sexuality studies, and sociology. Although students are required to work primarily with a core faculty member in Gender, Women, and Sexuality Studies, they have the opportunity to study with more than 90 faculty members from a wide range of disciplines who are adjunct faculty to Gender, Women, and Sexuality Studies.

Admission Requirements

Applicants are admitted to begin study during autumn quarter only and are required to have their application materials completed by the beginning of the prior January. A complete application file includes the Graduate School application, one copy of official transcripts, three recommendations, a statement of purpose, and scores from the Graduate Record Examination (GRE).

Degree Requirements

Minimum 90 credits for the PhD.

All students are required to complete 15 credits of the core seminars: History of Feminism (GWSS 501), Problems in Feminist Theory (GWSS 502), and Feminist Research and Methods of Inquiry (GWSS 503). Under the guidance of a core faculty mentor and advisory committee, the student shapes an individual program of study. The doctoral program usually requires three years of study beyond the master's level, including independent field research and preparation of a dissertation. PhD students must exhibit proficiency in a language relevant to their theoretical and regional areas of specialization. Students are urged to establish foreign language competency as undergraduates before entering the graduate program or as early as possible in their graduate careers.

Financial Aid

A limited number of teaching and research assistantships are offered to PhD students.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/.

GWSS 200 Introduction to Women Studies (5) I&S, DIV Feminist analysis of the construction and enforcement of gender differences and gender inequalities in various contexts. Emphasis on the intersection of race, class, sexuality, and nationality in the lives of women. Topics include feminist theory, motherhood, popular culture, sexual autonomy, racism, and activism in the United States, Asia, Latin America. Offered: AWSpS.

GWSS 206 Philosophy of Feminism (5) I&S, DIV Philosophical analysis of the concepts and assumptions central to feminism. Theoretical positions within the feminist movement; view of the ideal society, goals and strategies of the movement, intersections of the sex-gender system with other systems of oppression. Offered: jointly with PHIL 206/POL S 212.

GWSS 235 Global Feminist Art (5) VLPA/I&S Introduces feminism as a way of thinking about visual art practice in terms of social hierarchy, aesthetic form, and ideology. Explores how feminist artists working in diverse locations and cultural traditions challenge, at the local and global level, artistic conventions and representations of gender, sexuality, race, class, and nationality. Offered: jointly with ANTH 235.

GWSS 241 Hip Hop and Indie Rock (5) VLPA/I&S Habell-Pallan Introduction to pop music studies. Examines how archives, oral histories, and new media transform stories about music. Traces rhythms, tempos, and genres including blues, gospel, estilo bravo, punk, son jarocho, and disco that influence hip hop and indie rock, contextualizing their relation to gender, race/ethnicity, class, locality, and nation. Offered: Sp.

GWSS 244 Indigenous Feminisms (5) I&S, DIV Ross Reconceptualizes and examines the formation of feminisms within a transnational indigenous framework. Topics include indigenous knowledge production, sovereignty, analyses of genders and sexualities, violence, poverty, the politics of reproduction, cultural identities, media, and environmental and social justice.

GWSS 251 Introduction to Gender and Popular Culture (5) VLPA/I&S Habell-Pallan Introduction to critical examination of gender, race/ethnicity, and sexuality in music, film, television, and the internet. Explores cultural meanings and social uses of popular culture by various communities in local and global contexts. Analysis of commercial and independent pop culture. Examination of popular culture forms varies depending on instructor.

GWSS 255 Masculinities: Contestation, Circulation, and Transformation (5) I&S Looks at different ways that masculinity is understood and represented historically and contemporarily. While primarily U.S. based, also attends to how different styles of masculinity travel via immigration and media. Explores the relationship between men, masculinity, and other social movements (e.g. anti-violence, gay rights).

GWSS 256 Feminist Exploration Series (2-5, max. 6) I&S Explores special topics developed and presented by an upper division Gender, Women, and Sexuality Studies major under the supervision of a faculty member. Prerequisite: GWSS 200. Credit/no-credit only.

GWSS 257 Psychology of Gender (5) I&S, DIV Kenney Major psychological theories of gender-role development; biological and environmental influences that determine and maintain gender differences in behavior; roles in children and adults; topics include aggression, cognitive abilities, achievement motivation, affiliation. Recommended: either PSYCH 101 or GWSS 200. Offered: jointly with PSYCH 257.

GWSS 262 Gender and Sport (5) I&S, DIV Considers the relationship between sports and society. Focuses on how sports shape cultural ideas of masculinity and femininity. Examines how assumptions about professional and amateur athletes reflect and challenge social norms about gender, sexuality, race, and class. Other topics include student athletes, the business of sport, and non-normative athletic bodies. Offered: Asp.

GWSS 290 Special Topics in Women Studies (2-5, max. 15) I&S Exploration of specific problems and issues relevant to the study of women. Offered by visiting or resident faculty members.

GWSS 299 Women Studies Colloquium (2) I&S Introduces the discipline of Gender, Women, and Sexuality Studies to new and potential majors and minors. Credit/no-credit only.

GWSS 300 Gender, Race, and Class in Social Stratification (5) I&S, DIV The intersection of race, class, and gender in the lives of women of color in the United States from historical and contemporary perspectives. Topics include racism, classism, sexism, activism, sexuality, and interracial dynamics between women of color groups. Prerequisite: GWSS 200. Offered: jointly with AES 322.

GWSS 302 Research Methods in Women Studies (5) I&S Explores appropriate research methodologies for interdisciplinary work in women studies. Examines current debates and issues in feminist methodologies and critiques of methodology. Use of historical documents and theoretical texts. Computer applications in research in women studies. Prerequisite: either GWSS 200 or GWSS 206.

GWSS 305 Feminism in an International Context (5) I&S Women and feminism from global theoretical perspectives. Critical theoretical ways of thinking about feminism. How women are differently situated throughout the world. How they are represented affects women's agency. Focus on how race and gender affect one another. Representations of and by women throughout the world.

GWSS 310 Women and the Law (5) I&S, DIV Examines how law addresses women, how the courts have made attempts to address women of color, poor women, lesbians, and women with disabilities. Topics include constitutional construction of equality, employment discrimination, reproductive rights, regulation of sexuality, families and motherhood, sexual harassment, violence against women, and international women and human rights.

GWSS 313 Women in Politics (5) I&S, DIV Theoretical, historical, and empirical studies of women's participation in political and social movements. Women's diverse efforts to improve their political, social, and economic status. Policy issues of particular concern to women. Women's political experiences in household, local, regional, national, and international arenas. Offered: jointly with POL S 313.

GWSS 321 History of Afro-American Women and the Feminist Movement (5) I&S "Feminist Movement" from early nineteenth century to present. Treats relationship between black and white women in their struggle for independence, at times together and at times apart. Discusses the reasons, process, and results of collaboration as well as opposition. Examines recent and contemporary attempts at cooperation. Offered: jointly with AFRAM 321.

GWSS 323 History of Racial Formation in the United States: 1800-1990 (5) I&S Yee Traces the development of the concept of race in the United States from the nineteenth century to the late twentieth century. Specific topics include paid and unpaid labor, media, reproduction, migration, social activism, and the processes of identity and community formation.

GWSS 333 Gender and Globalization: Theory and Process (5) I&S, DIV Ramamurthy Theoretical, historical, and empirical analysis of how current processes of globalization are transforming the actual conditions of women's lives, labor, gender ideologies, and politics in complex and contradictory ways. Topics include feminist exploration of

colonialism, capitalism, economic restructuring policies, resistance in consumer and environmental movements. Offered: jointly with JSIS B 333.

GWSS 339 Social Movements in Contemporary India (5) I&S P. RAMAMURTHY Covers issues of social change, economic development, and identity politics in contemporary India studied through environmental and women's movements. Includes critiques of development and conflicts over forests, dams, women's rights, religious community, ethnicity, and citizenship. Offered: jointly with ANTH 339/JSIS A 339.

GWSS 341 Native Women in the Americas (5) I&S Historiography, sociology, biography, autobiography, and fiction about native women in the United States and Canada. Offered: jointly with AIS 341.

GWSS 345 Women and International Economic Development (5) I&S, DIV P. RAMAMURTHY Questions how women are affected by economic development in Third World and celebrates redefinitions of what development means. Introduces theoretical perspectives and methods to interrogate gender and development policies. Assesses current processes of globalization and potential for changing gender and economic inequalities. Offered: jointly with ANTH 345/JSIS B 345.

GWSS 350 Women in Law and Literature (5) VLPA/I&S, DIV Representations of women in American law and literature. Considers how women's political status and social roles have influenced legal and literary accounts of their behavior. Examines how legal cases and issues involving women are represented in literary texts and also how law can influence literary expression. Offered: jointly with CHID 350.

GWSS 351 Women of Color as Cross-Cultural Artists (5) VLPA/I&S, DIV Habell-Pallan Provides a historical context for artistic forms produced by racialized women. Examines the cultural production of Chicanas and Latinas in relation to that of Native American, African American, East and South Asian American, and Arab American women as well as those women of mixed heritage in the U.S.

GWSS 353 Feminist Anthropology (5) I&S, DIV Explores the history and contemporary practice of feminist ethnography at the interdisciplinary intersection of anthropology and gender studies. Examines how the inclusion of women, as subjects and researchers, has influenced anthropological knowledge production, and how the cross-cultural imperative of anthropology has influenced understandings of gender, sexuality, and race. Offered: jointly with ANTH 353; W.

GWSS 355 Men and Masculinity (5) I&S Critical study of systematic responses of men to feminist movements, including conservative, pro-feminist, men's rights, mythopoetic, and religious responses. How men of color and gay men view these various men's movements and their issues. Special attention given to philosophical problems such as nature of oppression, human nature, justice, and masculinity. Recommended: GWSS 200.

GWSS 357 Psychobiology of Women (5) NW Kenney Physiological and psychological aspects of women's lives; determinants of biological sex; physiological and psychological events of puberty; menopause; sexuality; contraception, pregnancy, childbirth, and lactation; role of culture in determining psychological response to physiological events. Offered: jointly with PSYCH 357.

GWSS 383 Social History of American Women to 1890 (5) I&S, DIV Yee A multi-racial, multicultural study of women in the United States from the seventeenth century to 1890 emphasizing women's unpaid work, participation in the paid labor force, charitable and reform activities, and nineteenth century social movements. Uses primary materials such as diaries, letters, speeches, and artifacts. Offered: jointly with HSTAA 373; W.

GWSS 384 Social History of American Women in the Twentieth Century (5) I&S Analyzes major themes in the history

of women in North America from 1890 through the 1990s. Themes include family and community formation, social activism, education, paid and unpaid labor patterns, war, migration, and changing conceptions of womanhood and femininity in the twentieth century. Offered: jointly with HSTAA 374.

GWSS 385 Women and Activism in the U.S., 1820-1990s (5) I&S Analyzes how U.S. social reform movements between the 1820s and the 1990s shaped discourses of gender, race, class, nation, and citizenship. Social movements include temperance, anti-prostitution, prison reform, dress reform, reproductive rights, eugenics, suffrage/anti-suffrage, abolitionism, labor, the "mothers' movement," civil rights, QBLTQ movement and dis/abilities, and evangelicalism.

GWSS 389 Race, Gender, and Sexuality in the Media (5) I&S, DIV Introduction to media representations of gender, race, and sexuality. Offered: jointly with AES 389/COM 389.

GWSS 390 Intermediate Topics in Gender, Women, and Sexuality Studies (5, max. 15) I&S Exploration of various topics and issues relevant to the study of gender, women, and sexuality.

GWSS 392 Asian American and Pacific Islander Women (5) I&S, DIV Explores the intersection of race, ethnicity, gender, class, and sexuality in the lives of Asian American and Pacific Islander women. Examines how forces such as immigration, colonialism, sovereignty, labor, family, gender roles and relations, community, war, homeland politics, transnationalism, and social movements shaped and were shaped by these women. Recommended: either AAS 205 or AAS 206. Offered: jointly with AAS 392.

GWSS 405 Comparative Women's Movements and Activism (5) I&S Comparative cultural, national, and historical study of women's movements and activism. Critically analyzes multiple arenas of women's movements and resistance. Topics include feminist anti-racism, pre-nationalism and nationalism, economics, electoral politics, women's and human rights, and international/transnational feminisms. Prerequisite: either GWSS 305, or SOC 364.

GWSS 417 The Politics of Talent Development (5) I&S Investigation of the psychological, cultural, socioeconomic, and political factors that enhance or inhibit the development of exceptional ability, focusing principally, but not exclusively, on women and girls. Pays special attention to issues of race, class, gender, geography, and an individual's orientation to the mainstream of her culture.

GWSS 427 Women and Violence (5) I&S, DIV *Ginorio* Multi-disciplinary explorations of the continuum of violence which affects women's lives, ranging from experience in personal settings (family violence) to cultural or state policies (prisons, wars). Violence against women explored in the context of societal, political, and state violence. Recommended: GWSS 200.

GWSS 428 Feminist Understanding of Victims (5) I&S, DIV *Ginorio* Explores the meanings of the term "victim" within popular, religious, psycho-social, and feminist discourses and the implications these have for victims, people and institutions that serve victims, and scholars who are concerned with these questions. Examines the tensions between activist and academic understandings of the impact of "backlash". Prerequisite: GWSS 200; recommended: GWSS 427.

GWSS 429 Scandinavian Women Writers in English Translation (5) VLPA Selected works by major Scandinavian women writers from mid-nineteenth-century bourgeois realism to the present with focus on feminist issues in literary criticism. Offered: jointly with SCAND 427.

GWSS 435 Gender and Spirituality (5) I&S Exploration of ways in which gender informs spiritual teachings and practices of different groups in ancient and contemporary times, with particular attention to the relationship between

spiritual beliefs and the construction of social, psychological, and political realities.

GWSS 438 Jewish Women in Contemporary America (5) I&S, DIV *Friedman* Examines how Jewish women's identities are socially constructed and transformed in contemporary America, using social histories, memoirs, and ethnographies to analyze scholars' approaches to Jewish women's lives. Topics include the role of social class, religion, migration, the Holocaust, and race relations in Jewish women's lives. Offered: jointly with JSIS C 438.

GWSS 440 Reading Native American Women's Lives (5, max. 10) I&S, DIV Seminar based on social science writings, autobiographies, biographies, and fiction written by, with, or about indigenous women of the United States and Canada. Offered: jointly with AIS 440.

GWSS 442 Images of Natives in the Cinema and Popular Cultures (5) VLPA/I&S, DIV *D. HART, L. ROSS* Cultural examination of images of Native people in cinema and popular culture based on social science writings and films by or about Natives in the United States and Canada. Offered: jointly with AIS 442.

GWSS 444 Criminality and "Deviance" in Native Communities (5) L. ROSS Seminar based on social science writings and biographies written by and about incarcerated Natives and "deviance" in Native communities in the United States and Canada. Offered: jointly with AIS 444.

GWSS 446 Global Asia (5) I&S *S. WELLAND* Explores how Asia has been constructed through transnational interactions such as imperialism, anti-colonialism, tourism, diaspora, and global capitalism. Topics include the cultural construction of similarity and difference, politics of representation, and political economy of global circulations of people and things. Prerequisite: one 200-level ANTH course. Offered: jointly with ANTH 442/JSIS A 452; W.

GWSS 447 Economics of Gender (5) I&S, DIV Microeconomic analysis of the sources of gender differences in earnings, labor force participation, occupational choice, education, and consumption. Economic theories of discrimination, human capital, fertility, and intrahousehold resource allocation. Economics of the family in developed and developing countries. Prerequisite: minimum grade of 2.0 in ECON 300. Offered: jointly with ECON 447.

GWSS 450 Language and Gender (5) VLPA/I&S, DIV *L. BILANIUK* Survey of the theoretical trends, methods, and research findings on the relationship between language and gender. Focus on power relations in gendered language use. Extensive study of research based on conversational analysis. Prerequisite: LING 200; either LING 201, LING 203, or ANTH 203. Offered: jointly with ANTH 450/LING 458.

GWSS 451 Latina Cultural Production (5) VLPA/I&S Explores the expressive culture of Chicana/Mexican American/Latina women in the United States. Cultural and artistic practices in home and in literary, music, film, spoken word, performing and visual arts. Focuses on how Chicana/Latina writers and artists re-envision traditional iconography.

GWSS 453 Lesbian Lives and Culture (5) I&S An exploration and overview of lesbianism in historical, social, cultural, and interpersonal contexts. Prerequisite: either GWSS 200 or GWSS 206.

GWSS 454 Women, Words, Music, and Change (5) VLPA/I&S, DIV Comparative analysis of use of myths, tales, music, and other forms of expressive culture to account for, reinforce, and change women's status and roles. Recommended: GWSS 353. Offered: jointly with ANTH 454.

GWSS 455 Contemporary Feminist Theory (5) I&S, DIV Raises the question of how political contexts condition the way some ideas become theory. Emphasizes the present crises in thinking about a transnational feminism. Prerequisite: GWSS 200; recommended: GWSS 206.

GWSS 456 Feminism, Racism, and Anti-Racism (5) I&S, DIV Examines meaning of racism and feminism in women's lives in an international context. Building upon an analysis of racial hierarchies and institutionalized racism, explores strategies used by women engaged in feminist and anti-racist activism. Prerequisite: GWSS 200.

GWSS 457 Women in China to 1800 (5) I&S, DIV Gender in Chinese culture, women's situations in the patrilineal family system, and the ways women's situations changed as other dimensions of China's political system, economy, and culture changed from early times through the nineteenth century. Offered: jointly with HSTAS 457.

GWSS 458 Ideologies and Technologies of Motherhood (5) I&S, DIV Examines how motherhood is culturally constituted, regulated, and managed within various ideological and technological milieus. Uses ethnographies from anthropology and case studies from feminist legal theory. Topics include slave mothers, surrogate mothers, lesbian mothers, transracial mothers, co-mothers, teen mothers. Prerequisite: GWSS 200. Offered: jointly with ANTH 484.

GWSS 459 Gender Histories of Modern China, Eighteenth to Twentieth Centuries (5) I&S Emergence of modernist social, political, intellectual gender formations in social activism, revolutionary writing, scientific ideologies, economic globalization. Stresses gender difference in colonial modernity, revolutionary movement, communism, post-socialist market society. Relates modern Chinese women to global flows, new division of labor, local and regional experience. Offered: jointly with HSTAS 459.

GWSS 462 Isak Dinesen and Karen Blixen (5) VLPA The fiction of Isak Dinesen (pseudonym for Karen Blixen) reevaluated in light of current issues in literary criticism, particularly feminist criticism. Close readings of selected tales, essays, and criticism. Offered: jointly with SCAND 462.

GWSS 464 Queer Desires (5) I&S, DIV *Swarr* Explores desire and the politics of sexuality as gendered, raced, classed, and transnational processes. Intimacies and globalization, normality and abnormality, and power and relationships are sites of inquiry into the constitution of "queerness." Students interrogate queer and sexuality studies, using varied media - films, activist writings, and scholarly articles.

GWSS 466 Gender and Architecture (3) VLPA/I&S Examines gender in the experience, practice, and theory of architecture and urban space with a focus on modern typologies: skyscraper, home, convent, bachelor pad, street, and closet. Draws from architectural and art history, social studies, design practice and theory, comparative literature, film studies, and queer theory. Offered: jointly with ARCH 466.

GWSS 468 Latin American Women (5) VLPA/I&S *Albarán* The elaboration of discourses of identity in relation to gender, ethnicity, social class, and nationality, by women writers from South America, Mexico, Central America, and the Caribbean. Testimonial literature, literature and resistance, women's experimental fiction. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Offered: jointly with SPAN 468.

GWSS 474 Trans/Gender Queries (5) I&S, DIV *Swarr* Writings by and about people who fall outside common conceptions of "women" and "men." Looks beyond this dualism in contemporary and historical global concepts, locating the emerging field of transgender studies in feminist studies and asking what the category "transgender" enables and obscures.

GWSS 476 Women and the City (5) I&S, DIV *England* Explores the reciprocal relations between gender relations, the layout of cities, and the activities of urban residents. Topics include: feminist theory and geography (women, gender, and the organization of space); women and urban poverty, housing and homelessness; gender roles and labor patterns; geographies of childcare; and women and urban politics. Offered: jointly with GEOG 476.

GWSS 483 Topics in U.S. Women's History (5, max. 10) I&S Yee Selected topics in United States women's history from the nineteenth and twentieth centuries. Prerequisite: either GWSS 200, GWSS 283, or GWSS 383.

GWSS 485 Issues for Ethnic Minorities and Women In Science and Engineering (3/5) I&S Addresses issues faced by women and ethnic minorities in physical sciences and engineering. Focuses on participation, barriers to participation, and solutions to those issues for women and ethnic minorities in physical sciences and engineering. Offered: jointly with PHYS 451.

GWSS 486 Representing Beyond the Binaries: Mixing Race, Gender, and Sexuality in the Media (5) I&S, DIV Joseph Cultural studies approach to examining the mixed formations that race, sexuality, and gender take in the contemporary United States media. Draws upon multi-disciplinary scholarship in examination of the media. Offered: jointly with AES 490/COM 490.

GWSS 487 Advanced Psychobiology of Women (5) I&S/NW Kenney Intensive reading on current issues relevant to women's psychology and physiology. Prerequisite: minimum 2.0 grade in PSYCH 357/ GWSS 357. Offered: jointly with PSYCH 487; W.

GWSS 488 Women and/in Science (5) I&S, DIV Ginorio Explores science as a method of inquiry and as a profession while also expanding knowledge about women through the use of biographies of women scientists, discipline-based and feminist critiques, and the psycho-social concept of socially defined identities. Recommended: GWSS Studies course; one college-level science course.

GWSS 489 Black Cultural Studies (5) I&S, DIV Examines how images of blackness have been (re)constructed through identity formation and entrenched inequality. Topics include black women's bodies, black men's bodies, blackface minstrelsy, black queer studies, black power, and black hybridities. Offered: jointly with AES 489/COM 489.

GWSS 490 Special Topics in Women Studies (2-5, max. 15) I&S Exploration of specific problems and issues relevant to the study of women. Offered by visiting or resident faculty members. Primarily for upper-division and graduate students.

GWSS 493 Senior Thesis (2-5, max. 15) I&S Students conceptualize a topic, conduct primary and secondary research, and write a major paper or project that engages methodologies and theories in interdisciplinary women's studies. Students work independently with a faculty member.

GWSS 494 Women Studies Capstone (5) I&S Provides graduating seniors with the opportunity to demonstrate facility with writing, critical thinking, documentation of scholarly work, research/gathering of information, and the ability to disseminate ideas to intended audiences via the creation of a capstone project. Prerequisite: GWSS 200; GWSS 300; minimum grade of 2.0 in one additional graded 300-level GWSS course; minimum grade of 2.0 in one additional graded 400-level GWSS course. Offered: AWSpS.

GWSS 495 Tutoring Women Studies (5) Students train to serve as tutors in designated courses. Facilitate weekly group discussions, assist with writing assignments, explain course materials. Prerequisite: GWSS 200; GWSS 300. Credit/no-credit only.

GWSS 496 Global Feminisms: International and Indigenous Communities (5-12, max. 24) I&S Participation in academic study abroad programs related to Gender, Women, and Sexuality Studies, emphasizing globalization and study in international contexts or indigenous communities within the United States. Prerequisite: GWSS 200; GWSS 300.

GWSS 497 Fieldwork in Women Studies (1-15, max. 15) Internship in local feminist-oriented agencies or projects. Includes a seminar component linking internship to scholarly literature and small group discussion. Supports in-depth exploration of social issues and skill development.

Prerequisite: GWSS 200; GWSS 300. Credit/no-credit only. Offered: AWSpS.

GWSS 499 Undergraduate Research (1-5, max. 10) Independent study and research supervised by a faculty member with appropriate academic interest. Prerequisite: GWSS 200; GWSS 300. Offered: AWSpS.

GWSS 501 History of Feminism (5) Study of feminism from the eighteenth through the twentieth centuries in the national, international, and intranational world system, with a focus on imperialism, colonialism, nationalism, and modernity. Surveys the literature in a global context, supplemented by critical essays and historiographic reviews.

GWSS 502 Cross Disciplinary Feminist Theory (5) Raises questions about how feminism becomes theory and what the relation of feminist theory is to conventional disciplines. Readings exemplify current crises in feminism (e.g., the emergence of neo-materialism; critical race theory; citizenship; identity; transnational and migrancy and questions of post-colonialism) to consider disciplinization.

GWSS 503 Feminist Research and Methods of Inquiry (5) Explores appropriate research methodologies for interdisciplinary work. Asks how scholarship is related to feminism as a social movement and to the institutions in which we work. Focuses on how similar objects of study are constituted in different disciplines for feminist scholars. Offered: Sp.

GWSS 504 Philosophies and Techniques of Teaching (5) Acquaints students with professional and educational issues of college teaching. Students design a course, including a daily outline, reading materials, evaluation instruments, course activities, assessment plans. Includes weekly teaching exercises as well as videotaping an actual class. Prerequisite: experience as a TA or equivalent. Priority given to Women Studies graduate students.

GWSS 505 Feminist Publishing (5) Seminar on feminist academic publishing. Students revise a scholarly paper in preparation for submission to an academic journal and provide critical commentary on other students' scholarly work. Also addresses general and specific issues related to the profession of academic publishing.

GWSS 510 Documentary Film/Video Research Methods in Native Communities (5) D. HART, L. ROSS Seminar exploring theoretical, methodological, and aesthetic issues when researching documentary film and video projects in Native American communities. Utilizes readings, screening, discussions, and a major research project to explore issues of documentary representation, ethics, and historiography. First part of a two-quarter documentary production sequence. Offered: jointly with AIS 501.

GWSS 526 The Study of Lives in Feminist Research: Narrative and Visual Approaches (5) Examines the study of others' lives by feminist researchers using ethnography, oral history, biography, photography, and documentary film. Explores the craft, goals, and ethics involved in these forms of representation. Includes workshop critique of research project in development.

GWSS 539 Social Movements in Contemporary India (5) P. RAMAMURTHY Covers issues of social change, economic development, and identity politics in contemporary India studied through environmental and women's movements. Includes critiques of development and conflicts over forests, dams, women's rights, religious community, ethnicity, and citizenship. Offered: jointly with ANTH 539/JSIS A 531.

GWSS 541 Research Seminar: Feminist Geographies (5) England Explores major research themes in feminist geographies. Particular attention to the concept that gendered identities and spaces are discursively (re)produced. Emphasizes recent feminist scholarship that emphasizes difference, as well as the intersections between gender, "race," ethnicity, sexuality, age, nationality, class, and other social identities and divisions. Offered: jointly with GEOG 541.

GWSS 542 Gender, Music, Nation (5) Habell-Pallan Music criticism and music studies as a site of feminist intellectual practice. Explores the ways gender and race/ethnicity shape musical discourse as well as narrative constructions of nation in regional and transnational contexts. Considers the influence of feminist theory, queer studies, performance studies, and cultural studies on music scholarship.

GWSS 545 Transnational Sexualities (5) Swarr Focuses on transnational processes such as colonialism and globalization, imperialism, and consumerism. Analyzes attempts to both codify and undermine universal queer subjects. Participants theorize sexual practices, discourses, and histories through explorations of tourism, HIV/AIDS, immigration, and other interstices of transnational intimacies.

GWSS 555 Feminist International Political Economy (5) Ramamurthy Provides overview of feminist engagements with international political economy. Topics include: feminist critiques of classical political economists; inter-war internationalisms, anti-colonial nationalisms and feminisms; feminist development studies; post colonial; 'third world' and transnational feminisms; feminist critiques of globalization, governmentality, and neoliberalism.

GWSS 564 Queer Desires (5) Swarr Explores desire and the politics of sexuality as gendered, raced, classed, and transnational processes. Intimacies and globalization, normality and abnormality, and power and relationships as sites of inquiry into the constitution of "queerness." Students interrogate queer and sexuality studies using varied media - films, activist writing, scholarly articles.

GWSS 566 Discourse and Sex/uality (5) Seminar-based analysis of discourse and social construction of eroticism/desire in face-to-face/mediatized talk and texts; examination of the reproduction of power, control, and ideology through the linguistic and semiotic realization of sex/uality. Offered: jointly with COM 566.

GWSS 572 Transnational Chicana Feminist Theory (5) Examination of the body of knowledge and scholarship produced under the rubric "Transnational Chicana feminist theory." Analyzes the ways Chicana feminist theory dynamically engages intellectual, poetic, and aesthetic traditions. Considers how Chicana feminist theory functions within and between disciplinary frameworks. Explores transnational roots and routes of Chicana feminist theory.

GWSS 577 Women of Color in Academia (5) Ginorio Through scholarship and identifications, "women of color" in academia are often positioned to question and redefine academia, education, and the established boundaries between academia and other communities. Discussion focuses on understanding institutional sites and forms of knowledge production and validation in academia in the United States.

GWSS 589 Gender, Race, and Communication (5) Analysis of the role of media in the construction of reality, production processes, and their influence on media representation of women and people of color. Offered: jointly with COM 567.

GWSS 590 Special Topics (1-5, max. 15) Offered by visitors or resident faculty as a one-time in-depth study of special interest.

GWSS 593 Feminist Doctoral Research Workshop (5) Swarr Designed to meet the needs of graduate students writing dissertation prospectuses on feminist subjects within any discipline. Students start with a drafted prospectus and revise their work together. Topics addressed include IRB applications, CV preparation, and dissertation funding. Credit/no-credit only.

GWSS 595 Graduate Student Colloquium (2, max. 12) Forum for graduate students to share their research ideas and progress, general examination preparation issues, and teaching concerns. Prerequisite: Gender, Women, and Sexuality Studies graduate students only. Credit/no-credit only. Offered: AWSpS.

GWSS 596 Preceptorial for Women Studies Graduate Students (5, max. 15) Graduate student and faculty member work collaboratively in developing or revising course content and pedagogical approach on a specialized area.

GWSS 597 Fieldwork in Women Studies (2-5, max. 15) Supervised ethnographic and other on-site research by Gender, Women, and Sexuality Studies graduate students. Gender, Women, and Sexuality Studies graduate students only.

GWSS 598 Directed Readings in Women Studies (*, max. 35) Selected topics for individualized or small group study.

GWSS 599 Graduate Research Colloquium (2, max. 6) Kenney A colloquium in which Gender, Women, and Sexuality Studies graduate students and faculty present and discuss their research at various points in its development. Credit/no-credit only. Offered: AWSpS.

GWSS 600 Independent Study or Research (*-) Offered: AWSpS.

GWSS 700 Master's Thesis (*-) Credit/no-credit only. Offered: AWSpS.

GWSS 701 Master's Practicum ([1-10]-, max. 10) Offered: AWSpS.

GWSS 800 Doctoral Dissertation (*-)

Geography

408A Smith

Geography is about the relationship between people and the environment. It provides important insights into the spatial transformations associated with globalization, environmental change, migration, health, development, and many other contemporary processes. The Department of Geography has a strong commitment to social justice and public scholarship, and provides a rich undergraduate experience for those who are passionate about exploring our world and understanding the social and spatial processes that shape it.

Geography seeks to understand the complex processes that result in the patterns, trends, and impacts of urbanization, migration, trade, and development. Geographers use ethnographies, statistical analysis, databases, scholarly research, and observation to construct models, maps, and other tools for understanding, and to address pressing social and environmental issues.

UNDERGRADUATE PROGRAM

Advisers

415 A & B Smith, Box 353550
(206) 543-3246

The Department of Geography offers the following programs of study:

- Bachelor of Arts degree with a major in geography
- A minor in geography

Students may choose from among four multifaceted tracks (Cities, Citizenship, and Migration; Environment, Economy, and Sustainability; Globalization, Health, and Development; and GIS, Mapping, and Society), or customize their own hybrid focus along more thematic or issue-driven lines, such as inequality, race/class/gender studies, etc. Lists of courses in each track may be found at depts.washington.edu/geog/program-details/.

For an overview of main faculty research themes and how they relate to these tracks, visit depts.washington.edu/geog/research-themes.html.

Bachelor of Arts

Suggested First- and Second-Year College Courses: Any 100- or 200-level GEOG course. Courses that develop strong writing, analytical, and qualitative- and quantitative-reasoning skills. Geography is inherently interdisciplinary, so exposure to many social science fields of study in the first two years is ideal.

Department Admission Requirements

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

Major Requirements

60 credits as follows:

- Foundations (30 credits):** See departmental adviser for approved track courses.
 - GEOG 315
 - One methods course from the following: GEOG 317, GEOG 326, GEOG 425, GEOG 426, or faculty approved methods course
 - One Cities, Citizenship, and Migration Track course (5 credits)
 - One Environment, Economy, and Sustainability Track course (5 credits)
 - One Globalization, Health, and Development Track course (5 credits)
 - One GIS, Mapping, and Society Track course (5 credits)
- Track (20 credits):** See depts.washington.edu/geog/ program-details for approved track courses. Students may customize their own hybrid focus along more thematic or issue-driven lines, such as inequality, race/class/gender studies, etc. See adviser for details. Four upper-division (300- and 400-level) geography courses are required for the track the student selects, at least two of which must be at the 400 level or students may choose from among four tracks:
 - Cities, Citizenship, and Migration
 - Environment, Economy, and Sustainability
 - GIS, Mapping, and Society
- Electives (10 credits):** GEOG electives at the 200 level or above; 300- and 400-level courses preferred.
- Additional Degree Conditions and Program Features**
 - Transfer students must complete a minimum of 25 upper-division credits (300 and 400 level) in geography in residence at the UW.
 - Individual geography course grades must be 2.0 or above to count toward major requirements; overall 2.50 GPA in geography courses counted toward the major required.
 - Students are encouraged to take appropriate elective courses outside the Geography Department in fields that support their track. Courses appropriate to various tracks are available on lists supplied by geography advisers, or may be recommended by the faculty adviser. Students should be aware that 300- and 400-level courses in other departments likely have prerequisites.
 - 5 credits of internship (GEOG 496) or independent study (GEOG 499) may apply toward the required 60 credits.
 - No single course may be counted toward more than one degree requirement.

Minor

Minor Requirements: 30 credits in geography, including 15 upper-division geography credits with at least 5 credits at the 400 level. No more than 5 credits applied to the mi-

nor may be from 100-level classes. Independent learning and internship credits (GEOG 494, GEOG 496, GEOG 497, GEOG 499) may not be counted as part of the 30 credits. A minimum 2.0 grade for each course counted toward the minor. At least 15 credits of upper-division geography courses must be taken at the UW.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Geographers address some of the world's most urgent challenges, including global and environmental change, economic and social inequality and poverty, world hunger, global health and healthcare, social justice in the city, migration and immigration, and what it means to be a global citizen in the twenty-first century. Responses to such questions are complex and partial, and these issues are not "fixable" by one-dimensional solutions. Geography's contribution to these public issues and solutions is through evidence-based, multi-scalar analyses and mapping of socio-spatial and environmental change. Social justice, community engagement and activism, and an accountability to place inform our inquiry and study.

In geography classes students learn how to design and conduct research, employing quantitative and qualitative methods; use statistical and demographic analysis; and interpret and analyze data, discourses, and texts and images in order to address significant topics and questions in human geography. Students combine classroom study with internships, community service, and independent research to develop integrated, rich, and relevant learning experiences. These experiences help develop and refine critical and analytical research and communication skills, offer hopeful and engaged responses to daunting problems, and emphasize that individuals can make a difference.

Typical questions or lines of inquiry in each track include:

- *Cities, Citizenship, and Migration:* Why do people move, and where do they go? What are the constraints and opportunities for migrants as they settle and integrate in new cities and new nations? How are cities formed and what are the forces that impact their economic and cultural development? The courses in this track focus on themes of urbanization and human movement, emphasizing the importance of labor and housing, as well as cultural processes and historical forms of discrimination that shape where people live and work. Students in this track develop an understanding of the intersections of power and place as they pertain to migration and immigrant life, citizenship and belonging, and the production of urban space.
- *Environment, Economy, and Sustainability:* Courses in this track study the reciprocal and often contradictory forces of economic activity, environmental policy, and sustainability. Using such key geographic concepts as scale, place and location, they analyze relations between such complex processes as: land use, labor markets, corporate location, international trade, energy policy and consumption, environmental regulatory policy, resource use, and food systems.
- *Globalization, Health, and Development* How does globalization shape life and death around the planet? How can development initiatives address global health disparities? Providing geographical answers to such questions, this track traces the extraordinarily uneven effects of global trade, global finance, and market-led development on food systems, health, and the geography of impoverishment. By putting global health challenges in a global socio-economic context, the track simultaneously highlights how social movements and social organizing can make a difference, including differences in formal policies

affecting human well-being directly as well as innovations in the ethics of care. Courses in the track provide frequent opportunities for service learning as part of the goal of helping students engage with real world challenges. All classes also approach these themes through a geographical lens: charting global-local relations and the links between nature, society, and political-economy in particular places. This geographical approach in turn enables us to explore how nutrition, health, and development are intertwined with other processes ranging from the personal experiences of migrant farm workers, to urban and regional redevelopment, to global financial reforms. Specific questions that frame our classes include: What are the links between life and debt (GEOG 123)? How have sixty years of development increased in-country inequality (GEOG 230)? How do global disease etiologies reflect other global interconnections (GEOG 280)? How does agricultural modernization relate to hunger (GEOG 371)? And what are the implications for food security, health security, and developmental security when they are re-framed in terms of geopolitics and the global security challenges of international relations (GEOG 375)?

- *GIS, Mapping, and Society* In courses that comprise the GIS, Mapping, and Society track, students learn to use GIS, web-based geospatial applications, and database management systems for problem solving in relation to a diverse range of societal concerns, such as those within the other geography tracks. Students learn a range of analytical and critical methods for cartographic representation, spatial analysis, geovisualization, and database management. Further, students learn about the politics, ethics, and values of mapping and geospatial technologies, and integrate their social and technical skills to undertake projects with research partners in the region.

Graduates have pursued careers as urban planners, environmental planners and land-use analysts, GIS analysts, economic analysts (marketing, location, geodemographics), public health researchers, NGO specialists in developing nations, airline route analysts, import-export/international-trade specialists, real estate valuation specialists, lawyers, economic development specialists, social studies teachers, and college professors.

- *Instructional and Research Facilities:* A map center in Suzzallo Library houses atlases, sheet maps, and aerial photographs. Departmental facilities include the Edward L. Ullman Geography Collaboratory and the John C. Sherman Laboratory, which houses a variety of computer workstations connected to the campus computer network. The Ullman Collaboratory in 415 Smith provides a unique collaborative classroom with networked computer work stations. The Geography Commons also provides computer work stations for students. The Department of Geography is a member of the Center for Social Science Computation and Research, which maintains an extensive data archive and offers many statistical and software consulting services.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* More than 125 geography students participate each year in internships. For lists of these opportunities, see the department's career site.
- *Department Scholarships:* None offered.
- *Student Organizations/Associations:* The Undergraduate Geography Association (UGA) organizes field trips, alumni career panels, public-service projects, and social gatherings.

Of Special Note: Students interested in GIS are encouraged to learn a high-level programming language such as C, C++, Java, or Visual Basic.

GRADUATE PROGRAM

Graduate Program Coordinator

415B Smith, Box 353550

(206) 543-3246

The Department of Geography has flexible programs of graduate study leading to the Master of Arts and Doctor of Philosophy degrees. The aspirant to the master's degree is expected to complete all work for the degree in four to six quarters. The aspirant to the doctoral degree is expected to undertake two years of post-master's study and must take a departmental diagnostic examination upon entry, pass the general examination, attain an appropriate level of competence in a foreign language or cognate field, and successfully complete a dissertation. Normally, doctoral program students complete all degree requirements in three to four years.

Master of Arts

Admission Requirements

Admission to the graduate program normally requires a minimum GPA of 3.00 (on a 4.00 scale), or "B." Students holding a master's degree must meet this minimum scholastic requirement, but also should have achieved a GPA higher than 3.00 for graduate studies completed. All applicants must take the Graduate Record Examination. Specific information regarding application procedures may be obtained by writing to the Graduate Program Coordinator.

The master's degree program enables students to gain greater familiarity with the richness and rigor of advanced study in the discipline of geography. Students use coursework to develop familiarity with the discipline and their chosen subfield(s), and use an original research project to develop skills in data gathering and analysis. Students may write either a thesis or two high-quality papers as part of their degree requirements. These original works are expected to meet high standards for research design and data analysis, and must be clearly written.

Degree Requirements

Required Courses:

1. GEOG 512
2. GEOG 511. One additional methods course, from the following: GEOG 471, GEOG 525, GEOG 526, GEOG 560, GEOG 561, GEOG 562, and GEOG 564.
3. Satisfactory completion of at least three quarters of GEOG 598.
4. Two departmental research seminars (designated as "seminars" or "research seminars"). GEOG 500, GEOG 502, GEOG 511, and GEOG 513, and any of the "methods" courses listed above do not count toward this requirement. In some cases, a "directed readings" course (GEOG 600) may count in lieu of this requirement. To petition for this substitution, the GEOG 600 faculty member should write an appeal to the Graduate Program Coordinator. Direct any questions about whether a specific 500-level GEOG course counts toward this requirement to Rick Roth.

Additional Requirements

1. 36 credits of graduate work, including 18 graded credits. If a thesis is written, students must complete at least 9 credits of GEOG 700..
2. Minimum three full-time (at least 9 credits) quarters of residence credits. Part-time quarters may be accumulated to meet one quarter's worth of this requirement.

3. Minimum 3.0 grade in all departmental courses, and a minimum 2.7 grade in all related courses used to satisfy degree requirements. An overall 3.00 GPA must be maintained to remain in the program.
4. Final examination constituting a defense of the thesis or papers.
5. All work for the degree must be completed within six years.

Master in Geographic Information Systems

The online professional master's program in Geographic Information Systems (M-GIS) helps working professionals enter or advance their careers in the field of geographic information science and sustainability management. M-GIS prepares students to understand and apply geographic information systems (GIS) to solve complex problems in a wide range of disciplines. Students learn to combine geovisualization, data management and geospatial analysis to develop, examine and portray data in two- and three-dimensional maps. Specialized program courses explore sustainability and investigate the interconnection of social, environmental and economic issues on a regional to global scale. www.gisonline.uw.edu

Admission Requirements

1. A bachelor's degree from an accredited college or university in the United States, or its equivalent from a foreign institution, in a spatially-oriented discipline such as, but not limited to, geography, urban planning, geology, environmental science, civil engineering, environmental science/studies, and/or forest resources.
2. Minimum 3.00 GPA in the last 60 graded semester hours or last 90 graded quarter hours of undergraduate and graduate study.
3. At least one year of professional work experience in a field that emphasizes spatial relationships, wherein analyzing and synthesizing phenomena related across space are important parts of the work.
4. Graduate Record Examination (GRE) scores.
5. A personal statement describing educational goals and objectives.
6. Three letters of recommendation.
7. Previous coursework or work experience in GIS is advantageous and is considered as a way to offset any relative weaknesses in some of the previous criteria.
8. *International Applicants:* The UW Graduate School requires every applicant whose native language is not English to demonstrate English language proficiency. See Graduate School Memorandum #8 and English proficiency tests comparison tables for the university's policy.

Degree Requirements

The M-GIS is a nine-course program primarily designed for part-time students. Each course is 5 credits and students must earn 45 credits to graduate. It is a non-thesis program, but the capstone course involves a final project.

Because this program combines GIS with sustainability management, the curriculum is developed to teach students how to address complex geographic information problems with GIS technologies, and create solutions that balance economic, social, and environmental issues at local and global scales. Graduates appreciate tradeoffs among human, financial, and physical resource constraints when creating solutions.

Core courses expose students to the fundamentals of GIS software technologies and advanced spatial thinking skills. Concentration courses in sustainability management consider how resources are being treated currently and how they will be treated for future generations.

Most courses are taught online; however, students are required to attend three, three-day summer sessions in Seattle.

Courses: GEOG 514, GEOG 517, GEOG 560, GEOG 562, GEOG 564, GEOG 565, GEOG 568, GEOG 569, GEOG 582

Doctor of Philosophy

The doctoral degree program enables students to complete a research project of notable scope and originality that makes a significant contribution to the discipline of geography and related fields. Advanced coursework provides an opportunity to gain familiarity with current knowledge in the student's areas of specialization. Student expertise in their chosen subfields is ensured through the preliminary review and general examination. Students may choose to write either a dissertation or three papers of publishable quality. All such research efforts are expected to meet high standards of research design and data analysis, and to be written clearly.

Admission Requirements

Admission to the graduate program normally requires a minimum GPA of 3.00 (on a 4.00 scale), or "B." Students holding a master's degree must meet this minimum scholastic requirement, but also should have achieved a GPA higher than 3.00 for graduate studies completed. All applicants must take the Graduate Record Examination. Specific information regarding application procedures may be obtained by writing to the Graduate Program Coordinator.

Degree Requirements

90 credits, to include:

1. GEOG 500
2. GEOG 511
3. One methods course from among the following: GEOG 471, GEOG 525, GEOG 526, GEOG 560, GEOG 561, (GEOG 562, and GEOG 564.
4. Satisfactory completion of at least three quarters of GEOG 598

Additional Requirements

- Completion of at least two department research seminars numbered 500 or above, but not including GEOG 502 or GEOG 513.
- Submission of a scholarly article to a professionally reviewed academic journal or application for research support from an external agency, such as the National Science Foundation. The publication may be jointly authored with a faculty member or other graduate student.
- Evidence of reading competence in a foreign language or a sound level of competence in a cognate field of concentration as determined by the student's Supervisory Committee.
- Completion of 90 credits, at least 60 at the University of Washington. (including 27 GEOG 800 credits). With the approval of the degree-granting unit, an appropriate master's degree from an accredited institution may substitute for 30 credits of enrollment.
- Numerical grades must be received in at least 18 quarter credits of coursework taken at the UW prior to scheduling the general examination. The Graduate School accepts numerical grades in approved 400-level courses as part of the major, and in all 500-level courses. A minimum 3.00 cumulative GPA is required.
- Successful completion of a preliminary review, usually undertaken during the first year.
- Creditable passage of the general examination. Registration as a graduate student is required the quarter the examination is taken and candidacy is conferred.
- Preparation of and acceptance by the Dean of the Graduate School of a dissertation (or three high-quality research papers) that is a significant contribution to

knowledge and clearly indicates training in research. Credit for the dissertation ordinarily should be at least one-third of the total credit. The candidate must register for a minimum of 27 credits of dissertation over a period of at least three quarters. At least one quarter must come after the student passes the general examination. With the exception of summer quarter, students are limited to a maximum of 10 credits per quarter of dissertation (800).

- Creditable passage of a final examination, which is usually devoted to the defense of the dissertation and the field with which it is concerned. The general and final examinations cannot be scheduled during the same quarter. Registration as a graduate student, registered for at least two credits, is required the quarter the examination is taken and the degree is conferred.
- Completion of all work for the doctoral degree within ten years. This includes quarters spent on-leave or out of status as well as applicable work from the master's degree from the UW or a master's degree from another institution, if applied toward one year of resident study.
- Registration maintained as a full- or part-time graduate student at the University for the quarter in which the degree is conferred (see detailed information under final quarter registration).
- A student must satisfy the requirements that are in force at the time the degree is to be awarded.
- Minimum 3.0 grade in all departmental courses, and a minimum 2.7 grade in all related courses used to satisfy degree requirements. A 3.00 overall GPA must be maintained to remain in the program.
- Students who earned an MA at the University of Washington have already met several of these requirements.

Financial Aid

The department usually awards approximately 15 to 20 teaching assistantships for the academic year. Most of the assistantships are for teaching quiz sections for a larger lecture class. A few of the more advanced doctoral candidates may teach a class. Normally several research assistantships are also available. In recent years, all of the department's graduate students have been funded by internal or external sources.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

GEOG 123 Introduction to Globalization (5) I&S, DIV M. SPARKE Provides an introduction to the debates over globalization. Focuses on the growth and intensification of global ties. Addresses the resulting inequalities and tensions, as well as the new opportunities for cultural and political exchange. Topics include the impacts on government, finance, labor, culture, the environment, health, and activism. Offered: jointly with JSIS 123.

GEOG 180 Introduction to Global Health: Disparities, Determinants, Policies, and Outcomes (5) I&S S. GLOYD, M. SPARKE Provides an introduction to global health, including: the burden and distribution of disease and mortality; the determinants of global health disparities; the making of global health policies; and the outcomes of global health interventions. Offered: jointly with G H 101/JSIS B 180; W.

GEOG 195 Special Topics in Geography (1-5, max. 10) I&S

GEOG 205 Introduction to Physical Sciences and the Environment (5) NW C. BIERMANN Major atmospheric, hydrologic, and geomorphic processes used to interpret the character, distribution, and human significance of different natural and human-altered environments. Includes labora-

tory exercises for science and non-science majors, geography majors and nonmajors.

GEOG 207 Economic Geography (5) I&S W. BEYERS The changing locations and spatial patterns of economic activity, including: production in agriculture, manufacturing, and services; spatial economic principles of trade, transportation, communications, and corporate organization; regional economic development, and the diffusion of technological innovation. Offered: A.

GEOG 208 Geography of the World Economy: Regional Fortunes and the Rise of Global Markets (5) I&S Ellis Examines the relationship between the globalization of economic activity and regional development. Topics include international trade, colonialism, industrial capitalism, advanced capitalism, and the globalization of labor markets.

GEOG 230 Geographies of Global Inequality (5) I&S, DIV Lawson Addresses increasing global inequalities by focusing on shifting spatial division of labor and the role of the international development industry in shaping economic and social inequality. Examines the relationships between economic globalization, the development industry, and rising global inequality: reviews the history and record of the international development project, and asks what it means to say that Western, advanced economies are not the norm against which the rest of the world must be understood.

GEOG 236 Development and Challenge in Greater China (5) I&S Chan Studies the geography of development processes, patterns, and problems in "Greater China": mainland China, Taiwan, and Hong Kong. Covers physical geography, history, and economic and political systems, with major focus on geographical issues in China's development: agriculture, population, industry and trade, and relations with Hong Kong and Taiwan. Offered: jointly with JSIS A 236.

GEOG 245 Geographic Perspectives on U.S. Population Diversity (5) I&S, DIV Withers Introduction to population geography. Offers a practical understanding of population processes (fertility, mortality, and migration); knowledge of geographic variation in population structures and characteristics; knowledge of data sources for demographic research; experience using formal demographic methods for geographic research; and an appreciation for the demographic underpinnings of contemporary social issues.

GEOG 258 Digital Geographies (5) I&S Elwood Explores the use and societal impacts of contemporary digital spatial technologies. Focuses on internet mapping, handheld geographic technologies, location-based services, spatial applications of social media, the geoweb, and traditional GIS. Develops hands-on experience using online digital spatial tools for geovisual representation, and skills for evaluation/critique of digital data and maps. Offered: W.

GEOG 270 Geographies of International Development and Environmental Change (5) I&S Bergmann Explores how concepts, theories and ideologies of international development and environmental issues interrelate. Approaches development and environment through several interconnected topics: population, consumption, carbon, land and water. Examines how these issues connect our lives to the lives of people living in the Third World. Offered: W.

GEOG 271 Geography of Food and Eating (5) I&S L. JAROSZ Examines the development of the world food economy, current responses to its instabilities and crises, and issues relating to obesity, hunger, and inequality in relation to food systems. Explores the political, social, and economic dimensions of food and eating in particular spaces, places, environments, contexts, and regions. Uses the theme of food and eating to examine key concepts from human geography and thereby provides an introduction to the discipline through this thematic approach.

GEOG 276 Introduction to Political Geography (5) I&S Brown Examines both the geography of politics and the politics of geography at a variety of spatial scales and in different global locations. Typical topics include: geographies

of the state and state power; geopolitics and globalization; national and local politics, and other politics of culture, health, nature, and the body.

GEOG 277 Geography of Cities (5) I&S, DIV England Explores economic, cultural, social and political dynamics of cities - their location, functions, and internal structure, including economic activities, housing, and social geography. Topics include economic restructuring; suburbanization and urban sprawl; urban planning; inner-city gentrification; and how issues of class, race, and gender are embedded in the geographies of cities.

GEOG 280 Introduction to the Geography of Health and Healthcare (5) I&S Mayer Concepts of health from a geographical viewpoint, including human-environment relations, development, geographical patterns of disease, and health systems in developed and developing countries.

GEOG 295 Special Topics in Geography (1-5, max. 10) I&S

GEOG 301 Cultural Geography (5) I&S Analysis of cultural processes in the formation of landscape, environment, region, and place in their relationship to individual and group identities and activities

GEOG 302 The Pacific Northwest (3) I&S Beyers Settlement pattern in the Pacific Northwest, emphasizing economic and historical factors, including the location of resource-oriented industries, policies regarding the use of public lands, and bases of the development of major urban areas in the region. Offered: W.

GEOG 310 Immigrant America: Trends and Policies from a Geographic Perspective (5) I&S J. ELLIS Examines U.S. immigration trends and policies from a geographic perspective. Topics include where immigrants come from, where they settle in the United States (and why they settle in those particular places), these locations, immigrant employment enclaves, the effects of U.S. immigration policy on immigrant settlement and employment patterns, unauthorized immigration, citizenship, and barriers to immigrant social and economic mobility in the United States.

GEOG 315 Explanation and Understanding in Geography (5) I&S Brown Covers the beginning steps in the research process. Introduces the discipline of geography, the department, and current faculty through the research aims of explanation and understanding that frame social scientific inquiry. Students develop basic library and writing skills as preparation for future research methods classes and independent research.

GEOG 317 Geographic Information and Spatial Analysis (5) I&S, QSR Withers Integrates geographic information systems and spatial data analysis, emphasizing the appropriate selection of methods, procedures for research design, and interpretation of findings. Topics include descriptive and inferential methods, spatial patterns and statistics, and correlation and spatial autocorrelation. Applications use SPSS and ArcMap software.

GEOG 323 Globalization and You (5) I&S M. SPARKE Offers an evidence-based analysis of globalization that addresses how individuals are affected personally as well as economically amidst the market-led processes of global integration. Offered: jointly with JSIS D 323; A.

GEOG 326 Quantitative Methods in Geography (5) I&S, QSR Chan, Withers Introduction to quantitative methods in geography, with a primary focus on statistical techniques. Examines the basic concepts, reasoning, and procedures geographers use in developing, analyzing, applying, and presenting quantitative methods. Topics include: generating and describing data; elementary probability, hypothesis testing, comparative tests; finding relationships; and using and misusing statistics.

GEOG 330 Latin America: Landscapes of Change (5) I&S Lawson Examines operation of economic, social, and political processes across countries of Latin America - on international, national, and local scales - to understand common issues facing the region and different impacts in particular countries. Topics include internationalization

of Latin American economies; agrarian and urban change; popular movements.

GEOG 331 Global Poverty and Care (5) I&S, DIV Lawson Explores the causes and patterns of global poverty, and the urgent need for studies of care in both academic work and public policy. Considers the possibilities and challenges of caring across distance, and ways to respectfully engage with people in different places.

GEOG 335 Geography of the Developing World (5) I&S Characteristics and causes, external and internal, of Third World development and obstacles to that development. Special attention to demographic and agricultural patterns, resource development, industrialization and urbanization, drawing on specific case studies from Asia, Africa, and Latin America. Recommended: either GEOG 123 or GEOG 230. Offered: jointly with JSIS B 335.

GEOG 336 Development and Challenge in China (5) I&S Chan Examines the geography of China's development since 1949. Introduces China's physical geography, history, and economic and political system. Emphasizes China's uneven development in agriculture, population, industry, and trade. Also examines problems China faces in meeting its internal food demand, as well as the external processes of globalization.

GEOG 342 Geography of Inequality (5) I&S, DIV England Geographies of social, political, and economic inequality. Focus is usually on North American cities. Examines the theoretical underpinning of inequality. Explores topics such as the spatial distribution of wealth and poverty, the geographies of exclusion, and discrimination in paid employment and housing.

GEOG 344 Migration in the Global Economy (5) I&S Mitchell Analyzes the relationship between human mobility in the late twentieth century and changes in the global economy. Allows students to gain familiarity with scholarly research on international migration from a diversity of approaches and methods. Offered: jointly with JSIS B 344.

GEOG 349 Geography of International Trade (5) I&S Introduces the theories and practice of international trade and foreign direct investment. Topics include: trade theory and policy; economic integration; currency markets and foreign exchange; trade operations and logistics; the international regulatory environment; and marketing, location and entry, and finance, accounting, and taxation.

GEOG 360 Principles of GIS Mapping (5) I&S, QSR Bergmann, Elwood, Nyerger Origins, development, and methods of cartographic mapping. Principles of data representation and map design for thematic mapping and spatial analysis. Introduction to principles of geographic information systems. Not available for credit to students who have completed GEOG 362. Offered: Asp.

GEOG 362 GIS Presentation, Analysis, and Problem-Solving (3) Introduces students to the systems, science, and study of geographic information systems (GIS), including what gives GIS its enduring importance, its core principles, its applications, its unique analysis methods, and the practices and dilemmas that often accompany the use and communication of geographic information. Not available for credit to students who have completed GEOG 360. Credit/no-credit only.

GEOG 370 Problems in Resource Management (5) I&S C. BIERMANN Principles and practices of effective conservation and utilization of natural resources. Role of technology in resource use. Physical, political, and economic aspects of resource management for food, population, land, water, air, energy, and timber resources.

GEOG 371 World Hunger and Agricultural Development (5) I&S Jarosz Addresses world hunger and poverty in relation to agricultural development, food security policy, the globalization of food and agriculture and social movements. Explores the problem and historical persistence of hunger across geographic scale and examines the debates about

how hunger can be eradicated. Recommended: either GEOG 230, GEOG 330, or GEOG 335.

GEOG 375 Geopolitics (5) I&S Sparke An introduction to both political geography and geopolitics, addressing the fundamental links between power and space. Topics covered include: theories of power, space, and modernity; the formation of modern states; international geopolitics in the aftermath of the Cold War; the post-colonial nation-state; and the geopolitics of resistance. Offered: jointly with JSIS B 375.

GEOG 377 Urban Political Geography (5) I&S Brown Examines how the spatial structure of cities and towns affects and is affected by political processes. Considers both traditional and newer forms of politics, as global and local issues. Special attention paid to where politics takes place within local contexts across state, civil society, home, and the body.

GEOG 378 Policing the City (5) I&S S. HERBERT Investigates how and why formal and informal order is established in urban areas, how this order produces advantages and disadvantages, and possibilities of alternative visions of order. Topics include formal means of control (zoning, laws, policing, building codes) and informal means of control (gossip, ostracism, peer pressure, local politics). Offered: jointly with LSJ 378; A.

GEOG 380 Geographical Patterns of Health and Disease (5) I&S Mayer Geography of infectious and chronic diseases at local, national, and international scales; environmental, cultural, and social explanations of those variations; comparative aspects of health systems.

GEOG 381 Maps and Health (5) I&S Combines the study of maps, GIS and other geovisualization technologies with research on the geography of health. Provides an introduction to key geovisualization tools, while also offering an opportunity to reflect intellectually on health maps through the lens of critical social theories about power and knowledge.

GEOG 395 Special Topics in Geography (1-5, max. 10) I&S

GEOG 425 Qualitative Methodology in Geography (5) I&S L. JAROSZ Historical and philosophical overview of qualitative methodology and techniques such as interviewing, ethnography, archival research, participatory action research, and focus groups. Exploration of forms of interpretation and analysis such as textual interpretation, critical discourse analysis, and content analysis. Addresses questions of ethics, power relations, field notes, and research presentation.

GEOG 426 Advanced Quantitative Methods (5) I&S, QSR Withers Introduces elementary spatial statistics and advanced statistical techniques in quantitative human geography. Methods reviewed include geographic applications of multiple regression analysis, spatial statistics and spatial autocorrelation, geographically weighted regression, factor analysis, discriminant analysis, and logistic regression. Prioritizes the interpretation and application of methods. Prerequisite: either GEOG 317 or GEOG 326.

GEOG 430 Contemporary Development Issues in Latin America (5) I&S Lawson Contemporary development issues in Latin America, seen from a spatial perspective. Concept of development; competing theories as related to various Latin American states. Economic structural transformation, migration, urbanization, regional inequality, and related policies.

GEOG 431 Geography and Gender (5) I&S Brown Examines theories and case studies across international, national, and regional scales in order to illustrate the impacts of social and economic processes upon the construction of gender in particular places.

GEOG 432 Geographies and Politics of Poverty and Privilege (5) I&S Lawson Examines theories and case studies across the Americas to understand geographies and politics of poverty and inequality. Outlines key concepts related to the reproduction of inequality/poverty, particu-

larly theories of class, gender, and race and examines the mechanisms through which knowledge and action on poverty and inequality are (re)produced. Offered: Sp.

GEOG 435 Industrialization and Urbanization in China (5) I&S *Chan* Examines the impacts of industrialization strategies adopted by the People's Republic of China on urbanization and rural-urban relations. Topics include: economic development strategies, industrial geography, rural industrialization, urban development patterns, migration, and urbanization policies. Recommended: GEOG 336. Offered: Sp.

GEOG 436 Social and Political Geographies of South Asia (5) I&S Introduces the social and political geographies of South Asia through reference to agrarian change in India. Outlines key concepts related to the reproduction of inequality in the region, particularly theories of caste, class, gender, and religious communalism, and examines the mechanisms through which these inequalities are reproduced in South Asia. Offered: jointly with JSIS A 438.

GEOG 439 Gender, Race, and the Geography of Employment (5) I&S *Ellis* Focuses on the geography of employment for men and women of different racial and ethnic backgrounds in American cities. Presents evidence on labor market inequality for different groups and explanations of these differences. Emphasizes the importance of a spatial perspective in understanding employment outcomes for women and minorities.

GEOG 442 Social Geography (5) I&S Review of concepts and methods of postwar social geography: historical roots and present orientations. Study of social spatial systems, their structures and functioning.

GEOG 445 Geography of Housing (5) I&S *Withers* Focuses on the geography of housing, especially in the United States. Topics include: the American dream of home ownership; housing affordability and differential access to home ownership; homelessness; the history of public housing; housing demography; residential mobility and neighborhood change, and discrimination in the housing market.

GEOG 448 GEOGRAPHY OF TRANSPORTATION (5) I&S

GEOG 451 Cultural Geography of Latin America (5) I&S Interdisciplinary senior seminar examining how physical and social geographies are culturally constructed and interconnected with subjectivities and power in Latin America. Topics include identity formation grounded in particular territories and the social constitution of space via an interplay of material and cultural forces. Offered: jointly with JSIS D 451.

GEOG 458 Advanced Digital Geographies (5) I&S, QSR *Bergmann* How are emerging digital approaches changing GIS and geography generally? Students learn skills needed to critically and creatively engage with coding, collaboration, shifting geospatial webs, and interactive maps and essays. Prerequisite: GEOG 360. Offered: Sp.

GEOG 461 Urban Geographic Information Systems (5) I&S *Elwood* Use of geographic information systems to investigate urban/regional issues; focus on transportation, land-use and environmental issues; all urban change problems considered. GIS data processing strategies. Problem definition for GIS processing. Data collection, geocoding issues. Data structuring strategies. Prerequisite: minimum grade of 2.0 in GEOG 360; recommended: GEOG 277. Offered: W.

GEOG 462 Coastal Geographic Information Systems (5) I&S, QSR *T. NYERGES* Combines lectures about fundamental concepts in geographic information systems with hands-on computer laboratory assignments about coastal environment-society issues. Coastal issues feature data measurement, characterization, and movement related to the land-water and environment society dynamic. Prerequisite: GEOG 360.

GEOG 464 GIS and Decision Support (5) I&S *T. NYERGES* Combines lectures about geographic information systems and decision methods with hands-on computer assign-

ments about regional and urban issues associated with such complex decision processes as planning, improvement programming, and capital project implementation. Emphasizes land, transportation, and water resources decision problems. Prerequisite: GEOG 360.

GEOG 465 GIS Database and Programming (5) I&S Explores GIS database models, database development, and database management systems used in GIS. Uses programming languages most applicable to GIS database work, particularly related to extending current commercial GIS such as ArcGIS. Prerequisite: either 2.0 in GEOG 461 or 2.0 in GEOG 462.

GEOG 467 Law, Justice, and the Environment (5) I&S *HERBERT* Examines the role law plays in shaping environmental policy. Challenges student to understand how environmental concerns are translated into legal discourse, and covers several typical issues that emerge in environmental law. Centers on active discussions. Offered: jointly with LSJ 467.

GEOG 469 Geographic Information Systems Workshop (5) *Elwood, Nyerger* Practices experience applying geographic information system (GIS) tools to analyze spatial data. Workshop format involves team-based work on GIS application project in various subfields of geography for community or university partners; encourages diverse backgrounds in various subfields of geography. Prerequisite: minimum grade of 2.0 in either GEOG 461 or GEOG 462. Offered: Sp.

GEOG 470 The Cultural Politics of Food (5) I&S *Jaros* Explores ways our understanding of the concepts of "food" and "eating" are culturally and spatially constructed by societal structures, power relations, and media representations. Drawing from research in cultural geography and critical food studies, examines the connections between food, culture, the media, politics, and economics. Prerequisite: GEOG 271.

GEOG 471 Methods of Resource Analysis (5) I&S Economic and noneconomic criteria for resource analysis. Theory and methods of linear models of natural resource analysis. Includes materials-balance modeling, residuals management, constrained system optimization approaches to water quality analysis, land-use patterns and interregional energy use, and multiple objective planning techniques applied to natural resource problems. Recommended: GEOG 370.

GEOG 474 Geography and the Law (5) I&S *S. HERBERT* Examines the relationship between geography, law, and socio-legal analysis; reviews significant instances where law and geography intersect, such as the regulation of public space, the regulation of borders and mobility, and disputes over property and land use. Offered: jointly with LSJ 474.

GEOG 476 Women and the City (5) I&S, DIV *England* Explores the reciprocal relations between gender relations, the layout of cities, and the activities of urban residents. Topics include: feminist theory and geography (women, gender, and the organization of space); women and urban poverty, housing and homelessness; gender roles and labor patterns; geographies of childcare; and women and urban politics. Offered: jointly with GWSS 476.

GEOG 477 Advanced Urban Geography (5) I&S *Brown* Geographic patterns and social processes within metropolitan areas. Canvases current research topics, methods, and theoretical debates in urban geography. Issues covered range across urban economic, political, and cultural geography. Recommended: GEOG 277.

GEOG 478 Social Justice and the City (5) I&S, DIV *Mitchell* Provides a link between general theories of urban development and their specific manifestation in the United States. Explores a series of themes related to contemporary urbanization processes, including urban segregation, gentrification, the rise of fortress cities, homelessness, and the loss of public space. Recommended: GEOG 277.

GEOG 479 Race, Ethnicity, and the American City (5) I&S, DIV *Ellis* Explores America's cities as sites where ethnic and racial interaction have generated specific patterns of opportunity and disadvantage in housing and labor markets; how ethnic identities and racial formations are changed by living and working in cities, and questions of assimilation, multiculturalism, and America's ethno-racial future.

GEOG 480 Environmental Geography, Climate, and Health (5) I&S *Mayer* Demonstrates and investigates how human-environment relations are expressed in the context of health and disease. Local and global examples emphasize the ways medical geography is situated at the intersection of the social, physical, and biological sciences. Examines interactions between individual health, public health, and social, biological, and physical phenomena. Prerequisite: either GEOG 280, GEOG 380, or GEOG 426.

GEOG 482 GIS Data Management (5) I&S *Nyerger* Examines the principles and application of geospatial database management software, including personal and enterprise geodatabase management solutions. Considers enterprise architectures for GIS relative to organizational size. Addresses collaborative uses of Internet, Intranet, and Extranet architectures. Offers case studies in database management, with a variety of dataset types and sizes. Prerequisite: GEOG 360.

GEOG 490 Field Research: The Seattle Region (6) I&S *Brown, Elwood* Field methods for contemporary urban research. Survey designs used in the analysis of transportation, land use, location of employment, shopping and housing, political fragmentation, and environmental degradation. Field report required, based on field work in the Seattle region.

GEOG 494 Senior Essay (3) I&S Supervised individual research and writing of major paper during senior year. Offered: AWP.

GEOG 495 Special Topics (*, max. 15) I&S Topics vary and are announced in the preceding quarter. Offered: AWP.

GEOG 496 Internship in Geography (3/5, max. 12) Internship in the public or private sector, supervised by a faculty member. Credit/no-credit only. Offered: AWP.

GEOG 497 Tutorial in Geography (1-5, max. 15) I&S Intensive directed study and tutoring. Literature reviews, formulations of project outlines and research designs, orientation in contemporary geographic thought and trends. Directed writing. Required for Honors students. Offered: AWP.

GEOG 499 Special Studies (*, max. 15) Supervised reading programs, undergraduate and graduate library and field research; special projects for undergraduate Honors students. Offered: AWP.

GEOG 500 Geographic Thought (5) Familiarizes entering graduate students with the research interests and publications of the geography faculty. Through readings, weekly essays, and discussions with faculty, students develop and deepen their individual research interests within the context of the intellectual life of the department. Offered: A.

GEOG 502 Professional Writing in Geography (*, max. 6)

GEOG 505 Spatial Dimensions of Chinese Development (5, max. 10) *Chan* Addresses several major spatial topics critical to present-day China's development, including: population and land relationship, the spatial structures of economic activities and governments; rural-urban relations and transition; central-local relations; the hukou system; population mobility at different spatial scales and urban centers.

GEOG 511 Contemporary Research Design in Geography (5) Reviews the key steps in designing and executing high-caliber independent research in geography. Students generate a research proposal that can further their own thesis or dissertation research.

GEOG 513 Research Grant Workshop (5, max. 10) Writing research proposals. Participants learn to identify and

approach sponsors; practice the peer-review process; develop a competitive research proposal. Prerequisite: GEOG 512 or GEOG 515 or equivalent; training and experience with quantitative, qualitative, or cartographic analysis; an already-formulated research project.

GEOG 514 GIS Problem Solving (5) *Nyerges* Introduces geospatial information technologies including geographic information systems, global positioning systems, remote sensing, and spatial decision support systems for addressing complex geospatial problems. Students gain an understanding of integrated data processing strategies including problem definition, database design, data collection, data structuring, data analysis, and information presentation. Offered: S.

GEOG 517 Geospatial Data Analysis (5) Provides a practical introduction to spatial data analysis and geographic information systems. Topics include overlay, buffer and distance fundamentals, descriptive and inferential spatial statistics, spatial pattern analysis and spatial autocorrelations, global and local spatial measures, regression analysis and geographically weighted regression. Emphasizes comprehension and application.

GEOG 520 Research Seminar: Geographic Information Representation (5) *Nyerges* Current issues in geographic information representation for geographic information systems (GIS). Includes representation for visualization, databases, and analyses. Prerequisite: one course in GIS.

GEOG 521 Research Seminar: Critical GIS (5) *Elwood* Examines theoretical and methodological foundations and practices of critical GIS research; considers philosophical and practical considerations in mixed methods research that incorporates GIS and other spatial technologies.

GEOG 522 Research Seminar: Space, Technology, and Society (5) *Elwood* Examines social scientific and humanistic theorizations of space, technologies, and their interrelationships; uses theses theorizations to assess social/cultural, political, and disciplinary implications of GIS, the geoweb, and emergent online mapping technologies. Offered: W.

GEOG 525 Advanced Qualitative Methods in Geography (5) *England, Jarosz* Examines why and how qualitative methods can be used to pursue research in geography. Includes consideration of theoretical, ethical, and political issues that arise with qualitative methods. Offers considerable practice in such methods as ethnography, focus groups, interviewing, discourse and content analyses, narrative analysis, and archival analysis.

GEOG 526 Advanced Quantitative Methods in Geography (5) Introduces elementary spatial statistics and advanced statistical techniques in quantitative human geography. Methods reviewed include geographic applications of multiple regression analysis, spatial statistics and spatial autocorrelation, geographically weighted regression, factor analysis, discriminant analysis, and logistic regression. Prioritizes the interpretation and application of methods. Prerequisite: GEOG 326 or equivalent.

GEOG 531 Latin American Development Seminar (5, max. 10) *Lawson* Evolution of development theory in Latin America from a spatial perspective. Theories and development issues, using case studies from Latin America. How geographers have conceptualized development problems and solutions. Prerequisite: GEOG 430.

GEOG 532 Research Seminar: Advanced Topics in Agriculture and Food (5, max. 10) *L. JAROSZ* Examines classic and contemporary research and writing on agricultural development and food and hunger drawing from political economy, political ecology, poststructural theory, cultural studies, and feminist theory.

GEOG 541 Research Seminar: Feminist Geographies (5) *England* Explores major research themes in feminist geographies. Particular attention to the concept that gendered identities and spaces are discursively (re)produced. Emphasizes recent feminist scholarship that emphasizes

difference, as well as the intersections between gender, "race," ethnicity, sexuality, age, nationality, class, and other social identities and divisions. Offered: jointly with GWSS 541.

GEOG 542 Research Seminar: Social and Population Geography (5, max. 10) Classic and contemporary theoretical and empirical research in social and population geography. Specific focus changes annually.

GEOG 543 Research Seminar: Topics in Immigration, Ethnicity, and Race (5, max. 10) *Ellis* Theoretical and empirical research issues in the geographies of immigration, ethnicity, and race. Specific focus changes annually.

GEOG 553 Advanced Topics in Cultural Geography (5, max. 10) *Mitchell* Focuses on important contemporary topics in geography and cultural studies, especially race and racism. Includes critical questions surrounding issues of representation, recognition, and redistribution. Offered: Sp.

GEOG 560 Principles of GIS Mapping (5) Origins, development, and methods of cartographic mapping. Principles of data representation and map design for thematic mapping and spatial analysis. Introduction of principles of geographic information systems (GIS).

GEOG 561 Urban Geographic Information Systems (5) *Elwood, Nyerges* Uses geographic information systems to investigate urban/regional issues, including transportation, land use, environment, emergency response, and public health. Spatial data acquisition, structuring, management, and analysis in a GIS environment - for urban planning, government, and research applications. Prerequisite: minimum grade of 2.0 in GEOG 560 or permission of instructor. Offered: W.

GEOG 562 Coastal Geographic Information Systems (5) *Nyerges* Combines lectures about fundamental concepts in geographic information systems with methods in hands-on computer lab assignments about coastal environment-society issues. Includes coastal-feature data measurement, characterization, and movement related to the land-water and environment-society dynamic. Prerequisite: GEOG 560 or equivalent.

GEOG 564 GIS and Decision Support (5) *Nyerges* Combines lectures about geographic information systems and decision methods with hands-on computer assignments about regional and urban issues associated with such complex decision processes as planning, improvement programming, and capital project implementation. Emphasis on land, transportation, and water resource decision problems. Prerequisite: GEOG 560 or equivalent.

GEOG 565 Geographic Information Systems Programming (5) *Nyerges* Covers GIS data structures and algorithms, plus map data systems used in GIS. Examines programming languages most applicable to GIS data management, analysis, and display work; particularly related to extending current commercial GIS methods using scripting environments as in ArcGIS.

GEOG 567 Research Seminar: Geography and Economic Development (5, max. 10) Explores ways in which economic and social changes affect the well-being and development of subnational, regional economies. Explanatory roles of such factors as labor and labor institutions, governments, technical change, corporations, capital markets, information costs, and international trade in the process of global restructuring. Specific focus changes annually.

GEOG 568 International Case Studies of GIS for Sustainability Management (5) *Nyerges* Uses GIS and resilience thinking to explore sustainable development projects in a variety of cultural settings. Examines international, national, and regional perspectives in order to understand how different organizations view sustainability as undertaken through GIS projects. Offered: Sp.

GEOG 569 Geographic Information Systems Workshop (5) *Elwood, Nyerges* Practical experience applying geographic information system (GIS) tools to analyze spatial data. Workshop format involves team-based work on GIS appli-

cation project for community or university partners; diverse background encouraged. Prerequisite: either 2.0 in GEOG 561 or 2.0 in GEOG 562. Offered: Sp.

GEOG 571 Research Seminar: Critical and Normative Ecologies (5)

GEOG 572 Research Seminar: Queer Geographies (5) *Brown* Explores the relationship between queer theory and critical human geography. Covers classic themes and debates, as well as new and emerging topics. Asks how geographic thought can be queered, as well as how queer studies can be augmented or critiqued with a geographical imagination.

GEOG 573 Urban Political Geography: Research Seminar (5) *Brown* Covers both classic and contemporary theoretical debates and research on the relation between power, place, and the local scale. Considers both conventional sites (e.g., the local state) as well as new forms and locations of city politics (e.g., sexuality and the body).

GEOG 574 Research Seminar: Geography, Law, and Social Control (5) *Herbert* Explores relationship between the construction and enforcement of law and the landscape of lived experience; reviews major approaches in socio-legal analysis and seeks to augment these with insights from contemporary human geography research; explores various ways in which geographical variance shapes legal behavior.

GEOG 575 Advanced Political Geography (5, max. 10) *Sparke* Provides resources for theorizing how politics shapes and is shaped by geographical relationships. Examines how politics are situated in complex material and discursive geographies that are partly reproduced through political negotiations. Examines interrelationships of contemporary capitalism with other complex systems of social and political power relations. Offered: jointly with JSIS B 575.

GEOG 578 Research Seminar: Theorizing the City (5) *Ellis* Considers classic and contemporary writings in urban theory in the twentieth century, including social ecology (Chicago School), political economy, and contemporary theoretical debates in poststructuralism, deconstructionism, and culture as they relate to cities and space.

GEOG 580 Medical Geography (3) *Mayer* Geography of disease, consideration in health systems planning. Analysis of distributions, diffusion models, migration studies. Application of distance, optimal location models to health systems planning; emergency medical services; distribution of health professionals; cultural variations in health behavior. Prerequisite: familiarity with social science research; health-related issues. Offered: jointly with HSERV 586.

GEOG 581 Seminar in Medical Geography (5, max. 10) *Mayer* Intensive research seminar dealing with new and promising research themes in medical geography and public health. Offered: jointly with HSERV 585.

GEOG 582 GIS Data Management (5) *Nyerges* Examines the principles and application of geospatial database management software, including personal and enterprise geodatabase management solutions. Considers enterprise architectures for GIS relative to organizational size. Addresses collaborative uses of Internet, Intranet, and Extranet architectures. Offers case studies in database management, with a variety of dataset types and sizes.

GEOG 598 Geography Colloquium (1, max. 6) Participation in, and critique of, student thesis and dissertation research, faculty research, and visitor contributions. Offered: AWSp.

GEOG 600 Independent Study or Research (*-) Offered: AWSpS.

GEOG 700 Master's Thesis (*-) Offered: AWSpS.

GEOG 800 Doctoral Dissertation (*-) Offered: AWSpS.

Germanics

340C Denny

The Department of Germanics focuses on the language, literature, and civilization of the German-speaking countries; on the role of their history, literature, and philosophy in Western civilization; and on linguistic analysis, especially historic, of the Germanic languages.

UNDERGRADUATE PROGRAM

Adviser

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The Department of Germanics offers the following programs of study:

- The Bachelor of Arts degree with a major in Germanics
- A minor in Germanics, plus an option in German linguistics

Bachelor of Arts

Suggested First- and Second-Year College Courses: First- and second-year German or equivalent. Courses in Central European history, literature and culture. Courses on broad cultural topics taught in English by Germanics.

Department Admission Requirements

Admission to the major status requires completion of GERMAN 202 or equivalent.

Major Requirements

60 credits as follows:

1. 20 credits as follows: GERMAN 203, GERMAN 311, GERMAN 322, GERMAN 401
2. Three 400-level courses in literature and culture (15 credits), chosen from the following: GERMAN 411, GERMAN 412, GERMAN 421, GERMAN 422, GERMAN 423, GERMAN 493, GERMAN 495
3. 25 additional credits from the approved list of electives or additional courses from the list above. No more than 10 of these credits can be at the 100 or 200 level, and no more than 10 credits total in GERMAN 301, GERMAN 302, GERMAN 303, GERMAN 304, GERMAN 307, GERMAN 333, and GERMAN 334.
4. Minimum 2.0 grade must be earned in every upper-division German course; an overall 2.50 GPA is required for all German courses counted toward the major.

Minor

Germanics

35 credits as follows:

1. GERMAN 203, GERMAN 311, GERMAN 322
2. 5 credits in 400-level coursework from either GERMAN 411, GERMAN 412, GERMAN 421, GERMAN 422, GERMAN 423, GERMAN 490, GERMAN 493, GERMAN 494, GERMAN 495, GERMAN 497, GERMAN 498, GERMAN 499, or from the courses listed below
3. 15 additional credits from the approved list of electives (no more than 10 credits may be taken from 100- or 200-level courses)
4. Minimum 2.0 grade is required for each course counted toward the minor.

German Linguistics

35 credits as follows:

1. GERMAN 203; either GERMAN 311 or GERMAN 322; GERMAN 401; GERMAN 451; GERMAN 452
2. Two additional courses (from any of the following):
 - a. *Language:* GERMAN 301, GERMAN 302, GERMAN 303, GERMAN 304, GERMAN 307, GERMAN 333, GERMAN 334, GERMAN 401, GERMAN 498
 - b. *Literature:* GERMAN 210, GERMAN 293, GERMAN 295, GERMAN 300, GERMAN 311 (if not used for requirement above), GERMAN 312, GERMAN 313, GERMAN 340, GERMAN 341, GERMAN 342, GERMAN 345, GERMAN 346, GERMAN 349, GERMAN 350, GERMAN 351, GERMAN 352, GERMAN 353, GERMAN 360, GERMAN 390, GERMAN 397, GERMAN 411, GERMAN 412, GERMAN 421, GERMAN 422, GERMAN 423, GERMAN 490, GERMAN 494, GERMAN 495, GERMAN 497
 - c. *Culture:* GERMAN 322 (if not used for requirement above), GERMAN 323, GERMAN 355, GERMAN 370, GERMAN 371, GERMAN 399, GERMAN 493, GERMAN 499
 - d. *Linguistics:* GERMAN 220, GERMAN 479, or courses from other departments offering linguistics
 - e. *Other:* GERMAN 395/GERMAN 396 (4 credits max.), GERMAN 398, GERMAN 446 (5 credits max.), GERMAN 447 (5 credits max.)
3. Minimum 2.0 grade is required for each course counted toward the minor.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:*
 - To acquire linguistic fluency in German and broad knowledge of German/Austrian/Swiss language, literature, and culture;
 - To increase critical awareness and sensitivity to other languages and cultures as well as to one's own;
 - To develop skills of analytical and integrative thinking, critical reading, and writing;
 - To communicate clearly and concisely both in written and spoken form;
 - To understand how to do research in German literacy and cultural studies.
- *Instructional and Research Facilities:* None
- *Honors Options Available:* With College Honors (Completion of Honors Core and Departmental Honors requirements). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:*
 - Advanced undergraduate majors and minors can sign up for 1-5 credits of faculty-sponsored research (GERMAN 447) for one quarter with a maximum of 15 credits. Five credits can count towards the major as an elective. Regular grades are assigned for research results. To see examples of research projects currently being offered, see the departmental website.
 - The internship in German (GERMAN 446) offers students the opportunity to do internships in public institutions or private businesses to apply their German language skills in practice. The internship experience provides a valuable tool to further increase students' communication skills in the German language, to explore and test potential career options, and to specify or expand study goals. Ideally an internship in German serves to enhance and further students' educational and professional objectives.
- *Study Abroad:* The Office of International Programs and Exchanges offers a number of different study abroad

options for Austria and Germany. Students can consult their website at www.ipe.washington.edu. The Department of Germanics offers a program in Vienna, Austria. Qualified students are invited to take part in the "Spring in Vienna" program. Every spring quarter the department sends a group of approximately 20 students to Vienna to participate in a program of studies in German language and Austrian culture for which students are able to earn 16 credits. Program costs are commensurate with in-state tuition at the University of Washington. Students should consult the departmental website for more information.

- *Department Scholarships:* The department's German Express program consists of a series of intensive courses able to take a student from no knowledge of German to fluency in one year. The best five students are awarded stipends of \$1,000 each to be applied toward study during spring quarter at a German university. Additional scholarship opportunities can be found on the departmental website.
- *Student Organizations/Associations:* German Club.

GRADUATE PROGRAM

Graduate Program Coordinator

240 Denny, Box 353130

(206) 543-4580

uwgerman@uw.edu

The graduate program in Germanics offers a broad, flexible, yet integrated curriculum that allows students to organize studies according to their inclinations and professional needs. Although based upon objectives common to all aspects of study (such as the acquisition of a body of learning, training in technical skills, and development of critical judgment), the program offers a background for different professional pursuits: careers as scholars and teachers in literature, cultural studies, the humanities, linguistics, and philology on the university level; the teaching of German language and civilization on the college and secondary school level; and professional writing, editing, and publishing. Study period of the doctoral program is two years (minimum number of post-master's course credits is 60). Completion of necessary coursework is followed by general written and oral examinations. A third doctoral year is reserved for writing the dissertation.

The MA and PhD programs concentrate on German literature, civilization, cultural history, and philosophical traditions, with an option to include Germanic linguistics and courses outside the department.

Master of Arts

Admission Requirements

An undergraduate major in German, or equivalent. Superior German language skills.

Degree Requirements

1. 40 hours of coursework as determined in consultation with adviser
2. One critical MA paper
3. Text analysis in one of the MA areas of expertise (see below)
4. Written comprehensive examination in one of the MA areas

Areas of expertise for the MA in Germanics are literary history; intellectual history; cultural studies; and linguistics or applied linguistics.

Students must demonstrate foundational competency in three of the four areas of expertise. Evaluation of this expertise is based on three procedures: one comprehensive

examination (based on the MA reading list); one text analysis (text selected by the MA committee from the MA reading list); one critical MA paper (based on work in a graduate seminar). Students choose the way these three evaluation procedures are distributed across their selected areas of expertise.

Doctor of Philosophy

Admission Requirements

Undergraduate major in German, or equivalent. Superior German language skills. Reading knowledge of a second foreign language (in addition to German) is required before the student is admitted to the PhD General Examination. Languages chosen are subject to approval by the department.

Degree Requirements

90 credits, to include:

60 credit hours at the 500 level or higher (GERMAN 411, GERMAN 451, GERMAN 452, GERMAN 497, GERMAN 498, GERMAN 499 may be counted toward this requirement if not already counted toward the MA); knowledge of a foreign language other than German; one PhD paper and a dissertation prospectus (or three PhD papers); three written doctoral examinations; an oral examination; and a dissertation.

1. The 60 hours of coursework are selected at the student's discretion with an eye toward developing distinct areas of specialization, though students are encouraged to define their areas broadly.
2. *PhD paper*: The doctoral paper must be on file one year following successful completion of the MA examination. For students who arrive with the MA, the paper must be on file by December 15 in the second year of coursework.
3. *Reading lists*: Guided by the PhD reading list, students prepare their own reading lists for each of the three doctoral examination areas in consultation with members of the PhD supervisory committee.
4. Knowledge of a foreign language other than German, by completion of a literature course - with readings in the language and a grade of 3.0 or higher - or by standard examinations in the target language approved by the Graduate Program Coordinator, must be demonstrated.
5. After students have completed the required 60 hours of coursework, met the language requirement, and had the dissertation prospectus approved they may register for 800-level coursework.
6. Students write three 24-hour examinations at home, organized in consultation with the Supervisory Committee according to one of the following patterns: one period examination, one genre examination, one special topic examination; two period examinations, one genre examination; two period examinations, one special topic examination; one period examination, two special topic examinations (for students specializing in linguistics).

Financial Aid

A limited number of teaching assistantships and fellowships are available. The teaching load consists of a five-hour course on the first- or second-year level. Teaching assistants are supervised by experienced faculty members.

GERMAN 100 Intensive First-Year German (15) Accelerated first-year German. Speaking and listening. Secondary objectives are reading and writing. Offered: S.

GERMAN 101 First-Year German (5) The methods and objectives are primarily communicative, with emphasis on speaking and listening. Secondary objectives are reading and writing. (Cannot be taken for credit if German is language of admission). First in a sequence of three. Prerequisite:

site: score of 0-11 on GER TL placement test if German is language of admission. Offered: AW.

GERMAN 102 First-Year German (5) The methods and objectives are primarily communicative, with emphasis on speaking and listening. Secondary objectives are reading and writing. Second in a sequence of three. Prerequisite: either GERMAN 101 or score of 12-35 on German placement test. Offered: WSp.

GERMAN 103 First-Year German (5) The methods and objectives are primarily communicative, with emphasis on speaking and listening. Secondary objectives are reading and writing. Third in a sequence of three. Prerequisite: either GERMAN 102, GERMAN 111, or score of 36-56 on German placement test. Offered: AWSpS.

GERMAN 104 Individualized First-Year German (1-15, max. 15) Individualized approach to elementary German instruction. Students progress at their own pace. Number of credits vary. Depending upon amount of material mastered, any number of credits up to 15 may be earned per quarter. (Note: If German is the student's language of admission, only 10 credits count towards graduation.) Credit/no-credit only.

GERMAN 111 Basic German Review (5) Includes the curriculum of GERMAN 102, preceded by a review of GERMAN 101. Designed for students with a background in German. Cannot be taken for credit if student has already taken GERMAN 102, GERMAN 103, or more advanced courses. Offered: A.

GERMAN 121 First-Year Reading German (5) Special beginning course devoted exclusively to the reading objective. Offered: S.

GERMAN 122 First-Year Reading German (5) Special beginning course devoted exclusively to the reading objective; GERMAN 122 continuation of GERMAN 121. Offered: S.

GERMAN 150 Conversational German Through Films (2, max. 6) Conversational practice in small groups based on films. Because series progresses through the year, beginners may enroll only Autumn Quarter. May be taken concurrently with other Germanics courses. Cannot be taken for credit if GERMAN 250 previously taken. Offered: AWSp.

GERMAN 195 Popular Film and the Holocaust (5) VLPA Introduces films about the Holocaust with particular emphasis on popular films. Develops the requisite tools for analyzing films, a historical perspective of the Holocaust, and the problems involved in trying to represent a historical event whose tragic dimensions exceed the limits of the imagination. Offered: jointly with JSIS C 175.

GERMAN 199 Supervised Study (1-10, max. 10) Study in German language and culture.

GERMAN 200 Intensive Second-Year German (15) VLPA Accelerated second-year German. Systematic review of German grammar. Intensive practice in conversation, reading and writing. Recommended: GERMAN 103.

GERMAN 201 Second-Year German (5) VLPA Systematic review of German grammar. Intensive practice in conversation, reading, and writing. First in a sequence of three. Recommended: GERMAN 103. Offered: AWSpS.

GERMAN 202 Second-Year German (5) VLPA Systematic review of German grammar. Intensive practice in conversation, reading, and writing. Second in a sequence of three. Recommended: GERMAN 201. Offered: AWSp.

GERMAN 203 Second-Year German (5) VLPA Systematic review of German grammar. Intensive practice in conversation, reading, and writing. Third in a sequence of three. Recommended: GERMAN 202. Offered: AWSp.

GERMAN 210 Classics of German Literature and Thought (5) VLPA Introduction to major figures of German culture from the Reformation to the present, their contribution to the intellectual life of the Western world. Luther, Kant, Goethe, Schopenhauer, Marx, Freud, Nietzsche, Kafka, Brecht, and Mann. In English.

GERMAN 220 Origins of the Germanic Languages (5) VLPA

Introduction to basic grammatical concepts, terminology, and linguistics with emphasis on German-English relationship. Overview of phonology, morphology, syntax, and history of Germanic languages and people, both ancient and modern. Languages covered include Old, Middle, and New High German; English, Frisian, Dutch, Old Saxon, and Gothic. Taught in English. Offered: jointly with LING 220.

GERMAN 221 The German Express: Second Year (10) VLPA Combines in one quarter the contents of GERMAN 201 and GERMAN 202, with special emphasis on reading and speaking skills. Limited to students who have demonstrated exceptional skills in first-year German. Recommended: GERMAN 103. Offered: A.

GERMAN 243 Fairy Tale and Fantasy (5) VLPA Studies of the Grimm brothers' fairy tales, their reception in different cultural frameworks, and their influence on fantasy literature from the nineteenth century to the present, including discussions of their sociological, psychological, and psychoanalytical implications and gender issues. In English.

GERMAN 250 Advanced Conversational German Through Films (2, max. 6) VLPA Conversational practice in small groups based on films. May be taken concurrently with other Germanics courses. Recommended: GERMAN 103; GERMAN 150. Offered: WSp.

GERMAN 275 Crime Scenes: Investigating the Cinema and Its Cultures (5) VLPA Teaches how to analyze film by closely studying crime scenes from historical and contemporary German and Scandinavian cinema. Directors studied include Fritz Lang, Carl Th. Dreyer, Billy Wilder, and Lars von Trier. Offered: jointly with SCAND 275.

GERMAN 293 Introduction to Contemporary German Culture (5) VLPA/I&S Introduction to culture of today's German-speaking world through readings from various media and discussion of diverse manifestations of both high and popular culture, its underlying beliefs and values, and its institutions and historical background. Readings and discussions in English.

GERMAN 295 The Contributions of German Jews to German Culture (5) VLPA/I&S, DIV Contribution, assimilation, and alienation of German-speaking Jews - such as Karl Marx, Sigmund Freud, and Franz Kafka - emphasizing the multi-cultural nature of that which is understood as "German culture." Offered: jointly with JSIS C 295.

GERMAN 298 Topics in Literature and Culture (5, max. 10) VLPA Introduces literary works and cultural artifacts from a variety of different traditions, cultures, and periods. Helps students to acquire basic tools for analyzing literature and culture.

GERMAN 299 Supervised Study (1-5, max. 10)

GERMAN 300 Studies in Germanics (5, max. 15) VLPA Topics or figures of German literature or language.

GERMAN 301 Conversation and Writing Skills (3-5) VLPA Language skill development (speaking, writing) using materials selected to broaden understanding of German-speaking countries. Recommended: GERMAN 203. Offered: AW.

GERMAN 302 Conversation and Writing Skills (3-5) VLPA Language skill development (speaking, writing) using materials selected to broaden understanding of German-speaking countries. Recommended: GERMAN 301. Offered: WSp.

GERMAN 303 Conversation and Writing Skills (3-5) VLPA Language skill development (speaking, writing) using materials selected to broaden understanding of German-speaking countries. Recommended: GERMAN 302. Offered: Sp.

GERMAN 304 Contemporary German Play (5, max. 15) VLPA Reading, analysis, and performance of one play by a contemporary German author. Taught in German. Performance scheduled for last week of quarter. Prerequisite: GERMAN 203. Offered: Sp.

GERMAN 307 THIRD-YEAR COMPOSITION (3-5) VLPA

GERMAN 311 Introduction to German Literary Studies (5) VLPA Introduction to major critical concepts and basic methodological issues of literary studies. Diverse reading strategies plus special emphasis on analytical writing about literature. Readings from eighteenth- to twentieth-century literature. Recommended: GERMAN 203.

GERMAN 312 Historical Approaches to German Literature (5) VLPA German literature from the Middle Ages to the present: Medieval Courtly period, Baroque, Enlightenment, Sturm und Drang, Classicism, Romanticism, Realism, Neoromanticism, Expressionism. Recommended: GERMAN 311.

GERMAN 313 Major Figures of German Literature (5) VLPA Focus on major figure such as Goethe, Schiller, Kleist, Fontane, Thomas Mann, Kafka. Emphasis on his/her cultural and sociopolitical contexts. Literary and nonliterary texts, including film, art, political, historical, and philosophical texts. Recommended: GERMAN 203; either GERMAN 311 or GERMAN 312.

GERMAN 322 Introduction to German Cultural Studies (5) VLPA Questions addressed include: What is "German culture," how has it been defined and contested, and how and why do we study it? Interdisciplinary methods and readings. Recommended: GERMAN 203.

GERMAN 323 Institutions and Their Ideas (5) VLPA/I&S Analysis of central institutions of contemporary Germany in their historical development. Recommended: GERMAN 203; either GERMAN 311 or GERMAN 312; GERMAN 322.

GERMAN 330 Conversational German (3-5) VLPA For participants in special summer programs only.

GERMAN 340 Friedrich Nietzsche in English (5) VLPA/I&S Analysis of Friedrich Nietzsche's chief works and the discussion of his position within modern German literature and thought.

GERMAN 341 Franz Kafka in English (5) VLPA Short stories and novels of Franz Kafka; emphasis on philosophical relevance and esthetic significance.

GERMAN 342 Thomas Mann in English (5) VLPA

GERMAN 345 Bertolt Brecht in English (5) VLPA

GERMAN 346 The Contemporary German Novel in English (5) VLPA Major novels of the postwar period (1945 to present) discussed in their historical context.

GERMAN 349 Goethe in English (5) VLPA Selected major works (especially *Faust*) of Goethe, whose literary, philosophical, and scientific achievements are examined as integral parts of his quest for meaning, wholeness, and universality, and whose impact on Western thinking is traced up to Thomas Mann and C. G. Jung.

GERMAN 350 The German Drama in English (5) VLPA German drama from the eighteenth to the twentieth centuries. German history and culture as reflected in the plays. Discussion of major themes.

GERMAN 351 Vienna 1900 in English (5) VLPA/I&S Interdisciplinary study of Vienna at the turn of the century. Discussion of literary texts with emphasis on other intellectual and cultural trends of this very rich and complex period.

GERMAN 352 Literature and Society in Weimar and National Socialist Germany in English (5) VLPA/I&S Literature, theater, and film, with adjunct consideration of art and architecture, in relation to the German social and cultural situation circa 1918 to circa 1947.

GERMAN 353 Postwar Germany (5) VLPA/I&S Study of culture, society, and politics in Germany since 1945. Readings include literary and nonliterary texts devoted to culture and everyday life. In English.

GERMAN 355 German Literature and Film in English (5) VLPA Relationship between literature and film in the German tradition. Content varies; focus may be on a particular time period, director, or theme. Special attention paid to developing critical and analytical skills.

GERMAN 360 Women in German Literature in English (5) VLPA/I&S Investigates the changing social roles of women in German society on the example of various literary texts from different periods.

GERMAN 370 History of German Cinema (5) VLPA/I&S History of German cinema emphasizing the cultural and political contexts. Films by Lang, Murnau, Riefenstahl, and Fassbinder, among others. Readings and discussions in English.

GERMAN 371 Special Topics: German Cinema (5, max. 10) VLPA Covers one or more German film directors, a specific genre, or a chosen theme. Topics vary. Readings and discussions in English.

GERMAN 390 Germanic Studies in English (5, max. 15) VLPA Topics or figures of German literature or language.

GERMAN 395 Proctoring of First-Year German Film Course (2, max. 6) VLPA Restricted to upper-division students of German who have demonstrated sufficient proficiency in speaking German to lead discussion groups in GERMAN 150. Leaders may participate one or two hours per week and receive 1 credit for each hour in class with 6 credits allowed in 3 quarters. Recommended: GERMAN 203. Credit/no-credit only. Offered: AWSp.

GERMAN 396 Proctoring of Second-Year German Film Course (2, max. 6) VLPA Restricted to upper-division students of German who have demonstrated sufficient proficiency in speaking German to lead discussion groups in GERMAN 250. Leaders may participate one or two hours per week and receive 1 credit for each hour in class with 6 credits allowed in three quarters. Recommended: GERMAN 303; either GERMAN 322 or GERMAN 323. Credit/no-credit only. Offered: WSp.

GERMAN 397 Foreign Studies in German Literature (1-6, max. 15) VLPA

GERMAN 398 Foreign Studies in German Language (1-6, max. 15) VLPA

GERMAN 399 Foreign Studies in German Culture (1-6, max. 15) VLPA/I&S

GERMAN 401 Advanced Writing and Conversation (3-5) VLPA Texts and exercises, both grammatical and stylistic, to develop vocabulary, stylistic awareness, and the practical application of grammatical rules in written German. First in a sequence of three. Recommended: GERMAN 303. Offered: A.

GERMAN 402 Advanced Writing and Conversation (3-5) VLPA Texts and exercises, both grammatical and stylistic, to develop vocabulary, stylistic awareness, and the practical application of grammatical rules in written German. Second in a sequence of three. Recommended: GERMAN 303.

GERMAN 403 Advanced Writing and Conversation (3-5) VLPA Texts and exercises, both grammatical and stylistic, to develop vocabulary, stylistic awareness, and the practical application of grammatical rules in written German. Third in a sequence of three. Recommended: GERMAN 303.

GERMAN 421 Studies in Eighteenth-Century Literature and Culture (5) VLPA Rotating special topics in literature and culture of the eighteenth century, such as particular movements, authors, genres, themes, or problems. Recommended: GERMAN 303; either GERMAN 311, GERMAN 312, GERMAN 322, or GERMAN 323. Offered: A.

GERMAN 422 Studies in Nineteenth-Century Literature and Culture (5) VLPA Rotating special topics in literature and culture of the nineteenth century, such as particular movements, authors, genres, themes, or problems. Recommended: GERMAN 303; either GERMAN 311, GERMAN 312, GERMAN 322, or GERMAN 323. Offered: W.

GERMAN 423 Studies in Twentieth-Century Literature and Culture (5) VLPA Rotating special topics in literature and culture of the twentieth century, such as particular movements, authors, genres, themes, or problems. Rec-

ommended: GERMAN 303; either GERMAN 311, GERMAN 312, GERMAN 322, or GERMAN 323. Offered: Sp.

GERMAN 430 Advanced Conversational German (3-5, max. 10) VLPA For participants in special summer programs only. Cannot be taken for credit by those who have already taken GERMAN 401, GERMAN 402, or GERMAN 403.

GERMAN 444 Undergraduate Thesis in Germanics (5) VLPA Supervised research leading to the writing of a research thesis.

GERMAN 446 Internships and Service Learning (2-5, max. 10) Prerequisite: 6 credits of upper-level German language courses. Credit/no-credit only.

GERMAN 447 Undergraduate Research (1-5, max. 15) Su-pervised research with faculty member.

GERMAN 451 Linguistic Analysis of German (5) VLPA Recommended: GERMAN 203. Offered: A.

GERMAN 452 History of the German Language (5) VLPA Traces the history of the German language from early Germanic to the present. Recommended: LING 200; GERMAN 203. Offered: jointly with LING 415; W.

GERMAN 479 Special Topics in the Teaching of Foreign Languages (3, max. 9) VLPA Intensive workshop for in-service and pre-service teachers of all foreign languages on some aspect of foreign-language teaching methodology.

GERMAN 490 Contemporary German Literature (5) VLPA Interpretation of selected works by contemporary German authors. Recommended: GERMAN 303; either GERMAN 311 or GERMAN 312.

GERMAN 493 Special Topics in German Culture (5) VLPA/I&S Recommended: GERMAN 303; either GERMAN 322 or GERMAN 323.

GERMAN 494 Studies in German Poetry (5) VLPA Introduction to various methods of analysis and interpretation. Recommended: GERMAN 303; either GERMAN 311 or GERMAN 312.

GERMAN 495 Proseminar in German Literature (5, max. 15) VLPA Special topics, the subject matter and depth of which are not included in other literature courses, arranged through consultation among students and faculty members.

GERMAN 496 History of Germanic Philology (5) VLPA Introduction to the works of outstanding scholars in the field of Germanics.

GERMAN 497 Studies in German Literature (1-6, max. 15)

GERMAN 498 Studies in the German Language (1-6, max. 15)

GERMAN 499 Studies in German Culture (1-6, max. 15)

GERMAN 500 Literary Theory, Methodology, and Bibliography (5) Historical survey and analysis of criticism (*Methodengeschichte*) and modern trends in contemporary theory. Methods of research and bibliography, as well as theoretical aspects of practical interpretation.

GERMAN 501 Proseminar in Methods and Writing (5) Introduction to research methods, presentation of research, scholarly writing, and general poetological issues. Each year a different special topic is chosen as a focus for students' research in the course.

GERMAN 503 Contemporary German Literature (5, max. 15) Seminar analyzing the esthetic movements and thought of contemporary German literature, the social and political problems dealt with in the works of representative authors, and major experimental concepts. Some previous exposure to German literature and civilization after 1945 is expected.

GERMAN 504 Special Studies in Literary Criticism and Theory (5, max. 15) Literary criticism and theory, focusing on special topics proposed by the instructor. Taught in English. Prerequisite: GERMAN 500 or equivalent.

GERMAN 510 Studies in Medieval Literature and Culture (5, max. 15) Seminar on rotating special topics in literature and culture of the Middle Ages, such as particular movements, authors, genres, themes, or problems.

GERMAN 511 Studies in Renaissance and Baroque Literature and Culture (5, max. 15) Seminar on rotating special topics in literature and culture of the Renaissance and Baroque, such as particular movements, authors, genres, themes, or problems.

GERMAN 512 Studies in Eighteenth-Century Literature and Culture (5, max. 15) Seminar on rotating special topics in literature and culture of the eighteenth century, such as particular movements, authors, genres, themes, or problems.

GERMAN 514 Studies in Nineteenth-Century Literature and Culture (5, max. 15) Seminar on rotating special topics in literature and culture of the nineteenth century, such as particular movements, authors, genres, themes, or problems.

GERMAN 516 Studies in Twentieth-Century Literature and Culture (5, max. 15) Seminar on rotating special topics in literature and culture of the twentieth century, such as particular movements, authors, genres, themes, or problems.

GERMAN 518 Foreign Language Teaching Methodology (2) *Brandl* Current foreign language teaching methods and approaches. Learning and teaching strategies and techniques for the four skills (reading, writing, speaking, listening) including cultural notions. Current and future trends in pedagogy and technology. Offered: jointly with NEAR E 518/SCAND 518/SLAV 518; A.

GERMAN 525 Seminar in Romanticism (5, max. 15)

GERMAN 526 Seminar in Nineteenth-Century Drama (5, max. 15)

GERMAN 527 Seminar in Nineteenth-Century Prose (5, max. 15)

GERMAN 528 Nineteenth-Century Poetry (5, max. 15) Representative selections from Holderlin, the late Goethe, and from prevalent trends in nineteenth-century poetry, such as romanticism, "Young Germany," poetic realism, and the experimental poetry of naturalism.

GERMAN 529 Studies in Literature 1870-1920 (5, max. 15) Seminar on rotating special topics drawn from the period 1870-1920, such as particular movements, authors, genres, themes, or problems.

GERMAN 533 Seminar in Eighteenth-Century Literature (5, max. 15) Study of one or more of the literary movements: Enlightenment, sentimentalism, anacreontics, storm and stress, classicism, early romanticism, and works by principal authors such as Gottsched, Bodmer, Gellert, Lessing, Wieland, Klopstock, Herder, Lenz, Goethe, Schiller, Jean Paul.

GERMAN 534 Storm and Stress (5, max. 15) Extensive investigation of poetological and esthetic concepts advanced by initiators and exponents of German storm and stress. Analyses of narrative and dramatic works of storm and stress reveal reflections and implementations of the new theoretical concepts.

GERMAN 535 Classicism: Goethe, Schiller (5, max. 15)

GERMAN 537 Studies in Literature 1770-1830 (5, max. 15) Seminar on rotating special topics drawn from the period 1770-1830, such as particular movements, authors, genres, themes, or problems.

GERMAN 540 Twentieth-Century Poetry (5, max. 15) Development of German poetry from Rilke, Hofmannsthal, and George through Trakl, Benn, the Expressionists and the Dadaists, Brecht, and Enzensberger, to such contemporaries as Eich, Heissenbuttel, the concrete poets, Celan, and Bachmann.

GERMAN 541 Twentieth-Century German Drama (5, max. 15) Selection from modern German drama representative

of the concern with the human condition, of social criticism, and of experimentation with the new dramatic forms.

GERMAN 542 Twentieth-Century Prose (5, max. 15) Selected modern German novels, short novels, and short stories by representative authors dealing with the social and political problems of Germany as well as with individual problems of existence and identity.

GERMAN 550 Gothic (5)

GERMAN 551 Seminar in Germanic Philology and Linguistics (5, max. 15) Topics vary. Prerequisite: basic knowledge of German and at least one elementary linguistics course.

GERMAN 552 Old High German (5)

GERMAN 555 Old Saxon (5)

GERMAN 556 Middle High German (5)

GERMAN 558 Middle High German Literature (5)

GERMAN 560 Modern Dialects (5)

GERMAN 565 Seminar in Courtly Epic (5) Aspects and methods of literary analysis pertaining to the study of medieval courtly epics.

GERMAN 566 Late Middle High German Narrative (3)

GERMAN 567 Minnesang (3) In-depth study of medieval German lyrics in the context of German and European literary and intellectual development. Poems of the period from Kurenberger through Walther are analyzed with stress on grammatical, formal, stylistic, and ideological interpretation. Prerequisite: adequate knowledge of Middle High German.

GERMAN 568 Seminar in Heroic Epic (5) Literary and historic problems of the German heroic epic, with special emphasis on the Nibelungenlied and the Dietrichsepik.

GERMAN 575 Teaching of German Literature and Civilization (5) Teaching of German language and literature on the advanced level in secondary schools and colleges. Credit/no-credit only.

GERMAN 576 Modern Methods and Materials in Teaching German (3) Theory and practice of communicative language teaching; current developments in foreign-language teaching; evaluation of teaching materials. Credit/no-credit only. Offered: A.

GERMAN 577 Principles of Second Language Learning (2)

GERMAN 580 Seminar in German Literature (5, max. 15) Open topics seminar with varying content.

GERMAN 581 Seminar in Poetry (5, max. 15) Open topics seminar with varying content.

GERMAN 582 Seminar in Drama (5, max. 15) Open topics seminar with varying content.

GERMAN 583 Seminar in Prose (5, max. 15) Open topics seminar with varying content.

GERMAN 590 Philosophical Issues in German Culture (5, max. 15) Seminar on rotating special topics dealing with the impact of particular thinkers, movements, or philosophical problems in German culture.

GERMAN 591 Studies in German Intellectual History (5, max. 15) Seminar on rotating special topics dealing with interactions of history, literature, and culture in the German tradition.

GERMAN 592 Cultural Studies (5, max. 15) Seminar on rotating special topics dealing with periods, themes, or particular problems in German life and culture.

GERMAN 600 Independent Study or Research (*-)

GERMAN 700 Master's Thesis (*-)

GERMAN 800 Doctoral Dissertation (*-)

History

315 Smith

History undertakes the study of human affairs in a manner that seeks to understand change and development rather than the state of things at a given moment, taking into account societies in diverse parts of the world from the earliest times for which written records exist to the present.

UNDERGRADUATE PROGRAM

Adviser

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histadv@uw.edu

The Department of History offers the following programs of study:

- The Bachelor of Arts degree with a major in history
- The Bachelor of Arts degree with a major in the history and philosophy of science, offered jointly with the Department of Philosophy
- Minors in history; history of empire and colonialism; history of race, gender, and power; history of religion and society; history of science; and history of war and society.

Bachelor of Arts

Suggested First- and Second-Year College Courses: Courses that develop writing skills.

Department Admission Requirements

1. Minimum college/university GPA of 2.00
2. Completion of 10 credits of college history with a minimum cumulative GPA of 2.50
3. Completion of 10 credits of composition/writing courses with a minimum grade of 2.0 for each course. The requirement may be met by a freshman English composition course or a "W" course.
4. Students may apply to the major at any time in the quarter. Transfer students must be enrolled at the UW before applying.

Major Requirements

60 credits, to include:

1. At least one 5-credit in four of the following six fields: Asia; Europe; Latin America and the Caribbean; Middle East and Africa; United States and Canada; and Comparative and Trans-regional
2. At least 10 credits in pre-modern history and 10 credits in modern history (as designated by the department)
3. At least 30 upper-division history credits completed in residence at the UW
4. 5 credits of HSTRY 388, to be completed no later than within two quarters of declaring the major
5. 5 credits of undergraduate senior seminar (as designated by the department)
6. Approved electives to reach 60 credits
7. Beyond the required subjects, the student may or may not specialize, depending upon personal interests and career plans.
8. A minimum 2.25 GPA for all history courses and minimum 2.0 grade in all history courses taken to fulfill requirements for the major.

Minor

Minor Requirements:

History: 30 credits of history, of which 20 must be upper-division, with a minimum 2.0 grade in each course applied toward the minor. Minimum 15 of the 20 upper-division credits must be completed in residence at the UW.

History or Empire and Colonialism: 30 credits from approved course list, of which 20 credits must be upper division, with a minimum 2.00 cumulative GPA in courses applied toward the minor. A minimum 15 of the 20 upper-division credits must be completed in residence at the UW Seattle campus. Up to 5 credits may overlap with other minors.

History of Race, Gender, and Power: 30 credits from approved course list, of which 20 credits must be upper division, with a minimum 2.00 cumulative GPA in courses applied toward the minor. Minimum 15 of the 20 upper-division credits must be completed in residence at the UW Seattle campus. Up to 5 credits may overlap with other minors.

History of Religion and Society: 30 credits from approved course list, of which 20 credits must be upper division, with a minimum 2.00 cumulative GPA in courses applied toward the minor. Minimum 15 of the 20 upper-division credits must be completed in residence at the UW Seattle campus. Up to 5 credits may overlap with other minors.

History of Science: 25 credits, including HSTCMP 311, HSTCMP 312, HSTRY 390, and HSTRY 493; plus one course from an approved list of elective courses. A minimum 2.0 grade is required in each course.

History of War and Society: 30 credits from approved course list, of which 20 credits must be upper division, with a minimum 2.00 cumulative GPA in courses applied toward the minor. Minimum 15 of the 20 upper-division credits must be completed in residence at the UW Seattle campus. Up to 5 credits may overlap with other minors.

Student Outcomes and Opportunities

- **Learning Objectives and Expected Outcomes:** The study of history enhances critical thinking and writing skills. It is a creative process in which students learn to use arguments and evidence to communicate a sound historical thesis. It is a liberal arts degree that encourages students to become well rounded, educated people. Graduates are prepared for a variety of careers in many professions and businesses. In addition to teaching, research, and museum and archives work, recent graduates have pursued careers as political lobbyists, journalists, and law enforcement officers. Many history majors pursue, and are well prepared for, further education and professional programs such as medicine, law, library science, and museum curatorship.
- **Instructional and Research Facilities:** The department funds a writing center for students enrolled in history courses. The department also has a small computer lab available for history majors.
- **Honors Options Available:** With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Distinction (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- **Research, Internships, and Service Learning:** The department encourages students to participate in internships that include historical elements. Students work with a sponsoring organization and a history faculty member. See adviser for details.
- **Department Scholarships:**
 - The Faye Wilson Scholarship is awarded to students emphasizing U.S. history and the Schwartz Fellowship to students pursuing historical study of a non-western civilization. The Freedman Remak Scholar-

ship is awarded to non-resident history majors based on academic merit.

- History majors may compete for two paper prizes: The Thomas Power Prize for papers written in a history course during the last year, and the York/Mason Award for history papers written on African Americans in the West.
- The Millican Fund and the Willstadter Snow-Smith Award provide funding for travel in the course of historical research.
- In addition, the department allows students to nominate their high school history teacher for the Pressly Prize, which honors excellence in education.
- Scholarship and prize competitions run in February and March of each year. See adviser for details.
- **Student Organizations/Associations:** Phi Alpha Theta, a history honors society. See adviser for details.

GRADUATE PROGRAM

Graduate Program Coordinator

206C Smith, Box 353560

(206) 543-8291

histgrad@uw.edu

The Department of History offers graduate training leading to the Master of Arts and Doctor of Philosophy degrees in a large number of fields within the discipline. Students in the programs prepare for careers as college teachers who combine teaching with scholarship and professional writing. A few graduates enter government service, college administration, or publishing. The MA program is normally completed in five or six full-time academic quarters or their equivalent.

Master of Arts

Admission Requirements

1. Completion of a strong undergraduate program in history, ordinarily as a history major
2. Usually a minimum 3.50 (A-) GPA, particularly in history and related subjects, and especially in the final two years of work, and in graduate work if any graduate studies have been completed prior to application
3. Ordinarily a score in the 80th percentile or higher on the verbal portion of the General Aptitude Test of the Graduate Record Examination (GRE)
4. Evidence of genuine intellectual ability and interest beyond the routine performance of academic tasks
5. Reading knowledge of at least one language in addition to English is required for all graduate degrees. It is not a requirement for admission to the graduate program, but qualified applicants with knowledge of at least one foreign language may be favored over those who lack such knowledge. Moreover, an applicant who proposes to work for a degree in Greek, Roman, European, Russian, Medieval, Modern European, Latin American, Middle Eastern, or Asian history is expected to have begun to acquire a working knowledge in the foreign languages essential to research in the field.

Degree Requirements

In addition to Graduate School requirements, 36 credits minimum, as follows:

1. Submission of proposed course of study: Two-field MA form or proposed course of study, as appropriate. This requirement must be met no later than the end of the second quarter of graduate study.
2. Official establishment of the MA committee and submission of the request for establishing a master's Supervi-

sory Committee form. This requirement must be met no later than the end of the third quarter of graduate study.

3. Successful completion of all language requirements. This requirement must be satisfied no later than the quarter immediately preceding the quarter in which the student expects to complete the master's degree.
4. Demonstrate by written examination mastery of a substantial body of historical knowledge. Students are expected to construct their fields of study in consultation with their supervising faculty.
5. Satisfactory completion of a graduate seminar which entails the preparation of a research seminar paper; or the satisfactory completion of an MA thesis. Most seminars are two- or three-quarter classes.
6. Official submission of an application for the degree
7. All Graduate School requirements

Doctor of Philosophy

Admission Requirements

1. Completion of a strong master's program in history, or a closely related field
2. Usually a minimum 3.50 (A-) GPA, particularly in history and related subjects
3. Ordinarily a score in the 80th percentile or higher on the verbal portion of the General Aptitude Test of the Graduate Record Examination (GRE)
4. Evidence of genuine intellectual ability and interest beyond the routine performance of academic tasks
5. Reading knowledge of at least one language in addition to English is required for all graduate degrees. It is not a requirement for admission to the graduate program, but qualified applicants with knowledge of at least one foreign language may be favored over those who lack such knowledge. Moreover, an applicant who proposes to work for a degree in Greek, Roman, European, Russian, Medieval, Modern European, Latin American, Middle Eastern, or Asian history is expected to have begun to acquire a working knowledge in the foreign languages essential to research in the field.

Degree Requirements

In addition to Graduate School Requirements, 90 credits minimum, as follows:

1. Submission of the proposed course of study form. This requirement should be met no later than the end of the second quarter after entrance to the PhD program. For students promoting into the PhD program from the MA program, this form must be completed no later than the end of the first quarter of doctoral study.
2. Official establishment of the doctoral Supervisory Committee and submission of the request for establishing a doctoral Supervisory Committee form. This requirement must be met no later than the end of the third quarter after entrance to the PhD program. For students promoting into the PhD program from the MA program, this form must be completed no later than the end of the first quarter of doctoral study.
3. Language requirements must be satisfied no later than the quarter immediately preceding the quarter in which the student expects to take the PhD general examination.
4. Satisfactory performance in the PhD general examination, which consists of four written examinations in four fields and an oral examination. Fields must be distributed among at least two divisions, such that at least one of these four fields lies clearly outside the student's primary division of concentration. Students are expected to construct their fields of study in consultation with their supervising faculty. PhD students concentrating in the U.S. history division are required to offer at least one of the following three chronological fields: Early America,

Nineteenth Century, Twentieth Century. A grade of “honors” or “high pass” in a departmental field examination for the MA degree may exempt the student from the PhD examination in that field at the discretion of the faculty member administering the PhD examination.

5. Satisfactory completion of a seminar paper while enrolled as a PhD student. This paper must be completed before the student takes the PhD general examination. Students who have not completed a graduate seminar in this department for their MA are ordinarily expected to enroll in such a seminar as part of their coursework for the PhD, and to write their research paper in the context of this seminar.
6. Official establishment of the doctoral reading committee
7. Preparation of an acceptable doctoral dissertation
8. Satisfactory performance in a final oral examination in defense of the dissertation

Financial Aid

Entering graduate students are considered for any departmental fellowships and other funding for which they are eligible. Students with, or who expect to receive, the MA degree by the time they begin their studies may apply for teaching assistantships and may, with continued satisfactory scholarly progress, hold a TA appointment for a total of nine quarters, provided adequate funds are available.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crs-cat/

Ancient and Medieval History

HSTAM 111 The Ancient World (5) I&S Origins of Western civilization to the fall of Rome.

HSTAM 112 The Medieval World (5) I&S Political, economic, social, and intellectual history of the Middle Ages. Cannot be taken for credit toward a history major if HSTAM 331 or 332 or 333 previously taken.

HSTAM 203 Introduction to the Middle Ages: Medieval People (5) I&S Introduction to the Western Middle Ages through a study of social roles and statuses as seen through documents and imaginative literature. The groups studied are rulers, aristocracy, peasants, townspeople, clergy, outcasts, and outsiders.

HSTAM 205 Military History of the Ancient World (5) I&S Military history from prehistoric times to the fall of the Roman Empire, with special emphasis on the Greco-Roman period and the campaigns of Alexander the Great, Hannibal, Scipio Africanus, and Julius Caesar.

HSTAM 235 Myths and Mysteries of the Middle Ages (5) I&S Introduces the basics of the historian's craft by focusing on some enduring mysteries of the European middle ages, including bog bodies, druids, King Arthur, Robin Hood, the Templars, the Holy Grail, the Shroud of Turin, and Joan of Arc.

HSTAM 276 Celtic Civilizations of the European Middle Ages (5) I&S Introduction to the history and pseudo-history of medieval Ireland, Wales, Scotland, and Gaul. Topics include “Celtic” religion, mythology, social institutions, nationalism, and the relationship between history and myth. Particular attention to how historians “do” history in the absence of straightforward historical sources.

HSTAM 290 Topics in Ancient/Medieval History (5, max. 10) I&S Examines special topics in ancient/medieval history.

HSTAM 302 Ancient History (5) I&S Political, social, economic, and cultural development of Rome from the be-

ginnings in the eighth century BC to the beginning of the Middle Ages.

HSTAM 312 The Roman Republic (5) I&S Political, social, economic, and cultural history, with emphasis on the development of the constitution and territorial expansions.

HSTAM 313 The Roman Empire (5) I&S Political, social, and cultural history, with special emphasis on the period of Cicero and Caesar.

HSTAM 314 The World of Late Antiquity (5) I&S Examines the transformation of the ancient world from the third-century crisis of the Roman Empire to the rise of Islamic civilization. Explores the manifold political, cultural, and social changes that transformed Europe, the Mediterranean, and the Near East between the third and the eighth centuries CE.

HSTAM 315 The Byzantine Empire (5) I&S Political, social, economic, and cultural history of the eastern Roman Empire from the fourth to fifteenth centuries.

HSTAM 325 Empires in Ancient Iran (5) I&S Explores the history of ancient and early medieval Iran, from the teachings of the prophet Zoroaster to the Islamic conquest of the Sasanian Empire. Focuses on the two dominant imperial phases of pre-Islamic Iranian history: the Achaemenid Empire created by Kings Cyrus and Darius, and the Sasanian Empire.

HSTAM 330 The Age of Augustus (5) VLPA/I&S Gowing Detailed study of the history and culture of the reign of Augustus, the first Roman emperor (31 BC-AD 14). Includes readings in Augustan authors such as Vergil, Ovid, and Horace as well as the study of Augustan art and architecture. Offered: jointly with CLAS 330.

HSTAM 331 Early Middle Ages (5) I&S The Dark Ages, feudalism, emergence of the medieval order of civilization, and the development of Romanesque culture.

HSTAM 332 Central Middle Ages (5) I&S Europe in the central Middle Ages: culture of cathedrals and universities, formation of national states, development of urban society.

HSTAM 333 Late Middle Ages (5) I&S Disintegration of the medieval order under the impact of the national state, the secularization of society, and the decline of the church. Movements of reform and revolution. The culture of late gothic Europe.

HSTAM 340 Medieval Women (5) I&S The experiences of women in medieval society: public and private power, changing concepts of family and the domestic sphere, ideal and reality in courtly love, women in religious life, women in the workplace, the querelle des femmes and the beginnings of “feminist” thought.

HSTAM 360 Medieval Christianity (5) I&S Development of Christianity in the medieval west circa 400 to 1500. Emphasis on the forms of religious life: monasticism, the papacy, friars, hermits, mystics, and reformers; and on the emergence of new modes of piety, both lay and clerical.

HSTAM 365 Medieval England, 1042-1485 (5) I&S Upper level survey of English history from the Norman conquest until 1485. Emphasis on political, social, and economic history, with special attention to the peculiarities of English development as these had emerged by 1485.

HSTAM 367 Medieval Jewish History (5) I&S Social and intellectual history of the Jews in western Europe to the fifteenth century. Jews under Islam and Christianity; the church and the Jews; the Crusades and their legacy; intellectual achievements; conflict and cooperation. Offered: jointly with JSIS C 367.

HSTAM 370 The Vikings (5) VLPA/I&S Vikings at home in Scandinavia and abroad, with particular emphasis on their activities as revealed in archaeological finds and in historical and literary sources. Offered: jointly with SCAND 370.

HSTAM 401 Early Greece (5) I&S Bronze and Dark Age Greece: realities of the heroic age of ancient Greece.

HSTAM 402 Classical Greece (5) I&S The classical civilization of ancient Greece, with special emphasis on the legacy of Greece to Western civilization.

HSTAM 403 Alexander the Great and the Hellenistic Age (5) I&S Rise of Macedonia, conquest of Near East by Alexander, and division into lesser kingdoms after Alexander's death. Special emphasis on fusion of cultures and change from city-state to world-state.

HSTAM 443 Medieval Russia: 850-1700 (5) I&S Development of Russia from earliest times to the reign of Peter the Great. Offered: jointly with JSIS A 443.

HSTAM 490 Topics in Ancient/Medieval History (5, max. 10) I&S Examines special topics in ancient/medieval history.

HSTAM 501 Greek History Field Course (3-6, max. 6) Examines various topics and themes in Greek history. Content varies.

HSTAM 505 Ancient Greece and Rome: Writings and Interpretations (3-6, max. 6) Study of historians, development of historical study as a distinct pursuit, focus of attention in historical scholarship in the ancient world and comparison with modern interpretation of antiquity.

HSTAM 506 Medieval Europe: Writings and Interpretations (3-6, max. 6) Study of historians, schools of history, and interpretations of medieval European history.

HSTAM 511 Roman History Field Course (3-6, max. 6) Examines various topics and themes in Roman history. Content varies.

HSTAM 512 Seminar in Ancient History ([3-6]-, max. 12) Detailed study of special topics in ancient history.

HSTAM 513 Seminar in Ancient History (-[3-6], max. 12) Detailed study of special topics in ancient history.

HSTAM 518 Topics in Late Antiquity (3-6, max. 18) Examines various topics in the transformation of the ancient world from the third-century crisis of the Roman Empire to the rise of Islamic civilization. Serves as the field course for masters and Ph.D. students.

HSTAM 530 Early Middle Ages (3-6, max. 6) Field course. Survey of early European history through the times of tribal migrations and invasions from Asia. Problems and methods of research.

HSTAM 531 Medieval European History (3-6, max. 6)

HSTAM 532 Medieval European Seminar (3-6, max. 12) Prerequisite: reading knowledge of Latin.

HSTAM 533 Medieval European Seminar (3-6, max. 12) Prerequisite: reading knowledge of Latin.

HSTAM 534 Medieval European Seminar (3-6, max. 12) Prerequisite: reading knowledge of Latin.

HSTAM 535 Later Medieval Europe (3-6, max. 6) Field course. Surveys European history from ca. 1250 to 1500, with particular attention to historiography.

HSTAM 536 Topics in Early Medieval History (3-6, max. 12) Graduate level study of specific topics in early medieval history. Topics vary from quarter to quarter; for information, please see instructor.

HSTAM 590 Topics in Ancient and Medieval History (5, max. 15) Seminar on selected topics in ancient and medieval history, with special emphasis on preparation for field examinations. Topics vary according to interests of students and instructor.

HSTAM 591 Advanced Medieval and Renaissance Seminar (3-6, max. 12)

HSTAM 592 Advanced Medieval and Renaissance Seminar (3-6, max. 12)

HSTAM 593 Advanced Medieval and Renaissance Seminar (3-6, max. 12)

Comparative and Transregional History

HSTCMP 200 Ten Events That Shook the World (5) I&S Offers introduction to history by examining ten events of great importance for both past and present. The ten events, which vary from quarter to quarter, come from diverse times and places, thereby encouraging a sweeping view of world history. (See department advisor for the current quarterly list of the ten events.)

HSTCMP 204 Europe and America in the Era of the World Wars (5) I&S Declining role of Europe in the world and rise of the United States from 1914 to 1945.

HSTCMP 205 Filipino Histories (5) I&S Offered: jointly with JSIS A 205.

HSTCMP 207 Introduction to Intellectual History (5) I&S Ideas in historical context. Comparative and developmental analysis of Western conceptions of "community," from Plato to Freud. Offered: jointly with CHID 207.

HSTCMP 209 History of Christianity (5) I&S Twenty centuries of the history, thought, and culture of Christianity.

HSTCMP 211 Introduction to the History of Science (5) I&S Introduction to major themes in the history of science. Investigation of historical and scientific methods through the study of particular historical cases.

HSTCMP 215 The History of the Atomic Bomb (5) I&S History of the atomic bomb from the beginning of nuclear physics to the security hearing of J. Robert Oppenheimer. Includes a study of the scientific achievements that made the bomb possible, the decision to deploy the bomb, the moral misgivings of the scientists involved.

HSTCMP 217 The Space Age (5) I&S Explores the history of ideas, events, and practices associated with the Space Age from the late nineteenth century through the twentieth. Emphasizes intellectual, cultural, and political/military history in the development of rockets and space technology in the United States, Germany, and the Soviet Union.

HSTCMP 225 The Silk Road (5) I&S *Waugh* History of cultural and economic exchange across Eurasia from the early Common Era to modern times. Spread of religions such as Islam and Buddhism, overland trade in rare commodities, interaction between nomadic and sedentary cultures, role of empires, culture of daily life, and the arts.

HSTCMP 245 Exploration and Empire: Science, Art, and Power, 1300-1800 (5) I&S Explores key moments in the history of exploration and empire, 1300-1800. Taking an interdisciplinary approach, focuses on scientific and artistic aspects of exploration, their implications for imperialism, and legacies in the post-colonial world.

HSTCMP 247 Before Global Health: The Histories of Public Health and International Health in the Global South (5) I&S Traces the roots of the modern global health movement by examining the history of overseas interventions in medicine and public health from the fifteenth century to the present. Focuses primarily on Latin America while including case studies on Africa, Asia, Australia, and the Pacific.

HSTCMP 249 Introduction to Labor Studies (5) I&S Conceptual and theoretical issues in the study of labor and work. Role of labor in national and international politics. Formation of labor movements. Historical and contemporary role of labor in the modern world. Offered: jointly with POL S 249/SOC 266.

HSTCMP 250 Introduction to Jewish Cultural History (5) I&S Introductory orientation to the settings in which Jews have marked out for themselves distinctive identities as a people, a culture, and as a religious community. Examines Jewish cultural history as a production of Jewish identity that is always produced in conversation with others in the non-Jewish world. Offered: jointly with JSIS C 250.

HSTCMP 258 Slavery and Slave Trading in the 21st Century (5) I&S, DIV Examines the forms that slavery and slave trading have taken in contemporary times.

HSTCMP 260 Slavery in History: A Comparative Study (5) I&S Slavery as a universal historical phenomenon lending itself to a comparative analysis is studied in terms of its philosophical justifications, economic importance, and local practices. The following historical periods are surveyed: the ancient Near East, Greece, Rome, Islam, Africa, Latin America, and North America.

HSTCMP 265 Modern Revolutions Around the World (5) I&S Introduces the causes, processes, and legacies of modern revolutions. Cases included the American, French, Mexican, Russian, and Chinese Revolutions. Special attention given to how these and other revolutions have shaped the modern world.

HSTCMP 269 The Holocaust: History and Memory (5) I&S, DIV Explores the Holocaust as crucial event of the twentieth century. Examines the origins of the Holocaust, perpetrators and victims, and efforts to come to terms with this genocide in Europe, Israel, and the United States. Offered: jointly with JSIS C 269.

HSTCMP 290 Topics in Comparative/Global History (5, max. 10) I&S Examines special topics in history.

HSTCMP 309 Marx and the Marxian Tradition in Western Thought: The Foundations of Modern Cultural Criticism I (5) I&S Critically examines the formation of modern Western culture, politics, and society through an historical analysis of the work of Karl Marx and the thinkers, artists, and activists who assimilated and transformed Marxian concepts from the late nineteenth century to the present. Offered: jointly with CHID 309.

HSTCMP 310 Science and Religion in Historical Perspective (5) I&S Scientific and religious ideas have been two of the major forces shaping our modern view of the world. Often regarded as being in conflict, they can equally well be seen as complementary and interdependent. Study of the relationship between scientific and religious ideas with focus on particular episodes of history from ancient to modern times.

HSTCMP 311 Science in Civilization: Antiquity to 1600 (5) I&S From pre-classical antiquity to the end of the Middle Ages, stressing the growth of scientific ideas, the cultural context in which they take shape, and their relationship to other movements of thought in the history of civilization.

HSTCMP 312 Science in Civilization: Science in Modern Society (5) I&S Growth of modern science since the Renaissance, emphasizing the scientific revolution of the seventeenth century, the development of methodology, and the emergence of new fields of interest and new modes of thought.

HSTCMP 313 Science in Civilization: Physics and Astrophysics Since 1850 (5) I&S/NW Organization and pursuit of the physical and astrophysical sciences, focusing on the major unifying principles of physics and astronomy and the social and cultural settings in which they were created. Offered: jointly with ASTR 313.

HSTCMP 314 The Psychoanalytic Revolution in Historical Perspective (5) I&S Genesis and evolution of Freudian theory in context of the crisis of liberal-bourgeois culture in central Europe and parallel developments in philosophy, literature, and social theory. Emergence and division of the psychoanalytic movement. Transformation of psychoanalysis in British, French, and especially American cultural traditions. Offered: jointly with CHID 314.

HSTCMP 315 History of Technology to 1940 (5) I&S Technology since the Middle Ages, in its social and historical contexts. From the medieval foundations of metal working, its social consequences and the establishment of a class of engineering practitioners, to the transformation of American rural life, domestic technology, and industry before World War II.

HSTCMP 319 Nietzsche and the Nietzschean Legacy in Western Thought: Foundations of Modern Cultural Critique II (5) I&S Critically examines the formation of modern Western politics, society, and cultures through a historical analysis of the thought of Friedrich Nietzsche and the thinkers, artists, and activists who assimilated and transformed the Nietzschean perspective during the twentieth century. Offered: jointly with CHID 319.

HSTCMP 320 Greek History: 7000 BC to Present (5) I&S History of Greece from its Neolithic village origins to the present. Examines the different forms of one of the most resilient cultures in the human story. Offered: jointly with JSIS A 320.

HSTCMP 345 War and Society (5) I&S Analysis of the techniques of war from the Renaissance to the present with consideration of the social, political, and economic consequences of war in the Western world.

HSTCMP 346 Images of War in History, Literature, and Media (5) VLPA/I&S Explores images of war generated by historians, writers, artists, filmmakers, television producers, and journalists, analyzing the perspectives on war adopted by various observers to see what motivates their representations. Focuses on ways in which various media shape images of war and the effect of this shaping on human consciousness.

HSTCMP 358 Slavery in the Atlantic World (5) I&S, DIV Comparative examination of slavery in North and South America, the Caribbean, and Africa from 1450-1800. Central concerns include: development of the Atlantic slave trade; diverse uses of slave labor in the Atlantic world; slave cultures that developed in the Americas; and ways Africans and African-Americans resisted their bondage.

HSTCMP 367 Southeast Asian Activism and Social Engagement (5) I&S *Rafael* Investigates how Southeast Asian activism is tied to the histories of political struggle within Southeast Asia and to questions of diasporic Asian American identity. Engages in group research projects exploring the meaning of social activism within local communities. Offered: jointly with JSIS A 367.

HSTCMP 369 The Jewish Twentieth Century in Film (5) VLPA/I&S *Stein* Surveys twentieth-century Jewish history in its European, American, and Middle Eastern contexts by examining films produced in these settings. Considers central events that shaped modern Jewish culture: the changing geography of Europe and the Middle East, mass migrations, the Holocaust, shifting meanings of race, culture, and religion. Offered: jointly with JSIS C 369.

HSTCMP 406 Issues in World History to 1500 (5) I&S Explores important questions about development of civilizations. Topics include the spread of peoples and languages; the significance of technologies such as agriculture, writing, and the stirrup; links between trade and the spread of religions and diseases; and primary and secondary state formation.

HSTCMP 410 Medicine, History, and Society (5) I&S Investigates the origins of aspects of contemporary life form vitamins, to giving birth in a hospital, bringing a historical perspective to topics including the politics of pharmaceuticals, the emergence of genetic determinism, and bioethics.

HSTCMP 412 Science and the Enlightenment (5) I&S The role of science in relation to intellectual, social, economic, and religious forces in the eighteenth century, and growth of the international community in science during the same period.

HSTCMP 425 History of the British Empire and Commonwealth Since 1783 (5) I&S Britain in the Caribbean, Africa, India, Southeast Asia, and the Pacific; and the settlement, economic development, and political evolution of Canada, Australia, New Zealand, and South Africa.

HSTCMP 449 Issues in Comparative Labor History (5) I&S Role of labor in the modern world. Emphasis on the centrality of workers' struggles in the evolution of national societies on the conceptual, research, and expository strategies

of contemporary students of the labor movement and on differences and relationships between labor in developed and underdeveloped countries.

HSTCMP 457 Topics in Labor Research (5, max. 10) I&S Analysis of the post-World War II decline of national labor movements and strategies employed to reverse this trend. Requires a major research project on organizing, bargaining, or another question in labor studies. Prerequisite: either POL S 249, HIST 249, or SOC 266. Offered: jointly with POL S 457.

HSTCMP 466 Sport and the British Empire in Asia, Africa, and the Middle East (5) I&S Examines British imperialism in Asia, Africa, and the Middle East through the prism of sport. Explores the rise of sport in Victorian England, its use to discipline and control colonized peoples, and its role in the rise of nationalism throughout the British Empire.

HSTCMP 467 Nations and States in the Modern World (5) I&S Development of national consciousness in the "old nations" of Europe before the French Revolution. Replacement by new nationalism, spreading into East Central Europe, Russia, Ibero-America, Asia, and Africa. Offered: jointly with JSIS B 467.

HSTCMP 468 Theatre as a Site of History and Memory (5) VLPA/I&S *Sears* Explores Asian theatre traditions as sites of memory, testimony, and archive using ethnographic and historiographical approaches. Includes service-learning components and collaborative performance projects. Offered: jointly with JSIS B 468.

HSTCMP 469 The Sephardic Diaspora: 1492-Present (5) I&S, DIV Examines the history and culture of Sephardic Jewry from the expulsion from the Iberian Peninsula in 1492 to the present. Explores the creation of Sephardic communities in the Dutch and Ottoman Empires, Western Europe, the Americas, and Africa, and the history of the conversos and "hidden Jews." Offered: jointly with JSIS C 466.

HSTCMP 483 Technology and Culture in the Making of Contemporary Empires (5) I&S *Benitez, Rodríguez-Sliva* Explores struggles shaping organization of US empire in the early twentieth century, focusing on sites where empire's material, cultural, and ideological boundaries were drawn and contested. Includes race, gender and class as colonial formation; technologies of imperial governance such as public health, citizenship, and territory. Offered: jointly with JSIS A 483.

HSTCMP 484 Colonial Encounters (5) I&S History of European colonialism from the 1750s to the present, with an emphasis on British and French colonial encounters. Offered: jointly with CHID 484.

HSTCMP 485 Comparative Colonialism (5) I&S, DIV *Rafael* Explores the historic roots and practices of colonialism throughout the world, focusing on the roles of nationalism, cosmopolitanism, and imperial domination. Treats colonialism as a world event whose effects continue to be felt and whose power needs to be addressed.

HSTCMP 490 Advanced Topics in Comparative/Global History (5, max. 10) I&S Examines special topics in history.

HSTCMP 504 Comparative Ethnicity and Nationalism (5) Theoretical approaches to, and historical case studies of, the phenomena of ethnicity, nationalism, and ethnic conflict in the modern world. Emphasis on Europe and Asia.

HSTCMP 506 Issues in World History to 1500 (5) Explores important questions about development of civilizations. Topics include the spread of peoples and languages; the significance of technologies such as agriculture, writing, and the stirrup; links between trade and the spread of religions and diseases; and primary and secondary state formation.

HSTCMP 511 History of Science (3-6, max. 6)

HSTCMP 512 Seminar in the History of Science ([3-6]-, max. 12)

HSTCMP 513 Seminar in the History of Science (-[3-6]-, max. 12)

HSTCMP 514 Seminar in the History of Science (-[3-6], max. 12)

HSTCMP 515 Field Course in the History of Technology (5) Introduces students to the literature, methodology, and problems of the history of technology, and prepares them for independent study in the field.

HSTCMP 520 Britons and Others (5) Provides an overview of major themes and recent scholarship in modern British and imperial history. Emphasizes the ways in which ideas about class, gender, and race have influenced Britain's relationship to the wider world.

HSTCMP 530 Comparative Colonialisms: Methodological and Conceptual Approaches (5) Introduces students to the historiography of modern European/American colonialisms, focusing on Africa, Asia, and/or the Americas. Addresses methodological and conceptual issues by examining relationship between capitalism and colonialism; violence and routinization of colonial power; colonial categories of race, ethnicity, class, and gender; and resistance movements and nationalist politics.

HSTCMP 566 Sport and the British Empire in Asia, Africa, and the Middle East (5) Examines British imperialism in Asia, Africa, and the Middle East through the prism of sport. Explores the rise of sport in Victorian England, its use to discipline and control colonized peoples, and its role in the rise of nationalism throughout the British Empire.

HSTCMP 580 Gender and History (5) Introduction to gender as category of historical analysis, examining the impact of feminist theory within the discipline of history. Course traces historiographical debates in women's and gender history and explores, through cross-cultural comparisons, how scholars have conceived the relationship between gender and categories such as class, race, ethnicity, and sexuality.

HSTCMP 586 Seminar in Comparative Colonial History ([3-6]-, max. 12)

HSTCMP 587 Seminar in Comparative Colonial History (-[3-6], max. 12)

HSTCMP 590 Topics in History (5, max. 15) Seminar on selected topics in general history, with special emphasis on preparation for field examinations. Topics vary according to interests of students and instructor.

History of Africa and the Middle East

HSTAFM 151 Introduction to Precolonial Africa (5) I&S, DIV Explores the African past from c. 1400 through the end of the nineteenth century. Uses the emerging evidence of historical, linguistic, and archaeological analysis to think critically about lingering notions that Africa and its peoples are static and unchanging, primitive and simple, and best understood in terms of racial difference.

HSTAFM 152 Introduction to African History, c. 1880 - Present (5) I&S, DIV Examines Africa's pasts from approximately 1880 to the present. Through the theme of the politics of wealth, explores the history of European colonization, African social and cultural life under colonial rule, anti-colonial movements and decolonization, and the changes and challenges of the post-colonial present.

HSTAFM 161 Survey of the Muslim Near East (5) I&S The Middle East (the Arab countries, Israel, Turkey, Iran, and Afghanistan) from the emergence of Islam in AD 622 to the present: culture, economics, politics.

HSTAFM 163 The Modern Middle East (5) I&S, DIV Provides an introduction to the politics, society, and culture of the Middle East since the 19th century and through the present. Aims to foster an understanding of imperial power and anti-imperialism, ethnicity and sectarianism, religious and secular sociopolitical movements, authoritarianism,

and the transformations wrought by modernity and economic development.

HSTAFM 261 The Crusades: Middle Eastern Perspectives (5) I&S Examines the impact of European Christians on the Middle East, from the establishment of the County of Edessa (1097) to the fall of Acon (1291). Explores how Muslims understood, reacted, and adapted to the crusades and how the close encounter with the "Franks" transformed medieval Middle Eastern societies.

HSTAFM 268 Wars in the Modern Middle East (5) I&S Examines the political, social, and cultural impact of war on Middle Eastern societies. Focuses on how the preparation for, conduct of, and aftermath of wars have affected the region. Examines the 1948 Arab-Israeli War, the Algerian War of Independence, the Lebanese Civil War, and the First Gulf War (1991).

HSTAFM 361 Middle Eastern History, 1453-1800 (5) I&S *Schwarz* Introduction to the early modern period in the Middle East, including an exploration of the political, economic, and cultural dominance of the Ottoman Empire and Safavid Iran. Explores the political and social dynamics and economic transformations of the two empires.

HSTAFM 451 Eastern and Central Africa Since 1500 (5) I&S Explores the history of Eastern and Central Africa from the period prior to the slave trade through European colonialism to the post-colonial present. Focuses on political, economic, and social change and continuity. Emphasis on understanding how various historical actors and historians have interpreted these processes.

HSTAFM 452 Southern Africa Since 1500 (5) I&S, DIV Explores the history of Southern Africa from pre-colonial social institutions through European colonialism and industrialization to the post-apartheid present. Focuses on the interplay between race, class, ethnicity, and gender in the structuring of political relations. Emphasis on understanding how various historical actors and historians have interpreted these processes.

HSTAFM 453 Health and Illness in Africa (5) I&S Explores health and illness in Africa from the nineteenth century to the present. Focuses on the influence of colonial and post colonial history on patterns of health and health care in sub-Saharan Africa. Analyzes Western representations of health and illness in Africa.

HSTAFM 461 History of the Middle East: 622-1300 (5) I&S Political and economic analysis of the period circa AD 600, preliminary to rise of Islam, to arrival of the Turks. Muhammad's teaching and impact; Islamization and Arabization.

HSTAFM 462 History of the Middle East: 1258-1798 (5) I&S Conquests by successors of Ghengis Khan; creation in Egypt, Syria, and Iran of cavalry-based states; domination of political, social, and economic history by Ottoman and Safavid empires. The Napoleonic invasion.

HSTAFM 463 History of the Middle East Since 1789 (5) I&S Critical issues and themes in the changing Middle East, including Westernization, growth of nationalism, Arab-Israeli dispute, Iranian revolution, and the role of Islam.

HSTAFM 465 Iran, Afghanistan and Central Asia, 1750-2001 (5) I&S Introduction to the modern history of the Islamic republics of Iran and Afghanistan and the secular republics of Central Asia from 1750 to 2001. Includes discussion of colonialism, the role of the U.S., and diaspora and exile in these predominantly Muslim societies.

HSTAFM 552 Field Course in African History (5) Methodological and conceptual issues in African historiography, focusing on 1500 to the present. Examines topics including pre-colonial politics and economics, slavery and the slave trades, European conquest and colonization, resistance movements and nationalist politics, and post-colonial debates and dilemmas. Special attention to issues of gender, race, ethnicity, and class.

HSTAFM 561 Islamic History (3-6, max. 6) Field course. Introduction to advanced study in the major periods and problems of Islam. Bibliographical guidance is stressed.

HSTAFM 562 Ottoman History (3-6, max. 6) Field course. Introduction to the major periods and problems of Ottoman history, 1300-1914, by acquainting the student with the major works in at least two languages. An attempt is made to teach some use of Ottoman materials. A minor problem is investigated in detail by every student. Prerequisite: knowledge of at least one major language besides English (French, German, Russian, or other).

HSTAFM 563 Modern Near East (3-6, max. 6) Field course introducing the student to the major periods and problems of Near Eastern history, 1798 to the present.

History of Asia

HSTAS 201 Introduction to South Asian History, pre-history to 1500 (5) I&S Religions, literature, philosophy, politics, arts, and history of India from earliest times to the Mughal empire.

HSTAS 202 Introduction to South Asian History, 1500 - present (5) I&S The Islamic impact, British conquest, and contemporary India. Emphasis on the rise of nationalism, social organization, and contemporary life and history. Offered: jointly with JSIS A 202.

HSTAS 211 History of Chinese Civilization (5) I&S Intensive survey of Chinese civilization from earliest times to today. Introduces all students, including East Asian history majors, to the general sweep of Chinese history. Social, cultural, and intellectual developments.

HSTAS 212 History of Korean Civilization (5) I&S From earliest times to the present. Development of Korean society and culture in terms of government organization, social and economic change, literature, and art. Offered: jointly with JSIS A 212.

HSTAS 221 History of Southeast Asia (5) I&S, DIV Surveys Southeast Asian civilizations at the outset of Western colonial rule; the colonial impact on the traditional societies of Burma, Thailand, Cambodia, Laos, Vietnam, Malaysia, Indonesia, and the Philippines; nineteenth- and twentieth-century nationalist and revolutionary movements; emergence of Southeast Asia as a region in the modern world. Offered: jointly with JSIS A 221.

HSTAS 241 Japanese Civilization (5) I&S Japan's civilization, including its origins, government, literature, economic institutions, material culture, social organization, and religions, in relation to the development of Japan as a society and nation. Cannot be taken for credit if SISEA 341 previously taken. Offered: jointly with JSIS A 241.

HSTAS 244 Imperialism and Anti-Colonialism in Asia (5) I&S, DIV Introduction to Western imperialism expansion, conquest, and colonial rule in Asia; the anti-colonial, nationalist resistances they engendered; and the resultant cultural, political, economic, and intellectual transformations in Asian societies. Covers post-1800 violence, racial hierarchies, human rights abuses, post-colonial memories, persistent strategies of domination, and structural inequities. Offered: jointly with JSIS A 244.

HSTAS 245 Human Rights in Asia (5) I&S, DIV Callahan, Giebel Introduction to recent and ongoing human rights issues in South, Southeast, and East Asia. Focuses on how human rights politics have played out in domestic political arenas. Provides exposure to views/insights into the historical context in which human rights claims, abuses, and debates arise. Offered: jointly with JSIS A 245.

HSTAS 265 The Viet Nam Wars (5) I&S Giebel Recent Vietnamese history and struggles for independence and national unification vis-a-vis French colonialism, Japanese occupation, American intervention, and internal divisions. Covers historical roots and contemporary contexts of revolution and war, objectives and motivations of participants, and the enormous human costs. Emphasizes socio-cultur-

al changes and wars' legacies. Offered: jointly with JSIS A 265.

HSTAS 290 Topics in Asian History (5, max. 10) I&S Examines special topics in Asian history.

HSTAS 303 Divided Lands/Divided Lives: An Environmental History of South Asia (5) Focuses on the mobilization of South Asian tribal, peasant, and ethnic communities around ecological issues to secure social equity in the colonial and post-colonial period. Examines how the complex interactions of states and peoples have changed the ways in which nature itself is conceptualized. Offered: jointly with JSIS A 303.

HSTAS 348 Alternative Routes to Modernity (5) I&S Routes to modernity followed by non-Western societies between 1600 and 1900. Historical experiences of non-Western societies seen in the context of European history and of development theory. Emphasizes primary sources and techniques for posing theoretical questions of historical data. Offered: jointly with JSIS A 346.

HSTAS 354 Modern China: From Empire to Republics (5) Dong Surveys the major historical events and discourses of twentieth century China and lays a foundation for understanding contemporary China. Themes include reforms; revolutions; colonialism and imperialism; state and society; and social and cultural changes. Offered: jointly with JSIS D 354.

HSTAS 364 Violence, Myth, and Memory (5) VLPA/I&S Sears Explores how images and ideas of power, violence, and global modernity circulate in memories and discourses about US relations with Vietnam, the Philippines, and Indonesia. Topics include foundations myths, colonial and postcolonial encounters, historiography and narrative, and nationalist and ethnic identity formations. Offered: jointly with JSIS B 364; Sp.

HSTAS 401 History of Ancient India (5) I&S India in ancient times; emphasis on forms of political organizations and economic life, social organizations, and cultural developments.

HSTAS 402 History of Medieval and Mughal India (5) I&S Medieval India; emphasis on forms of political organizations and economic life, social organizations, and cultural developments.

HSTAS 403 History of Modern India to 1900 (5) I&S Modern India; emphasis on forms of political organizations and economic life, social organizations, and cultural developments.

HSTAS 404 History of Twentieth-Century India (5) I&S Analysis of the problems in the fields of social life, international and domestic politics, education, economics, and other areas that confront India today.

HSTAS 421 History of Pre-Modern Japan (5) I&S Introduces the early years of Japan's political, socioeconomic, and cultural history, culminating in the emergence of the early modern state around 1600.

HSTAS 423 History of Modern Japan (5) I&S Political, social, economic, and cultural development of Japan from the late Tokugawa period to the present with special emphasis on the cultural impact of the West. Recommended: JSIS A 242. Offered: jointly with JSIS A 423.

HSTAS 424 The Emergence of Postwar Japan (5) I&S Pyle The making of modern Japan; World War II and surrender; American occupation; postoccupation rebuilding; emergence as an industrial power. Recommended: JSIS A 242. Offered: jointly with JSIS A 424.

HSTAS 441 Economic and Social History of Japan to 1900 (5) I&S Lecture-seminar on Japanese economic and social history from 700 to 1900. Analyses of the rise and decline of the shoen system, the rise of commerce, social change, changes in the living standard, demographic changes, and the early phases of industrialization. Political and cultural developments as related to economic and social change. Recommended: JSIS A 242.

HSTAS 451 Chinese History: Earliest Times to 221 BC (5) I&S Pre-imperial China.

HSTAS 452 Chinese History from Earliest Times to 1276 (5) I&S Traces the development of Chinese civilization from earliest times through the Song dynasty. Examines social, cultural, political, and economic history.

HSTAS 453 Chinese History from 1276-1895 (5) I&S Political, social, economic, and intellectual history from the time of the Mongol conquest of China to the Sino-Japanese war. Focus on the evolution of the late imperial Chinese state and the "early modern" era in China.

HSTAS 454 History of Modern China (5) I&S Social, cultural, political, economic, and intellectual transformations and continuities in China from the end of the imperial period to the present. Offered: jointly with JSIS A 454.

HSTAS 456 Topics in Chinese Social History (5) I&S Surveys major issues and approaches to the study of the role of the Chinese people in China's historical development. Historical focus of course varies with instructor. Recommended: either HSTAS 211, HSTAS 452, HSTAS 453, or HSTAS/JSIS A 454. Offered: jointly with JSIS A 456.

HSTAS 457 Women in China to 1800 (5) I&S, DIV Gender in Chinese culture, women's situations in the patrilineal family system, and the ways women's situations changed as other dimensions of China's political system, economy, and culture changed from early times through the nineteenth century. Offered: jointly with GWSS 457.

HSTAS 459 Gender Histories of Modern China, Eighteenth to Twentieth Centuries (5) I&S Emergence of modernist social, political, intellectual gender formations in social activism, revolutionary writing, scientific ideologies, economic globalization. Stresses gender difference in colonial modernity, revolutionary movement, communism, post-socialist market society. Relates modern Chinese women to global flows, new division of labor, local and regional experience. Offered: jointly with GWSS 459.

HSTAS 460 Cities in China: Past and Present (5) I&S Dong Economic, political, social, and cultural functions of the city in modern Chinese history. Changes in China's urban system. The city as cultural center and focus of literary and cinematic representation. Attention to architecture, commerce, urbanization, the role of capital cities in the power of the state. Offered: jointly with JSIS A 460.

HSTAS 462 Southeast Asian History to 1800 (5) I&S Absorption and modification of cultures (Indian and Chinese), religions (Islam, Buddhism, Catholicism), and peoples (northern European) by island- and mainland-Southeast Asians. Main themes are cultural contact and the growth of states and peoples.

HSTAS 463 Southeast Asian History from 1800 to the Present (5) I&S Post-eighteenth-century history of the present countries of Burma, Thailand, Cambodia, Laos, Vietnam, Malaysia, Singapore, Brunei, Indonesia, and the Philippines. Deals with colonial rule, emerging nationalism, and political independence. Investigates broad themes of social, economic, and cultural history.

HSTAS 466 Islam, Mysticism, Politics and Performance in Indonesian Culture (5) VLPA/I&S Examines how Indonesia, the world's fourth most-populous country, with the largest Islamic population, weaves together local practices and influences from India and Persia. Offers ways of understanding modern Indonesian performing arts, religion, and politics. Offered: jointly with JSIS A 462.

HSTAS 481 History of Pre-Modern Korea (5) I&S Examines political, socioeconomic, intellectual, and cultural development of Korea from the earliest times through the nineteenth century.

HSTAS 482 History of Modern Korea (5) I&S Examines political, socioeconomic, intellectual, and cultural development of Korea from the last nineteenth century to the present. Emphasizes colonial and post-colonial nation building experiences of the two (South and North) Koreans.

HSTAS 490 Topics in Asian History (5, max. 10) I&S

HSTAS 501 Indian History (3-6, max. 6) Prerequisite: permission of instructor.

HSTAS 502 Seminar: History of India (3-6, max. 12) Seminar on selected topics and problems in the history of medieval and modern India. Prerequisite: HSTAS 501 and permission of instructor.

HSTAS 503 Seminar: History of India (3-6, max. 12) Seminar on selected topics and problems in the history of medieval and modern India. Prerequisite: HSTAS 501 and permission of instructor.

HSTAS 520 Premodern Japanese History (5) Field course; Japanese history prior to 1868. Prerequisite: HSTAS 421 and HSTAS 422, or SISEA 441 and SISEA 541, or permission of instructor.

HSTAS 521 Modern Japanese History (3-6, max. 6) Field course. Prerequisite: HSTAS 422, HSTAS 423, or permission of instructor.

HSTAS 523 Seminar in Modern Japanese History (3-6, max. 12)

HSTAS 524 Seminar in Modern Japanese History (3-6, max. 12)

HSTAS 530 Field Course in Southeast Asian History (5) Introduces major English-language works on Southeast Asian history and to the major historiographical issues of the era. Offered: jointly with JSIS A 580.

HSTAS 532 Seminar in Southeast Asian History (5) Selected topics in Southeast Asian history and historiography. Includes preparation for theses and doctoral dissertations on Southeast Asian History. Offered: jointly with JSIS A 582.

HSTAS 534 Indonesian Histories, Oral Traditions, and Archives (5) Explores the inscription of Indonesian histories and stories. Focuses on oral traditions, oral testimonies, and archives. Investigates how oral and written testimonies enter historical archives. Explores theoretical work on literary and performance traditions as they relate to nationalism and Islam in Indonesia. Offered: jointly with JSIS A 534.

HSTAS 541 Economic and Social History of Japan to 1900 (5) Analyses of landholding systems, the rise of commerce, demographic changes, urbanization, early industrialization, and social change. Prerequisite: previous course work in Japanese history or economic history, or permission of instructor. Not open to students who have taken HSTAS 441.

HSTAS 551 Field Course in Chinese History: Pre-Sung Period (3-6, max. 6) *Ebrey* Introduction to the English-language literature on Chinese history through the Song dynasty. Recommended: either HSTAS 452 or equivalent.

HSTAS 552 Seminar in Chinese History: Earliest Times to 1276 ([3-6]-, max. 12) *Ebrey* Methods and materials for research in early imperial Chinese history. Prerequisite: reading knowledge of classical Chinese; recommended: either HSTAS 452, HSTAS 550, HSTAS 551, or equivalent.

HSTAS 553 Seminar in Chinese History: Earliest Times to 1276 ([3-6]-, max. 12) *Ebrey* Methods and materials for research in early imperial Chinese history. Prerequisite: reading knowledge of classical Chinese; recommended: either HSTAS 452, HSTAS 550, HSTAS 551, or equivalent.

HSTAS 554 Seminar in Chinese History: Earliest Times to 1276 ([3-6]-, max. 12) *Ebrey* Methods and materials for research in early imperial Chinese history. Prerequisite: reading knowledge of classical Chinese; recommended: either HSTAS 452, HSTAS 550, HSTAS 551, or equivalent.

HSTAS 555 Core Research Seminar in Chinese History (5-, max. 10) I&S An introduction to research practices in Chinese history and exemplary recent works.

HSTAS 556 Core Research Seminar in Chinese History (-5, max. 10) I&S An introduction to research practices in Chinese history and exemplary recent works.

HSTAS 560 Field Course in Chinese History: 1276-1895 ([3-6]-, max. 6) *Guy* Introduction to the English-language literature on the Yuan, Min, and Qing dynasties. Recommended: either HSTAS 453 or equivalent.

HSTAS 561 Field Course in Chinese History: 1276-1895 ([3-6]-, max. 6) *Guy* Introduction to the English-language literature on the Yuan, Min, and Qing dynasties. Recommended: either HSTAS 453 or equivalent.

HSTAS 562 Seminar in Chinese History: 1268-1895 ([3-6]-, max. 12) *Guy* Materials and methods for research in imperial Chinese history. Prerequisite: reading knowledge of Chinese; recommended: either HSTAS 453, HSTAS 560, HSTAS 561, or equivalent.

HSTAS 563 Seminar in Chinese History: 1268-1895 ([3-6]-, max. 12) *Guy* Materials and methods for research in imperial Chinese history. Prerequisite: reading knowledge of Chinese; recommended: either HSTAS 453, HSTAS 560, HSTAS 561, or equivalent.

HSTAS 564 Seminar in Chinese History: 1268-1895 ([3-6]-, max. 12) *Guy* Materials and methods for research in imperial Chinese history. Prerequisite: reading knowledge of Chinese; recommended: either HSTAS 453, HSTAS 560, HSTAS 561, or equivalent.

HSTAS 566 Islam, Mysticism, Politics, and Performance in Indonesia (5) Examines how Indonesia, the world's fourth most-populous country, with the largest Islamic population, weaves together local practices and influence from India and Persia. Offers ways of understanding modern Indonesian performing arts, religion, and politics. Offered: jointly with JSIS A 586.

HSTAS 572 Seminar in Twentieth Century Chinese History ([3-6]-, max. 12) *Dong* Materials and methods for research in imperial Chinese history. Prerequisite: reading knowledge of Chinese; recommended: either HSTAS 453, HSTAS 560, HSTAS 561, or equivalent.

HSTAS 573 Seminar in Twentieth Century Chinese History ([3-6]-, max. 12) *Dong* Materials and methods for research in twentieth-century Chinese history. Prerequisite: knowledge of Chinese and permission of instructor.

HSTAS 574 Seminar in Twentieth Century Chinese History ([3-6]-, max. 12) *Dong* Materials and methods for research in twentieth-century Chinese history. Prerequisite: knowledge of Chinese and permission of instructor.

HSTAS 575 Seminar in Chinese History: Modern Period ([3-6]-, max. 12) Research seminar in modern Chinese history. Training in the materials and methods of research, and preparation of extended research papers. Prerequisite: HSTAS 571-572 or permission of instructor and reading knowledge of Chinese.

HSTAS 579 Modern Chinese History (5) Introduction to the major English-language literature on modern Chinese history and to the major historiographical issues of the period. Prerequisite: HSTAS 454 or equivalent, and permission of instructor. Offered: jointly with JSIS A 576.

HSTAS 581 Modern Korean History (3-6, max. 6) Field course. Prerequisite: permission of instructor.

HSTAS 582 Seminar in Korean History ([3-6]-, max. 12) Selected topics in Korean history and historiography.

HSTAS 583 Seminar in Korean History ([3-6]-, max. 12) Selected topics in Korean history and historiography.

HSTAS 584 Seminar in Korean History ([3-6]-, max. 12) Selected topics in Korean history and historiography.

HSTAS 590 Topics in History (5, max. 15) Seminar on selected topics in general history, with special emphasis on preparation for field examinations. Topics vary according to interests of students and instructor.

History of Latin America and the Caribbean

HSTLAC 185 Race, Gender, and Class in Latin America and the Caribbean (5) I&S, DIV Explores the power struggles

generated by imperial expansion, colonialism, and processes of nation-formation (1400 to the present) in the forging of Latin America and the Caribbean. Examines how gender, race, sex, and class became crucial means to sustain, navigate, and challenge domination as well as to imagine alternative futures.

HSTLAC 282 History of Mexico: Culture, Identity, and the Politics of Rule from the Aztecs to the Present (5) I&S Overview of Mexican history from late Aztec times until the twenty-first century. Emphasizes how women, campesinos, indigenous populations, free and enslaved Afro-Mexicans, and the urban poor experienced the past, challenged colonial and post-colonial rule, and shaped modern Mexican society and culture.

HSTLAC 285 Latin American History Through Film (5) VLPA/I&S Critical analysis of Latin American films as historical documents. Subjects include Iberian conquest and colonialism, the struggle for independence in the nineteenth century, social revolutions of the twentieth century, and problems of contemporary development. Readings and lectures place each film in the context of the historiography of the subject matter.

HSTLAC 384 Latin America: Inter-American and Intra-Continental Relations (5) I&S Inter-American relations, focusing on the United States' diplomatic and military responses to the problems of Latin America since 1776. Intra-Latin American relations and regional organizations (e.g., the Organization of American States).

HSTLAC 385 Colonial Society and the Negotiation of Rule in Latin America and the Caribbean (5) I&S, DIV Examines the transition to Spanish and Portuguese rule in Latin America and the establishment, and eventual demise, of colonial systems linking Latin America to Europe and Africa. Asks how "colonized" groups mediated forms of colonial oppression and contributed to the development of colonial political culture.

HSTLAC 386 The Challenges of Post-Coloniality in Latin America and the Caribbean (5) I&S, DIV Explores the legacies of, and ruptures from, colonialism and the new challenges Latin American and Caribbean peoples faced throughout the years after their struggles for independence from direct European rule. Emphasis on analysis of the negotiations and challenges entailed in the dynamic processes of national state formation in comparative perspective.

HSTLAC 481 History of Peru and the Andean Region (5) I&S Traces the history of Peru specifically and the Andean highlands generally, from Inca times to the present, examining the shifting relationship between peasants, indigenous peoples, and the state. Analyzes historically why modern forms of peasant and indigenous political power differs radically between Peru, Bolivia, and Ecuador.

HSTLAC 482 The History of Brazil: Colonial Period to the Present (5) I&S Colonial foundations; the first and second empires; the old and new republics; current problems; prospects for the future.

HSTLAC 488 History of the Caribbean and Central America (5) I&S Political, social, and economic history of principal countries in the Caribbean and Central America from their discovery to the present.

HSTLAC 581 Latin American History: Colonial Period (3-6, max. 6)

HSTLAC 582 Latin American History: National Period (3-6, max. 6)

HSTLAC 583 Seminar in Latin American History ([3-6]-, max. 12) Problems of historical research in the history of Latin America from colonial beginnings to the present.

HSTLAC 584 Seminar in Latin American History ([3-6]-, max. 12) Problems of historical research in the history of Latin America from colonial beginnings to the present.

HSTLAC 585 Seminar in Latin American History (-[3-6], max. 12) Problems of historical research in the history of Latin America from colonial beginnings to the present.

History of Modern Europe

HSTEU 113 Europe and the Modern World (5) I&S Political, economic, social, and intellectual history of modern Europe. Cannot be taken for credit toward a history major if HSTEU 302 or 303 previously taken.

HSTEU 140 Russia from the Tenth Century to the Present (5) I&S Russian political, social, and economic history from the tenth century to the present. Offered: jointly with JSIS D 140.

HSTEU 210 Paris (5) VLPA/I&S

HSTEU 211 France: A Portrait (5) I&S Thematic approach to the history of France. Abandons the conventional chronological format in favor of a constellation of topics and themes - architecture, science, sex, cities, barricades, etc. - that, taken together and in historical perspective, make up a portrait of France.

HSTEU 219 Science and the Arts in Early Modern Europe (5) I&S Explores the role of artisanal craft practice and knowledge in the Scientific Revolution. Examines the artisanal world and its traditions of craft knowledge and follows the transmission of artisanal practice into the scholarly world of natural philosophy in the seventeenth century. Assesses the consequences for scientists and artisans.

HSTEU 220 Introduction to East European Studies (5) I&S *Felak* Introduction to the history of post-1945 Eastern Europe focusing on political, economic, social, cultural, and diplomatic issues. Countries surveyed include Albania, Bulgaria, Czechoslovakia, Hungary, Poland, Romania, and Yugoslavia. Offered: jointly with JSIS A 220.

HSTEU 234 History of Nazi Germany (5) I&S Introduces students to the social, political, and cultural history of Germany leading to and during the National Socialist era from 1933-1945. Through the lens of Germany social history, studies the rise of fascism and genocide, and how the German case can inform other historical studies.

HSTEU 245 St. Petersburg/Leningrad: City as History (5) I&S Introduction of political, social, and cultural history of St. Petersburg from 1703-1991. Uses St. Petersburg as a window to explore major themes in Imperial Russian and Soviet history, including westernization and questioning of Russia's national identity, urbanization, industrialization, revolution, multinational empire, World War II, Stalinism, and socialistic reformism.

HSTEU 250 Rome (5) VLPA/I&S Focuses on Rome as an historical, intellectual, and artistic world center. Literary and historic documents, visual arts, architecture, film, and opera used to explore the changing paradigms of the Eternal City. In English. Offered: jointly with ART H 250/ITAL 250.

HSTEU 273 Women and Gender in Modern Europe (5) I&S Examines European women's changing social role and competing views of femininity from the Enlightenment to the end of the cold war. Special focus on the relationship of gender and politics and on the female body in bourgeois society, industrialization, imperialism, the welfare state, fascism, and the cold war.

HSTEU 274 European History and Film from the 1890's to the Present (5) VLPA/I&S Introduces the histories of world war, the rise and fall of fascism and communism, postwar migrations, the Cold War and decolonization, and the making of the European Community through film. Historical content unified by methodological focus on the social and political function of film.

HSTEU 275 Life in England (5) I&S Social history of England from the Norman conquest to the present, seen through letters, autobiographies, novels, and plays of the time. Life of the ordinary inhabitant-in the village and the manor house.

HSTEU 276 Postwar: European History and Film after 1945 (5) VLPA/I&S Explores efforts to reconstruct Europe and European identity after 1945. Assesses the successes and failures of these efforts. Addresses themes of poverty and affluence, postwar justice, Americanization, expansion and collapse of communism, decolonization, migration, and ongoing ethnic tensions that threatened new forms of warfare. Explores the history uses of film.

HSTEU 290 Topics in European History (5, max. 10) I&S Examines special topics in European history.

HSTEU 301 Early Modern European History: 1450-1648 (5) I&S Political, social, economic, and cultural history from the late Renaissance to the Peace of Westphalia.

HSTEU 302 Modern European History: 1648-1815 (5) I&S Political, social, economic, and cultural history from the Peace of Westphalia to the fall of Napoleon.

HSTEU 303 Contemporary European History Since 1815 (5) I&S Political, social, economic, and cultural history from the fall of Napoleon to the present.

HSTEU 304 Cultural History of Renaissance Europe (5) VLPA/I&S Examination of Medicean Florence, late sixteenth-century France, Elizabethan England, and the baroque courts of the early seventeenth century as cultural centers. Includes analysis of painters such as Botticelli and Rubens; poets such as Ronsard and Donne; philosophers such as Pico and Montaigne; and playwrights such as Marlowe, Shakespeare and Lope de Vega.

HSTEU 305 European Witch Trials (5) I&S Witchcraft and magical beliefs in Europe considered as a problem in intellectual, social, and legal history. Medieval background, systematization of witchcraft theory in fifteenth century; comparison of learned and popular beliefs; mechanisms of witch trials and inquisitorial procedure; the Faust legend; growth of skepticism and decline of witchcraft in seventeenth century.

HSTEU 323 France Since 1814 (5) I&S Political, economic, and social history since the Congress of Vienna. Special emphasis upon the continuity of the revolutionary tradition.

HSTEU 334 Germany 1871-1989 (5) I&S Society and politics from Germany's first unification to its reunification; domestic and foreign policy; political, economic, social, and cultural developments; high emphasis on German society's self-perception and on the variety of interpretations of this period's history

HSTEU 361 Spain and Its Golden Age, 1469-1700 (5) I&S History and culture of Spain and its empire from the late Middle Ages through the seventeenth century.

HSTEU 364 Modern Greece: 1821 to the Present (5) I&S Politics and society of Greece from War of Independence to the present. Emergence and development of the Greek state; Greece in the world wars; civil war and post-war politics; military dictatorship; transition to democracy; recent developments. No prior study of Greece assumed. Offered: jointly with JSIS A 364.

HSTEU 368 Modern European Jewish History (5) I&S Surveys European Jewish history from the Spanish expulsion (1492) to World War I (1914). Considers diversity of European Jewries and the factors that cohered them. Examines how European Jewries ordered their lives, shaped gender and class norms, and interacted with the societies in which they lived. Offered: jointly with JSIS C 368.

HSTEU 370 J.R.R. Tolkien: A Mythology for England (5) VLPA/I&S Explores J.R.R. Tolkien in historical context. Influence of the nineteenth-century philosophy and folklore, World War I, Germanic mythology, Oxford Christianity, and the Inklings. Primary themes include language as a source of myth, fate and free will, religion, technology and nature, heroism and war, race and evil.

HSTEU 376 Modern Irish History (5) I&S Political and social history from 1800 to the present; the Irish Question after the Act of Union; development of Irish nationalism in the Home Rule and Sinn Fein periods; the Irish Free State and

Northern Ireland since 1921; current problems in Northern Ireland.

HSTEU 378 The Making of Contemporary France (5) I&S Historical origins and subsequent development of nine contemporary problems and characteristics of French government and politics, economy, and society.

HSTEU 380 History of Scandinavia to 1720 (5) I&S Scandinavian history from the Viking Age to 1720, with an emphasis on the political, social, and economic development of Denmark, Norway, Sweden, Finland, and Iceland from the Middle Ages to the Enlightenment. Offered: jointly with SCAND 380.

HSTEU 381 History of Scandinavia Since 1720 (5) I&S Scandinavian history from the Enlightenment to the Welfare State with emphasis on the political, social, and economic development of the modern Scandinavian nations of Denmark, Norway, Sweden, Finland, and Iceland. Offered: jointly with SCAND 381.

HSTEU 401 The Italian Renaissance: (5) I&S Conditions of Renaissance culture: Italian republics and despots, humanism, the classical ideal of the arts, Machiavelli and the foundations of modern political thought; the end of an era.

HSTEU 402 The Reformation (5) I&S Origins of the disunity of Europe in the crisis of the sixteenth century with emphasis on the relations between religion and politics.

HSTEU 405 European Intellectual History: Eighteenth Century (5) VLPA/I&S Development of the social sciences, moral theory, political theory, and religious thought in eighteenth-century Europe. Rationalism, empiricism, utilitarianism, and the sources of idealism.

HSTEU 406 European Intellectual History: Nineteenth Century (5) VLPA/I&S Selected topics in intellectual history up to 1890. The philosophical consequences of the French Revolution, the development of idealism, conservatism, romanticism, and early socialist theory; positivism, the problems of historicism, new forms of Christian apologetics, utilitarianism in decline, liberalism as philosophy, the early Marx.

HSTEU 407 European Intellectual History: Twentieth Century (5) VLPA/I&S Selected topics in the intellectual history of the late nineteenth and early twentieth centuries. The aftermath of Darwinism, the problems of methodology in modern social science, historicism and moral relativism, irrationalism in philosophy and social theory, revisionism in secular and orthodox religions.

HSTEU 409 The Catholic Church in Europe, 1914-present (5) I&S Examines the Catholic Church in the context of European history since World War I. Explores politics and diplomacy as well as Catholic thought and culture in Europe. Major themes include challenges presented to the Church by Nazism, Communism, secularization, and Islam.

HSTEU 411 Europe: 1814-70 (5) I&S Development of Europe during the age of Metternich, the revolutions of 1848, and the emergence of new national states.

HSTEU 412 Europe in the Age of the Masses: 1870-1914 (5) I&S Impact of population increase and technological change on European society; stresses and strains in European life and outlook.

HSTEU 413 Europe: 1914-45 (5) I&S Politics and society of Europe in the age of the concentration camp.

HSTEU 414 Europe Since 1945 (5) I&S Political, economic, and military developments in Europe under the impact of the Cold War.

HSTEU 415 Europe in the Second World War (5) I&S Inquiry to discover what the war of 1939-45 was about and what it did to more than five hundred million Europeans.

HSTEU 422 The French Revolution and Napoleon: 1789-1815 (5) I&S Transformation of France under the Revolution of 1789; the Reign of Terror and Napoleon; the impact of the revolution and Napoleon upon Europe.

HSTEU 432 Germany: 1914-1945 (5) I&S Politics and society from the collapse of the Bismarckian empire to the collapse of Hitler's empire.

HSTEU 435 World War I (5) I&S European society on the eve of the war. War experience of the Europeans. Long term consequences of the war on European social, political, and economic institutions. Impact of the war on non-European world. The war in European literature.

HSTEU 444 Imperial Russia: 1700-1900 (5) I&S Development of Russia from Peter the Great to Nicholas II. Offered: jointly with JSIS A 444.

HSTEU 445 The Rise and Fall of the Soviet Union (5) I&S Russia and the USSR from Nicholas II to the present. Offered: jointly with JSIS A 445.

HSTEU 451 East-Central Europe Since 1342 (5) I&S Explores the history of the lands and peoples of East Central Europe (Poles, Czechs, Slovaks, and Hungarians).

HSTEU 452 Eastern Europe Since 1918 (5) I&S Explores the history of Poland, the Czech Republic, Hungary, and Slovakia from the end of World War I to the present.

HSTEU 453 History of the Balkans, 1400 to the Present (5) I&S Centuries of Ottoman rule that produced a new basis for the reemergence of independent states in the nineteenth and twentieth centuries; history of these new states until the present.

HSTEU 454 Baltic History (5) I&S Overview of the history of the area occupied by the Baltic countries of Latvia, Lithuania, and Estonia. Emphasizes their emergence as modern European nation-states. Era from World War I to present treated in depth, including the historical role and present situation of non-Baltic peoples, particularly Russians. Offered: jointly with SCAND 454.

HSTEU 464 The Jews in Spanish History (5) I&S Sephardic Jews in Spanish politics, economy, and culture, emphasizing the medieval Golden Age and the Inquisition. Offered: jointly with JSIS C 468.

HSTEU 465 The Jews of Eastern Europe (5) I&S Jewish society in Poland, Russia, the Hapsburg Lands, and Romania from the late Middle Ages to the Holocaust. Offered: jointly with JSIS C 465.

HSTEU 470 The Jacobethan Age: England 1580-1630 (5) I&S Emphasis on arts and society instead of the traditional kings, battles, and politics; the way people at all levels of society lived, in towns and in the countryside, within the bounds of the royal court or outside in the political wilderness. Classes on poetry, drama, music, architecture, painting, interior decoration, and some of the minor arts, as well as on demography and some of the traditional historical subjects. Not open for credit to students who have taken 471 or 472.

HSTEU 471 England in the Sixteenth Century (5) I&S Political, administrative, and social history from Henry VII to Elizabeth I, with emphasis on the Reformation and its effects and on conditions of life in Elizabethan England. Not open to students who have taken HSTEU 470.

HSTEU 472 England in the Seventeenth Century (5) I&S Political, administrative, and social history from the accession of James I to the Glorious Revolution. Not open to students who have taken HSTEU 470.

HSTEU 474 Britain in the Nineteenth Century (5) I&S Political, social, and cultural development; the agrarian, industrial, and French revolutions; the rise of parliamentary democracy; the Victorian age; political thought from utilitarianism to Fabianism; Irish home rule.

HSTEU 475 Britain in the Twentieth Century (5) I&S From the Boer War to the present; conservatism, liberalism, and socialism; Britain in two world wars; the decline of British imperialism.

HSTEU 482 Fascism in Europe (5) I&S History of the fascist era in modern Europe from 1919 to 1945. A study of the principal examples of national fascism and fascist-like

movements coupled with a general theoretical consideration of the phenomenon.

HSTEU 490 Topics in European History (5, max. 10) I&S Examines special topics in European history.

HSTEU 501 Renaissance Field Course (3-6, max. 6) Topics in the cultural, political, and social history of the Renaissance era.

HSTEU 502 Reformation Field Course (3-6, max. 6) Topics in the religious, political, and social history of the Reformation era.

HSTEU 505 Early Modern European History (3-6, max. 18) Select topics in early modern European history. Topics vary from quarter to quarter. Prerequisite: permission of instructor.

HSTEU 506 Modern Europe: Writings and Interpretations (3-6, max. 6) Study of historians, schools of history, and interpretations of modern European history.

HSTEU 510 Core Seminar in the History of Modern Europe (5-) An introduction to historiographical classics and exemplary new works in the various fields of modern European history. Members of the seminar choose research topics and present the results of their research to the seminar.

HSTEU 511 Core Seminar in the History of Modern Europe (-5-) An introduction to historiographical classics and exemplary new works in the various fields of modern European history. Members of the seminar choose research topics and present the results of their research to the seminar.

HSTEU 512 Core Seminar in the History of Modern Europe (-5) An introduction to historiographical classics and exemplary new works in the various fields of modern European history. Members of the seminar choose research topics and present the results of their research to the seminar.

HSTEU 513 Europe and the Modern World I (5) Provides an acquaintance with some of the themes, problems, and events in the history of modern Europe, 1789-1914, including Europe's larger global engagements. Offers foundation for advanced thematic or regional study, a basis for comparative historical study within Europe and beyond, and preparation for teaching entry-level and advanced undergraduate surveys.

HSTEU 515 Modern European Intellectual History (3-6, max. 6)

HSTEU 516 Seminar: European Intellectual History ([3-6]-, max. 6)

HSTEU 517 Seminar: European Intellectual History (-[3-6], max. 6)

HSTEU 521 Modern European History: France (3-6, max. 6)

HSTEU 522 Seminar in French History ([3-6]-, max. 12)

HSTEU 523 Seminar in French History (-[3-6]-, max. 12)

HSTEU 524 Seminar in French History (-[3-6], max. 12)

HSTEU 531 Modern European History: Germany (3-6, max. 6)

HSTEU 532 Seminar in Modern European History: Germany ([3-6]-, max. 12)

HSTEU 533 Seminar in Modern European History: Germany (-[3-6]-, max. 12)

HSTEU 534 Seminar in Modern European History: Germany (-[3-6], max. 12)

HSTEU 543 Empire and Nationalism in Russian History (5) Explores cultural diversity in Imperial Russian history. Examines the role of nationality, cultural diversity, and "Russianness" through issues of identity, nationality policies, and ideologies. Pay particular attention to the development of the nationalistic discourse in Imperial Russia.

HSTEU 544 Modern Russian History (3-6, max. 6)

HSTEU 545 Seminar in Modern Russian History ([3-6]-, max. 12) Prerequisite: reading knowledge of Russian and either French or German.

HSTEU 546 Seminar in Modern Russian History (-[3-6]-, max. 12) Prerequisite: reading knowledge of Russian and either French or German.

HSTEU 547 Seminar in Modern Russian History (-[3-6], max. 12) Prerequisite: reading knowledge of Russian and either French or German.

HSTEU 548 Field Course in Soviet History (3-6, max. 6) Specialized course for graduate history students in the scholarly literature of Russian history since 1917. Intended for graduate students preparing for MA or Ph.D. field examination in Russian history of the Soviet period.

HSTEU 551 History of Eastern Europe: 1772-1939 (5) Study of the east-central European region: Poland, Czechoslovakia, Hungary, Romania, and the Balkan countries, from their rebirth to World War II. Prerequisite: reading knowledge of German, French, Russian, or one East European language.

HSTEU 552 History of Eastern Europe: 1939 to the Present (5) Prerequisite: reading knowledge of one major European or one East European language.

HSTEU 553 Seminar in Modern East European History ([3-6]-, max. 6) Study and research involving special methods dealing with the histories of the East European countries in the modern period.

HSTEU 554 Seminar in Modern East European History (-[3-6]-, max. 6) Study and research involving special methods dealing with the histories of the East European countries in the modern period.

HSTEU 555 Seminar in Modern East European History (-[3-6], max. 6) Study and research involving special methods dealing with the histories of the East European countries in the modern period.

HSTEU 571 English History: Tudor and Stuart (3-6, max. 6)

HSTEU 572 English History (3-6, max. 6)

HSTEU 573 Seminar in Modern English History ([3-6]-, max. 6)

HSTEU 574 Seminar in Modern English History (-[3-6], max. 6)

HSTEU 575 Seminar in Tudor-Stuart History ([3-6]-, max. 12) History of England under the Tudors and the Stuarts. Prerequisite: HSTEU 571 or permission of instructor.

HSTEU 576 Seminar in Tudor-Stuart History (-[3-6], max. 12) History of England under the Tudors and the Stuarts. Prerequisite: HSTEU 571 or permission of instructor.

HSTEU 590 Topics in History (5, max. 15) Seminar on selected topics in general history, with special emphasis on preparation for field examinations. Topics vary according to interests of students and instructor.

History Of North America (United States And Canada)

HSTAA 101 Survey of the History of the United States (5) I&S Supplies the knowledge of American history that any intelligent and educated American citizen should have. Objective is to make the student aware of his or her heritage of the past and more intelligently conscious of the present.

HSTAA 105 The Peoples of the United States (5) I&S, DIV Surveys American diversity since 1500. Repeopling of America through conquest and immigration by Native Americans, Europeans, Africans, Asians, and Latin Americans. Contributions of various peoples and the conflicts between them, with special attention to changing constructions of race and ethnicity and evolving understandings of what it means to be American.

HSTAA 110 History of American Citizenship (5) I&S, DIV Examines how, when, and why different groups of people (e.g., white men, white men without property, peoples of color including one-time slaves, women, immigrants) became eligible for citizenship throughout American history.

Explores how and why for many peoples, at many times, citizenship did not confer equal rights to all.

HSTAA 150 Introduction to African American History (5) I&S Introductory survey of topics and problems in Afro-American history with some attention to Africa as well as to America. Basic introductory course for sequence of lecture courses and seminars in Afro-American history. Offered: jointly with AFRAM 150.

HSTAA 202 American Foreign Policy, 1776 -Present (5) I&S Surveys the history of American foreign relations.

HSTAA 205 Asian American History (5) I&S, DIV Introductory history of Asian Indians, Chinese, Filipinos, Japanese and Koreans in the United States from the 1840s to the 1960s. Major themes include imperialism, labor migration, racism, community formation, and resistance.

HSTAA 208 The City: People, Place, and Environments (5) I&S Surveys the history of cities in North America and around the globe from 1800 to the present. Considers economic and technological change; politics and government; city planning and landscaping design; migration and immigration, race, gender, and class; suburbanization; popular culture; and natural environments and natural disasters.

HSTAA 212 The Military History of the United States From Colonial Times to the Present (5) I&S Development of American military policies, organizational patterns, tactics, and weaponry, from beginnings as a seventeenth-century frontier defense force to the global conflicts and military commitments of the twentieth century. Interaction and tension between need for an effective military force and concept of civilian control of that force.

HSTAA 221 Environmental History of the U.S. (5) I&S L. NASH Surveys the relationship between nature and human history, including the impact of the non-human environment on American history and the environmental effects of colonization, urbanization, and consumerism; the cultural construction of nature in different eras and its social implications; the sources and limits of modern environmental politics. Offered: jointly with ENVIR 221; A.

HSTAA 225 American Slavery (5) I&S, DIV Explores the making of American slavery from beginnings on the African coast to the plantations of the southern United States. Includes slave life, pro-slavery thought, slave management, representations of slavery then and now, abolitionism, and debates about slavery.

HSTAA 230 Race and Power in America, 1861-1940 (5) I&S, DIV Explores race and the shaping of American society between the Civil War and World War II. Topics include reconstruction, segregation and lynching, immigration and naturalization, imperialism, and movements for social justice.

HSTAA 235 The American People and Their Culture in the Modern Era: A History of the United States Since 1940 (5) I&S Through study of documents, personal testimony, and other source materials, through written reports on historical problems, and through discussions, lectures, films, and audiovisual presentations, students are encouraged to examine evidence and to think "historically" about persons, events, and movements within the memory of their own generation and that immediately preceding theirs. Primarily for first-year students.

HSTAA 236 How Race Matters: Racial Norms in the Making of U.S. Society and Culture (5) I&S Confronts U.S. racial history through a series of questions: Is U.S. history a story of increasing tolerance and inclusion, or a story about confronting and reconsolidating racial dominance? How have slavery, segregation, immigration, Indian removal, and imperialism defined national identity? How does racial exclusion intersect with class, gender, and sexuality?

HSTAA 270 The Jazz Age (5) I&S, DIV *Walter* Interdisciplinary study of period after World War I to Great Crash. Afro-American and Anglo-American currents and impulses that flowed together in the Roaring Twenties. Covers politics of normalcy, economics of margin, literature of indulgence

and confusion, transformation of race relations, and cultural influence of jazz. Offered: jointly with AFRAM 270.

HSTAA 273 Women of the American West (5) I&S Women of the Trans-Mississippi West, from the time of European contact to World War II, studied in all their multifarious roles. Explores ethnicity, class, work, family, suffrage, politics, reform, women's groups, arts and entertainment, religion, civilizing and resistance, and gender ideology.

HSTAA 290 Topics in American History (5, max. 10) I&S Examines special topics in American history.

HSTAA 301 Colonial North America (5) I&S Early America from the sixteenth century to the end of the American Revolution: the founding years, social and religious development, race relations, development of the Atlantic world, origins and legacy of American independence.

HSTAA 302 Everyday Life in Nineteenth-Century America (5) I&S Explores the history of everyday Americans (women, slaves, working people, farmers) of a variety of races, ethnicities, and citizenships in the context of the major cultural, social, and political changes that dramatically transformed their lives over the course of the nineteenth century.

HSTAA 303 Modern American Civilization From 1877 (5) I&S Emergence of modern America, after the Civil War; interrelationships of economic, social, political, and intellectual developments.

HSTAA 313 African Americans in the American West (5) I&S, DIV Explores pre-1848 Spanish-speaking black settlers, slavery, post-civil war migration, buffalo soldiers. 19th and 20th century black urban settlers, World War II migration, the civil rights movement in the West, the interaction of African Americans with other people of color. Particular focus on Seattle and the Pacific Northwest.

HSTAA 315 Researching Indians' History (5) I&S A. HARMON Finding and interpreting sources of information about American Indians' history. Offered: jointly with AIS 370.

HSTAA 316 History of American Science (5) I&S History of science in the United States, including migration of European science, development in colonial America, growth of an American scientific community, and expansion of American science in the twentieth century. Issues of scientific attitudes to the natural world, race, ethnicity, and gender are included.

HSTAA 321 Becoming Black Americans (5) I&S, DIV History of Africans in America from slave trade through the Civil War, with emphasis on how gender informed African-American experience. Topics include slave trade, middle passage, life in plantation south, culture, family structure and resistance, and the experience of free blacks, North and South.

HSTAA 322 African-American History, 1865 To The Present (5) I&S, DIV African-American experience from Reconstruction to the present, emphasizing the variety of African-American political expression. Gender and class differences closely examined, as well as such constructs as "community," "race," and "blackness."

HSTAA 331 American Indian History I to 1840 (5) I&S, DIV A. HARMON History of indigenous peoples and their descendants in the area that now constitutes the United States, from the eve of European discovery of the Americas to 1840. Emphasis on relations between indigenous peoples and immigrants. Offered: jointly with AIS 331.

HSTAA 332 American Indian History II Since 1840 (5) I&S, DIV A. HARMON History of American Indians in the United States from 1840 to the present. Emphasis on relations between Indians and non-Indians, government policies, and Indian strategies of survival. Offered: jointly with AIS 332.

HSTAA 334 Civil Rights and Black Power in the United States (5) VLPA/I&S *Stephoe* Examines the politics and culture of the modern African American freedom struggle, which began after WWII and continued into the 1970s. In-

terrogates political strategies associated with nonviolent direct action, armed self-reliance, and black nationalism, as well as the cultural expression that reflect these political currents. Recommended: AFRAM 150; AFRAM 270. Offered: jointly with AFRAM 334.

HSTAA 336 American Jewish History Since 1885 (5) I&S Political, social, economic, religious history of American Jewish community from great eastern European migration to present. Integration of immigrant community into general American community; rise of nativism; development of American socialism; World War I and II; and reactions of American Jews to these events. Offered: jointly with JSIS C 336.

HSTAA 338 The United States and Vietnam (5) I&S American involvement in Vietnam, including: the complex of negotiations; strategies and objectives of both sides; military, political, and economic operations of the United States; efforts at pacification; impact of Vietnam on American affairs.

HSTAA 351 American Constitutional History: From Colonial Times to the Present (5) I&S European origins; the constitution-making of the American Revolution; the growth of government; Civil War and Reconstruction as constitutional crises; reform and the new federalism; the Supreme Court and civil rights; Congress, the presidency, and modern American constitutionalism.

HSTAA 353 Class, Labor, and American Capitalism (5) I&S, DIV The history of workers and class formation from early industrialization to the present. Emphasizes the interaction of class with race, ethnicity, gender, and political culture within the context of American economic development. Explores the role of unions, labor politics, and radical movements.

HSTAA 365 Culture, Politics, and Film in Twentieth Century America (5) VLPA/I&S Explores relationship between film and twentieth century U.S. cultural, social, and political history. Examines the ways that films responded to, participated in, and helped shape understandings of modernity, national identity, political power, race and ethnic relations, gender, and crises such as economic depression and war.

HSTAA 371 Consumption and Consumerism in the Modern U.S. (5) I&S Surveys the rise of consumer society in the late-nineteenth and twentieth-century United States including theories of consumption, the experience of consumer culture by different social groups, the role of the state in fostering consumption, the material impacts of consumer society in the U.S. and beyond, and critiques of consumerism.

HSTAA 373 Social History of American Women to 1890 (5) I&S, DIV *Yee A* multi-racial, multicultural study of women in the United States from the seventeenth century to 1890 emphasizing women's unpaid work, participation in the paid labor force, charitable and reform activities, and nineteenth century social movements. Uses primary materials such as diaries, letters, speeches, and artifacts. Offered: jointly with GWSS 383; W.

HSTAA 374 Social History of American Women in the Twentieth Century (5) I&S Analyzes major themes in the history of women in North America from 1890 through the 1990s. Themes include family and community formation, social activism, education, paid and unpaid labor patterns, war, migration, and changing conceptions of womanhood and femininity in the twentieth century. Offered: jointly with GWSS 384.

HSTAA 377 History of Canada (5) I&S General survey and analysis of political, economic, social, and cultural aspects of Canadian history from the foundation of New France to present; Canadian-American relations, the rise of Quebec nationalism, and the development of the Canadian West. Offered: jointly with JSIS A 375.

HSTAA 401 American Revolution and Confederation (5) I&S Causes of separation of the United States from the British empire; political theory of the Revolution; its mili-

tary history; diplomacy of the Revolution; the Revolution as a social movement; intellectual aspects; readjustment after independence; the formation of the American union; the Constitution.

HSTAA 404 New England: From the Foundings to the Civil War (5) I&S New England from colonial beginnings to the region's emergence to national leadership in the mid-nineteenth century. Emphasis on Puritanism, the New England town, adjustment to empire, revolution and constitution making, the growth of party, abolitionism, the flowering of a regional culture, and the personalities who embodied these key themes and periods.

HSTAA 406 Asian American Activism (5) I&S, DIV Explores the multiple political traditions forged by Asian Americans, from the earliest challenges to racist laws and unequal wages to the latest debates over affirmative action and racial profiling. Examines Asian American communities organized to oppose and to perpetuate social inequalities. Offered: jointly with AAS 406.

HSTAA 407 Andrew Jackson's United States (5) I&S In-depth examination of the U.S. from 1820 to 1850, including changes which affected American politics, society, and culture.

HSTAA 409 American Social History: The Early Years (5) I&S Survey of American society and institutions from the colonial era through the Civil War, with special attention to reform, labor, immigration, education, law enforcement and the city.

HSTAA 410 American Social History: The Modern Era (5) I&S Survey of American society and institutions from Reconstruction to the present with special attention to reform, poverty, social mobility, immigrant and ethnic groups, the city and law enforcement.

HSTAA 411 The United States During the Era of Civil War and Reconstruction (5) I&S Conflicting interests, ideologies, and ways of life in the United States from the 1840s to the 1870s.

HSTAA 412 The Westward Movement, 1700-1850 (5) I&S Anglo-American advance into interior of continental United States culminating in occupation of Far West. Rivalry with New France and New Spain in colonial period; role of federal government in westward expansion; land policy and land distribution; migration, settlement, and the pioneering experience; federal Indian policies and implementation; political evolution, urbanization, and economic development of trans-Appalachian West; shaping of national character and institutions.

HSTAA 413 History of the Trans-Mississippi West (5) I&S Anglo-American exploration, conquest, occupation, and exploitation of the trans-Mississippi West, with emphasis on economic development into the twentieth century. Considers wide range of developmental themes (social, political, cultural) in historiography of American West.

HSTAA 414 The Canadian West, 1670-1990 (5) I&S Examines the history of colonization and settlement of Canada's four westernmost provinces with emphasis on their economic, social, and Native history.

HSTAA 415 History of Indian-White Relations in Anglo-America (5) I&S Explores the wide variety of interactions in North America, ranging from close alliances to outright warfare, between Native Americans and Europeans and their descendants from contact through the removal of most of the remaining eastern Indians to land west of the Mississippi River during the 1830s.

HSTAA 417 Indians in Western Washington History (5) I&S, DIV A. HARMON Relations of Indians and non-Indians in the Puget Sound region, from the 1790s to the present, with emphasis on evolving ideas about Indian identity. Offered: jointly with AIS 425.

HSTAA 426 American Urban History Since 1870 (3/5) I&S Development of American cities for the past century. Top-

ics include physical development, immigration, politics, and changes in society and culture.

HSTAA 431 American Politics and Society Since 1920 (5) I&S Political, social, economic, and intellectual developments in the United States from 1920 to the present.

HSTAA 432 History of Washington and the Pacific Northwest (5) I&S Exploration and settlement; economic development; growth of government and social institutions; statehood.

HSTAA 433 A Documentary History of Pacific Northwest Identity (5) I&S Findlay Considers cultural construction of Pacific Northwest region through more than two centuries of narratives, including Native American stories; travel literature from early explorers to modern tourists; accounts by newcomers from pioneer to modern era; aggressive regionalism of 1890-1945; Northwest literature of the post-war period. Offered: S.

HSTAA 446 American Indian Economic History (5) I&S Harmon Surveys and analyzes the history of American Indians' economic challenges and strategies. Topics include the economic cultures of indigenous North American societies, the impacts of European colonization and U.S. government policies, and tribal strategies aimed at improving Indians' economic circumstances. Offered: jointly with AIS 446.

HSTAA 454 The Intellectual History of the United States (5) VLPA/I&S Lectures and discussions devoted to the development of the American mind, from historical beginnings to the present.

HSTAA 458 Education in the Forming of American Society (5) I&S Beadie Covers the development of American education in cultural context; history of schools and non-school learning from colonial period to the twentieth-century; apprenticeship and learning societies; community and market-based schooling; liberal learning and the rise of the university; and schools as agencies of economic and political integration and mediators of culture and social status. Offered: jointly with EDLPS 458.

HSTAA 459 History of American Education Since 1865 (3) I&S Development of American education in cultural context: progressive education, recent criticism, continuing issues and trends. Offered: jointly with EDLPS 459.

HSTAA 461 Diplomatic History of the United States, 1776-1901 (5) I&S Foreign policy of the United States government prior to the twentieth century. Emphasis on international wars, territorial expansion, and the peculiarities of the American position in world politics.

HSTAA 462 Diplomatic History of the United States, 1901-Present (5) I&S Foreign policy of the United States government during the twentieth century. International wars and the other major episodes in diplomacy are emphasized.

HSTAA 465 The Sixties in America: Kennedy to the Counterculture (5) I&S Examines American politics, society, and culture during the 1960's. Also lightly touches upon 1945-1959 and 1970-1975. Topics include the Cold War; Vietnam; JFK, LBJ and their critics; MLK, Malcolm X, race, gender, and social movements; and mass culture, pop culture, and the counterculture.

HSTAA 473 Homefront: American Cultures and Society in the 1940s (5) I&S An exploration of the impact of WWII on American culture and social thought. Topics include the effects of war on civil liberties and civil rights, the uses of nationalism, patriotism, and racial ideology, the internment of Japanese-Americans, responses to the Holocaust, and the effects of war on social life.

HSTAA 490 Topics in American History (5, max. 10) I&S Examines special topics in American history.

HSTAA 501 American History: Early (3-6, max. 6)

HSTAA 503 Seminar in American History, Early ([3-6]-, max. 12) Research seminar in early American History, 1600-1875.

HSTAA 504 Seminar in American History, Early (-[3-6], max. 12) Research seminar in early American History, 1600-1875.

HSTAA 506 Slavery in the Americas (5) Explores the rise of American slavery beginning with the development of the Atlantic slave trade between southern European powers and coastal African traders. Topics include cultures of slavery in the Americas, comparative racial formations, cultural change, and the role of gender in slave societies.

HSTAA 508 American Urban History (5) Covers major themes and scholarly literature in American urban history.

HSTAA 512 American History: Western (3-6, max. 6)

HSTAA 513 Seminar in American History: Western ([3-6]-, max. 12)

HSTAA 514 Seminar in American History: Western (-[3-6], max. 12)

HSTAA 516 Hispanics of the United States (3-6, max. 6)

HSTAA 517 Field Course in American Indian History (5) Field-reading course. Survey of major problems and literature concerning indigenous peoples of North America and their descendants.

HSTAA 519 Asian American History (5) Introduces students to the field of Asian American history, with an emphasis on historiographical shifts and debates. Includes a broad range of topics and methodologies that often cross disciplinary boundaries.

HSTAA 521 American History: Writings and Interpretations, 1770-1870 (4-6)

HSTAA 522 American History: Writings and Interpretations Since 1870 (4-6)

HSTAA 524 American Social History Before 1860 (3-6, max. 6) Field course. Survey of major problems and literature in American social history before 1860.

HSTAA 525 American Social History After 1860 (3-6, max. 6) Field course. Survey of major problems and literature in American social history after 1860.

HSTAA 531 American History: Twentieth Century (3-6, max. 6)

HSTAA 532 Seminar in American History: Recent Period ([3-6]-, max. 12)

HSTAA 533 Seminar in American History: Recent Period (-[3-6]-, max. 12)

HSTAA 534 Seminar in American History: Recent Period (-[3-6], max. 12)

HSTAA 540 African American Urban History: 1700-2000 (5) Examines the growth and evolution of African-American urban communities from the colonial era to the present, with particular emphasis on cities of the West.

HSTAA 549 Culture, Politics, and Power in Nineteenth-Century Black America (5) Canonical issues, problems, and topics in nineteenth-century black social history. Traces major developments during the period; engages historiographical debates; and explores methodological questions such as the intersection of social and cultural history, and the challenges and possibilities of writing the history of a people with few written records.

HSTAA 550 African-American History to Reconstruction (5) Comprehensive introduction to the major topics and writings in African-American history from the colonial era to 1900, including the inception of slavery, free Blacks, slave revolts, Black abolition, Blacks in the Civil War and Reconstruction, and the Black female role in the struggle for freedom.

HSTAA 551 African-American History Since Reconstruction (5) Comprehensive introduction to the major topics and writings in African-American history in the twentieth century, including Jim Crow era, Black Women's Movement, Harlem Renaissance, legal origins of Civil Rights Revolution, Second Reconstruction, and Politics of Cultural Pluralism.

HSTAA 552 Graduate Seminar in African-American History (5-) Research experiences and opportunities in African-American history. Provides students with skills and methodology to pursue advanced research in the field.

HSTAA 553 Graduate Seminar in African-American History (-5) Research experiences and opportunities in African-American history. Provides students with skills and methodology to pursue advanced research in the field.

HSTAA 554 American History: Intellectual (3-6, max. 6)

HSTAA 555 Seminar: American Intellectual History ([3-6]-, max. 12) Develops research and writing competence in American intellectual history. Prerequisite: permission of instructor or graduate program coordinator.

HSTAA 556 Seminar: American Intellectual History (-[3-6], max. 12) Develops research and writing competence in American intellectual history. Prerequisite: permission of instructor or graduate program coordinator.

HSTAA 561 History of American Foreign Policy (3-6, max. 6)

HSTAA 562 Seminar in American Diplomatic History ([3-6]-, max. 12)

HSTAA 563 Seminar in American Diplomatic History (-[3-6], max. 12)

HSTAA 570 American Environmental History (5) Readings in environmental history emphasizing theory, methodology, and principal themes in the field. Readings emphasize the environmental history of North America and the United States.

HSTAA 590 Topics in American History (5, max. 15) Seminar on selected topics in American history, with special emphasis on preparation for field examinations. Topics vary according to interests of students and instructor.

History Seminars and Independent Studies

HSTRY 199 Foreign Study (3-5, max. 10) I&S Lower-division history courses, for which there are no direct University of Washington equivalents, taken through the University of Washington Foreign Study Program.

HSTRY 388 Colloquium: Introduction to History (5, max. 10) I&S Introduction to the discipline of history for new or prospective majors. Emphasizes the basic skills of reading, analysis, and communication (both verbal and written) that are central to the historian's craft. Each seminar discusses a different subject or problem.

HSTRY 390 Colloquium in History and Science (5) I&S Study in the history of science to bridge the gap between the natural sciences and the humanities. Students should have a strong background both in history and in a natural science.

HSTRY 395 Modern Historical Writing, Honors Seminar (5) I&S New types of problems examined by historians and new techniques that have evolved for solution. Brief historiographical introduction, reaching back to the "scientific" historians of the mid-nineteenth century, then continues by examining the impact on historians of new disciplines such as psychology, sociology, and economics, and of new techniques such as statistics and prosopography. Readings are in the theorists and in those who followed their lead. Admission by departmental invitation only.

HSTRY 399 Advanced Foreign Study (3-5, max. 15) I&S Upper-division history courses, for which there are no direct University of Washington equivalents, taken through the University of Washington Foreign Study Program.

HSTRY 491 Honors Historical Method (5-) I&S The purposes, materials, and techniques of historical scholarship. Theory, practice, and criticism. For honors students.

HSTRY 492 Honors Historical Method (-5) I&S The purposes, materials, and techniques of historical scholarship. Theory, practice, and criticism. For honors students.

HSTRY 493 Senior Thesis in the History of Science (5, max. 10) I&S Preparation of the senior thesis for the History and Science emphasis.

HSTRY 494 Colloquium in Historiography (5, max. 15) I&S Advanced seminar examining central issues in historiography. Emphasizes reading, discussion, and writing.

HSTRY 495 History Internship (1-5, max. 10) Off-campus independent fieldwork with a community agency in an apprenticeship or internship situation. Work to be jointly supervised by a member of the History Department and an on-site field supervisor.

HSTRY 498 Colloquium in History (5, max. 15) I&S Each seminar examines a different subject or problem. A quarterly list of the seminars and their instructors is available in the Department of History undergraduate advising office.

HSTRY 499 Undergraduate Research (1-5, max. 15)

HSTRY 500 Perspectives on History (5)

HSTRY 570 Topics in Teaching History (3) Topics include active learning, teaching writing, assessment, and course design. Designed for history graduate students working or planning to work as TAs or instructors. Students produce a teaching portfolio and conduct peer observations. Credit/no-credit only.

HSTRY 571 Orientation to an Academic Career in History (3) Course for prospective college and university history instructors, preparing them for the nonacademic aspects of their duties. Prerequisite: Master of Arts degree in history or permission of instructor. Credit/no-credit only.

HSTRY 572 Dissertation Prospectus Workshop (3) Students will craft their dissertation prospectuses with their respective PhD chairs and committees, that must approve the prospectus before it is presented to the History Department. In addition to fulfilling a departmental requirement, students can use the prospectus as a component for future funding and employment applications. Credit/no-credit only.

HSTRY 595 Historical Practices (5) Emphasizes the inter-relatedness of theoretical issues and historical research. Students read works that encourage the rethinking of sources and their historical meaning and experiment with sources, methods, and questions in a set of practical assignments.

HSTRY 596 History Research Seminar (5-) Advanced historical research seminar. First in a series of two.

HSTRY 597 History Research Seminar (-5) Advanced historical research seminar. Second in a series of two.

HSTRY 598 Methods of Historical Research (5) Exploration of new historical and scholarly techniques employed in historical research. Use of social science methodology and literary theory in the evaluation and interpretation of historical sources. Use of feminist theory, deconstruction, critical theory, and orality/literacy studies. Student research paper is based upon a chosen theoretical approach.

HSTRY 600 Independent Study or Research (*-)

HSTRY 800 Doctoral Dissertation (*-)

Human Rights

The issue of human rights has attracted increased attention around the world. The tri-campus Human Rights minor at the University of Washington provides students the opportunity to learn about the political, philosophical, economic, cultural, and legal aspects of this complex subject.

UNDERGRADUATE PROGRAM

Adviser

215 Smith, Box 353530

(206) 543-1824

polsadv@uw.edu

111 Thomson, Box 353650

(206) 543-6001

jsisadv@uw.edu

The human rights minor is offered at all three University campuses, allowing students to take advantage of the expertise available on the campuses where they are not regularly in residence, although the minor can be completed on any one campus.

Minor

Minor Requirements: 25 credits, to include the following:

1. 10 credits from an approved list of courses* concerned with human rights as a core concept
2. 5 credits from an approved list of courses* concerned with human rights in a broad context
3. 10 additional credits drawn from the above approved lists of courses* concerned with human rights
4. At least 3 credits of the required 25 credits must be in a human-rights-related internship, practicum, international study abroad, or demonstrated equivalent. Courses that satisfy this requirement include BIS 403, BIS 480; LSJ 310, LSJ 499, POL S 496, JSIS 387, and similar practicum and study-abroad courses in other programs (on the Seattle campus); and TIAS 496. See adviser for faculty-approved alternatives. Courses used to satisfy this requirement must be approved/supervised by the faculty offering courses appropriate to the minor. Credits for the minor may be completed across the three UW campuses, or on any single campus. If the minor is completed by a Seattle-major student, no more than 10 credits applied to the minor may be in the student's major department.

* The list of core courses and context courses is maintained by the Human Rights Advisory Committee. For the current list of such courses, see depts.washington.edu/hrights/hrminor.html. Note: From time to time, the advisory committee adds, subtracts, or reclassifies courses on the approved list. Students who have planned their studies on the basis of an earlier list may fulfill the requirements of the minor as specified in that earlier list.

Individualized Studies

171 Mary Gates Hall

Individualized Studies is an interdisciplinary major option for students who wish to create a program of study by combining selected courses from two or more departments. Students are required to identify a central organizing theme for their major and design it under the guidance and supervision of at least two faculty members and an Individualized Studies adviser.

UNDERGRADUATE PROGRAM

Adviser

171 Mary Gates Hall, Box 352805

(206) 543-2550

istudy@uw.edu

The Individualized Studies program offers the following programs of study:

- Bachelor of Arts with a major in Individualized Studies
- Bachelor of Science with a major in Individualized Studies

Degree depends on the theme and curriculum of the approved major.

Ethnomusicology and technical writing are faculty-designed major options also available through Individualized Studies. Ethnomusicology (BA) focuses on the study of world cultures through their musical expression. Technical writing (BA or BS) offers the study of writing and other modes of communication in a variety of technical environments.

Bachelor of Arts, Bachelor of Science

Suggested First- and Second-Year College Courses: Varies, depending on student's area of concentration.

Program Admission Requirements

Before developing an Individualized Studies major, students should read "Designing an Individualized Studies Major," or obtain a copy from the UAA Advising, 141 Mary Gates Hall. Particular attention should be paid to the sections defining restrictions on themes and restricted access to courses. Individualized Studies majors are not possible in a number of subjects because the UW does not offer sufficient coursework. Upper-division courses in departments with competitive admission are generally not available to students not in that major and ordinarily cannot be included in Individualized Studies proposals.

After reading the guidelines, the student must go through the following steps to design a major:

1. Identify the unifying interdisciplinary theme of the program.
2. Make a list of courses taken or planned to be taken toward this goal. This list should comprise between 50 and 70 quarter credits, all of which are related to the area of concentration. These courses must come from at least two departments, but may come from any number of areas, so long as interrelationships are discernible. Most courses must be at the 300- or 400-level. At least half the 50-70 credits selected for the major must come from courses taught within the College of Arts and Sciences.
3. Draft a statement that describes the proposed major and discusses the interrelationships among the courses chosen. Propose a brief, descriptive title for the major.
4. Submit the proposal to the Individualized Studies Committee for initial approval. Prospective majors should submit proposals to the Individualized Studies Committee for review at least three quarters prior to graduation.
5. Identify at least two faculty sponsors for the major. The faculty sponsors attest to the intellectual soundness of the proposal and agree to provide whatever guidance is jointly decided upon. They may also suggest changes in the previously approved written proposal or list of courses.
6. Obtain final approval from an Individualized Studies adviser.
7. Transfer students must be enrolled at the UW before applying to the major.

8. Admission requirements for the three faculty-designed major options vary. See an adviser for more details.

Major Requirements

55 to 70 credits, including completion of the approved curriculum and a 5-credit required senior study (minimum grade of 2.7 required for senior study). Awarding of the Bachelor of Arts or Bachelor of Science degree depends on the content of each student's program.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Varies, depending on student's area of concentration.
- *Instructional and Research Facilities:* None
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* None
- *Department Scholarships:* None offered
- *Student Organizations/Associations:* None

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

General Studies

GEN ST 101 University Learning Skills (1-3, max. 3) Introduction to university culture. Practice in skills necessary for academic success, including note-taking, test-taking, writing, active learning, and time and stress management. Academic planning. Introduction to university resources.

GEN ST 105 Introduction to Liberal Studies (1-10, max. 10) Designed to increase the academic proficiencies of new freshmen entering the University. Includes coursework in the liberal arts and sciences and related work in writing, speaking, and mathematics. Introduces students to computing and campus culture. Credit/no-credit only.

GEN ST 160 Discovery Seminar in the Humanities (5) VLPA Small intensive seminar focusing on the visual, literary, and performing arts taught during Early Fall Start led by faculty representing a wide spectrum of academic disciplines and interests. Offered: A.

GEN ST 161 Discovery Seminar in Individuals and Society (5) I&S Small intensive seminar focusing on individuals and society taught during Early Fall Start led by faculty representing a wide spectrum of academic disciplines and interests. Offered: A.

GEN ST 162 Discovery Seminar in the Natural World (5) NW Small intensive seminar focusing on the natural world taught during Early Fall Start led by faculty representing a wide spectrum of academic disciplines and interests. Offered: A.

GEN ST 197 Freshman Seminar (1-3, max. 3) Small-group discussion with faculty representing a wide spectrum of academic disciplines. Topics and approaches vary. Instructor may introduce research techniques or findings, concentrate on readings in his/her area of interest, or illustrate problems and alternatives related to the study of a particular academic discipline. Credit/no-credit only. Offered: AWSp.

GEN ST 199 The University Community (1-2, max. 2) Introduces students to various aspects of the University of Washington community. Includes exploration of university resources and opportunities, and academically related skill development. Credit/no-credit only. Offered: A.

GEN ST 297 Undergraduate Seminar (1-3, max. 3) Small-group discussion with faculty representing a wide spectrum of academic disciplines. Topics include faculty's research techniques or findings, concentrated reading in his/her area of interest, or illustrated problems and alternative related to the study of a particular academic discipline. Class structure varies based on instructor. Credit/no-credit only. Offered: AWSp.

GEN ST 300 Colloquium on Education, Learning, and Society (1, max. 3) I&S Creates a learning community among Education minor students and their instructors. Students learn from researchers and practicing educators about current pedagogical projects and theories. Fosters self-reflexive projects to build understanding of learning pathways.

GEN ST 340 Community Fieldwork: Law (1-5, max. 5) Credit/no-credit only.

GEN ST 341 Community Fieldwork: Law (1-5, max. 5) Credit/no-credit only.

GEN ST 342 Community Fieldwork: Health (1-5, max. 5) Credit/no-credit only.

GEN ST 343 Community Fieldwork: Health (1-5, max. 5) Credit/no-credit only.

GEN ST 344 Community Fieldwork: Social Services (1-5, max. 5) Credit/no-credit only.

GEN ST 345 Community Fieldwork: Social Services (1-5, max. 5) Credit/no-credit only.

GEN ST 346 Community Fieldwork: Education (1-5, max. 5) Credit/no-credit only.

GEN ST 347 Community Fieldwork: Education (1-5, max. 5) Credit/no-credit only.

GEN ST 348 Community Fieldwork: Special Topics (1-5, max. 5) Credit/no-credit only.

GEN ST 349 Community Fieldwork: Special Topics (1-5, max. 5) Credit/no-credit only.

GEN ST 350 Independent Fieldwork (1-6, max. 18) Independent fieldwork in community agencies, apprenticeships, internships, as approved for College of Arts and Sciences credit. Faculty sponsor and internship supervisor are required. Credit/no-credit only. Offered: AWSpS.

GEN ST 391 Supervised Study in Selected Fields (*, max. 15) Special supervised study in a field represented in the College of Arts and Sciences. Faculty supervisor required. Offered: AWSpS.

GEN ST 470 Undergraduate Peer Instructor Practicum (1-3, max. 12) Provides instruction in group leadership and promotion of values and methods of learning within a university setting. For Peer Instructors in the FIG and TRIG programs. Credit/no-credit only. Offered: AWSpS.

Individualized Studies

INDIV 493 Senior Study (5) For Individualized Studies majors only. Faculty supervisor required. Offered: AWSpS.

Integrated Social Sciences

The Integrated Social Sciences program provides a broad interdisciplinary education in the social sciences for undergraduates. It emphasizes development of critical and integrative thinking for students interested in human society and social problems. ISS is an online degree-completion program aimed at students who have already completed a substantial amount of college coursework.

UNDERGRADUATE PROGRAM

Adviser

059 Communication, Box 353765

(206) 2219183

Integrated Social Sciences offers the following program of study:

- Bachelor of Arts degree with a major in integrated social sciences

Bachelor of Arts

Suggested First- and Second-Year College Courses: General coursework developing critical thinking, analytical, and writing skills. Coursework which satisfies general education requirements for the College of Arts and Sciences, including courses in English composition, foreign language, and quantitative and symbolic reasoning.

Department Admission Requirements

1. Minimum 75 transferable quarter credits
2. Minimum 2.00 GPA in all transferable college coursework
3. Minimum 2.50 GPA in all courses applied to ISS major requirements
4. Completion in high school or community college of College Academic Distribution Requirement (CADR).
5. Demonstrated progress toward University and College of Arts and Sciences general education requirements

ISS accepts only program-specific students. Admission is competitive. Completion of minimum admission requirements does not guarantee admission to the University. In addition, applicants are evaluated on the following criteria: (1) overall academic record; (2) a personal statement; (3) likelihood of success in an online-format program, based on a separate application question.

Major Requirements

60 credits as follows:

1. *ISS Core (20 credits):* ISS 301; ISS 350; ISS 355 (8 credits: 2 credits, repeated four times); ISS 401
2. *Thematic Areas Courses (40 credits):* To include at least one 5-credit course from each of five of the following seven areas of inquiry: (1) information and technological society; (2) population dynamics and movements; (3) conflict and cooperation; (4) diversity and global justice; (5) societal inequalities and power relations; (6) social contexts of health and risk; (7) societies and environments. Three or more disciplinary prefixes must be included. The list of approved courses is available from the ISS advising office or the program website.
3. 30 of the 40 thematic areas course credits must be upper division.
4. Minimum 45 credits applied to major requirements must be taken in the UW ISS program.
5. Minimum 2.00 cumulative GPA in courses applied to major requirements
6. Completion of all Arts and Sciences general education requirements

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsct/

ISS 301 Social Science Theory in Context (5) I&S M. SPARKE Explores how social sciences study what people do, how people understand their world, and how that un-

derstanding shapes social practice. Provides ways to conceptualize how social relations - economic, political, cultural, sexual, racial, spatial, and historical relations - interact in real work contexts. Offered: A.

ISS 350 Introduction to Portfolios in Social Science (2)

I&S M. SPARKE Helps students begin the process of developing a Learning E-portfolio in which they articulate connections between substantive content learned in their social science courses, as well as begin a process of reflection of their learning in different contexts (private and public, individual, and social). Offered: A.

International Studies

401 Thomson

The Henry M. Jackson School of International Studies organizes and supports interdisciplinary teaching and research in international affairs. The school consists of a group of interdisciplinary area-studies programs on major world regions, as well as topical and comparative programs of study that transcend national and regional boundaries.

UNDERGRADUATE PROGRAM

Adviser

111 Thomson, Box 353650

(206) 543-6001

jsisadv@uw.edu

The School of International Studies offers the following programs of study:

- The Bachelor of Arts degree with a major in Asian studies; Canadian studies; comparative religion; European studies; international studies; Jewish studies; or Latin American and Caribbean studies
- Minors in Africa and the African diaspora; Canadian studies; China studies; comparative Islamic studies; comparative religion; European studies; international studies; Japan studies, Jewish studies, Korea studies; Latin America and Caribbean studies; Middle East studies; Russian, Eastern European, and Central Asian studies; South Asian studies, and Southeast Asian studies.
- A minor in arctic studies (offered jointly between the Jackson School of International Studies and the School of Oceanography)

African Studies

Daniel J. Hoffman, Chair

Adviser

326 Thomson, Box 353650

(206) 616-0998

africa1@uw.edu

African studies involves a multi-campus interdisciplinary group of faculty, staff, and students who share an interest in interdisciplinary questions relating to Africa and the African diaspora. Africa-focused courses are taught in a variety of scholarly disciplines and programs, including art, music, anthropology, forestry and fisheries, geography, history, international health, American ethnic studies, and the interdisciplinary arts and sciences programs at UW Bothell and UW Tacoma. The African studies program coordinates and disseminates information on Africa-related activities; facilitates research, internships, and study abroad opportunities; and administers the Africa and African diaspora minor.

Minor

Minor Requirements: 30 credits from at least three departments whose approved courses are shown on the African studies website, jsis.washington.edu/africa/, including:

1. Minimum 15 credits at the 300 level or above
2. Minimum 5 credits from the approved list of courses on the African diaspora
3. Minimum 10 credits from the approved list of courses on Africa
4. Maximum 10 credits of language courses, which may include 5 credits at the third-year level or above from the Africa-relevant languages of Arabic, French, or Portuguese and 10 credits of Swahili at the second-year level or above
5. Other courses not on the website may be approved by the program office.
6. Minimum 15 credits completed at the UW
7. Minimum 2.0 grade in each course applied toward the minor

Asian Studies

The undergraduate program in Asian studies is directed by a committee consisting of the chairs of China studies, Korea studies, Japan studies, South Asian studies, and Southeast Asian studies (see below under Minors), and a designated faculty coordinator.

The Asian studies major combines language training with interdisciplinary study of an Asian region or single country. The program emphasizes social science approaches to the study of history, culture, and society, with provision for study of literature and the arts as well. Students may focus on China, Japan, Korea, South Asia (Bangladesh, India, Nepal, Pakistan, Sri Lanka, Tibet), Southeast Asia (Brunei, Burma [Myanmar], Cambodia, East Timor, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand, Vietnam), or Asia as a whole. Five interdisciplinary minors on individual countries or regions also are offered.

Bachelor of Arts

Suggested First- and Second-Year College Courses: Either JSIS 203 or JSIS A 207, and two introductory Asian civilization courses (see major requirements, below). Progress toward two years of a relevant Asian language. Courses that develop writing skills, especially in the social sciences.

Department Admission Requirements

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

Major Requirements

80 credits as follows:

1. 30 credits or second-year equivalent language training in a language appropriate to student's concentration, plus 50 credits as follows:
2. Either JSIS 203 or JSIS A 207 (5 credits)
3. JSIS 201 (5 credits)
4. An Asian civilization course in student's concentration chosen from JSIS A 212/HSTAS 212, JSIS A 241/HSTAS 241, JSIS A 242, HSTAS 201, HSTAS 202, HSTAS 211, JSIS A 206, JSIS A 221/HSTAS 221 (5 credits)
5. 35 credits of approved coursework from one regional or country concentration, or from the general Asia concentration
6. Approved research paper required in one of the upper-division concentration courses
7. Minimum grade of 2.0 in all courses counted toward the major (except first- and second-year language courses, where grades must average 2.00)
8. 30 of the 35 credits required for the concentration requirement must be taken in residence at the UW.

Minor**China Studies**

Madeleine Yue Dong, Chair

Minor Requirements: 30 credits, to include the following:

1. HSTAS 211 and either JSIS C 202 or one additional introductory Asian civilization course (10 credits)*
2. 10 credits of electives taken at the UW, chosen from the China history/social science electives list*
3. 5 credits of electives taken at the UW, chosen from the China history/social science list or the China arts/literature electives list*
4. 5 additional credits in Chinese language beyond second-year level, or in upper-division transfer courses on China, or in additional electives chosen from the China history/social science electives list*
5. Minimum grade of 2.0 required in each course applied toward the minor

* The list of Asian civilization courses and China electives is maintained by the China studies program. For the current list of such courses, see jsis.washington.edu/advise/undergraduate/minors.shtml.

Japan Studies*Minor Requirements:* 30 credits, to include the following:

1. JSIS A 241/HSTAS 241 or JSIS A 242 and one course on a different Asian civilization (10 credits)*
2. 10 credits of electives taken at the UW, chosen from the Japan history/social science electives list*
3. 5 credits of electives taken at the UW, chosen from either the Japan history/social science list or from the Japan arts/literature elective list*
4. 5 credits in Japanese language beyond second-year level, or in upper-division transfer courses on Japan, or in additional electives chosen from the Japan history/social science elective list*
5. Minimum grade of 2.0 required in each course applied toward the minor.

* The list of Asian civilization courses and Japan electives is maintained by the Japan studies program. For the current list of such courses, see jsis.washington.edu/advise/undergraduate/minors.shtml.

Korea Studies

Clark W. Sorensen, Chair

Minor Requirements: 30 credits, to include the following:

1. JSIS A 212/HSTAS 212 and one additional introductory Asian civilization course (10 credits)*
2. 20 credits of electives, 15 of which must be taken at the UW, to include: (a) 10 credits chosen from the list of core courses*; (b) 5 credits chosen from the list of core courses or the list of electives*; (c) 5 additional credits in Korean language beyond second-year level, or in upper-division transfer courses on Korea, or from the lists of core courses and electives*
3. Minimum grade of 2.0 required in each course applied toward the minor.

* The lists of Asian civilization core and elective classes are maintained by the Korea studies program. For the current list of such courses, see jsis.washington.edu/advise/undergraduate/minors.shtml.

South Asian Studies

Priti Ramamurthy, Chair

Minor Requirements: 30 credits, to include the following:

1. HSTAS 202 or JSIS A 200 (5 credits)

2. One additional introductory Asian civilization course (5 credits)*
3. 15 credits of electives taken at the UW, chosen from the approved list*
4. 5 additional credits in a South Asian language beyond second-year level, or in upper-division transfer courses on South Asia, or in additional electives chosen from the approved list*
5. Minimum grade of 2.0 required in each course applied toward the minor.

* The list of Asian civilization courses and South Asia electives is maintained by the South Asian studies program. For the current list of such courses, see jsis.washington.edu/advise/undergraduate/minors.shtml.

Southeast Asian Studies

Laurie J. Sears, Chair

Minor Requirements: 30 credits, to include the following:

1. JSIS A 221/HSTAS 221 (5 credits)
2. One introductory Asian civilization course (5 credits)*
3. 15 credits of electives taken at the UW, chosen from the approved list*
4. 5 additional credits in a Southeast Asian language beyond second-year level, or in upper division transfer courses on Southeast Asia, or from the approved list of electives*
5. Minimum grade of 2.0 required in each course applied toward the minor.

* The list of Asian civilization courses and Southeast Asia electives is maintained by the Southeast Asia program. For the current list of such courses, see jsis.washington.edu/advise/undergraduate/minors.shtml.

Canadian Studies

Daniel Hart, Chair

Canadian studies provides a broad understanding of Canadian society, culture and communications, historical development, and contemporary problems.

Bachelor of Arts

Suggested First- and Second-Year College Courses: ECON 200, ECON 201. Progress toward two years of French language. Canadian history courses. Courses that develop writing skills.

Department Admission Requirements

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

Major Requirements

30 credits or second-year-equivalent French language training, plus 53 credits as follows:

1. JSIS 200, JSIS 201, JSIS 202; ECON 200, ECON 201; JSIS A 356, JSIS A 498
2. Minimum 18 credits from approved Canadian Studies elective course list

Minors

Canadian Studies Minor Requirements: 25 credits as follows:

1. JSIS A 356 and JSIS A 498 (10 credits)
2. 15 credits of electives chosen from an approved list*
3. Minimum grade of 2.0 in each course applied to the minor
4. Minimum 15 credits toward the minor completed at the UW

* The list of Canada electives is maintained by the Canadian studies program. For the current list, see [\[ington.edu/advise/undergraduate/minors.shtml\]\(http://ington.edu/advise/undergraduate/minors.shtml\). Since the program from time to time adds, subtracts, or reclassifies approved courses, students who have planned their studies on the basis of an earlier list may fulfill the requirements of the minor as specified on that list.](http://jsis.wash-</p>
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Minor in Arctic Studies: See entry for Arctic Studies in the Interdisciplinary Undergraduate Programs section of the General Catalog.

Comparative Islamic Studies

Comparative Islamic studies provides a broad understanding of Islamic society, culture and communications, historical development, and contemporary problems.

Minor*Minor Requirements:* 30 credits as follows:

1. NEAR E 210/JSIS A 210 (5)
2. NEAR E 211/JSIS C 211 or NEAR E 212/JSIS C 212 (5)
3. 10 credits in Islamic religious traditions and texts, chosen from an approved list*
4. 10 credits in history, society, and culture of Islam, chosen from an approved list*
5. Minimum grade of 2.0 in each course counted toward the minor

* The approved list of Comparative Islamic studies electives is maintained by the School of International Studies. For the current list, see jsis.washington.edu/advise/undergraduate/minors.shtml. Since the school from time to time adds, subtracts, or reclassifies courses on the approved list, students who have planned their studies on the basis of an earlier list may fulfill the requirements as specified on that list.

Comparative Religion

James K. Wellman, Chair

The comparative religion major introduces students to broad theoretical issues in the academic study of religion, and encourages them to explore these issues through mastering details of the textual canons, historical traditions, social contexts, and cultural forms of religion.

Bachelor of Arts

Suggested First- and Second-Year College Courses: JSIS C 201, JSIS C 202. Courses that develop writing proficiency. Courses in particular religious traditions such as Christianity, Judaism, Islam, Hinduism, and Buddhism. Courses in the history of civilizations such as Chinese, South Asian, and Western.

Department Admission Requirements

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

Major Requirements

55 credits as follows:

1. JSIS C 201, JSIS C 202; JSIS B 380/CHID 380; JSIS 201
2. 35 additional credits in comparative religion courses, of which at least 15 must be at the 300 level or above, selected from the three rubrics of textual canons, historical traditions, and social contexts and cultural forms. The distribution must include at least 5 credits and no more than 20 credits in any particular rubric.

Minor*Minor Requirements:* 30 credits as follows:

1. JSIS C 201, JSIS C 202
2. 15 additional credits in comparative religion courses or joint-listed equivalents
3. 5 additional credits chosen from comparative religion courses or from an approved list of electives*

* The list of approved comparative religion courses is maintained by the Comparative Religion program. For the current list of such courses, see jsis.washington.edu/advise/undergraduate/minors.shtml.

European Studies

Christine Ingebritsen, Chair

The curriculum in European studies prepares students to pursue careers requiring an understanding of all the forces, both material and cultural, contemporary and historical, that are shaping Europe today (North, South, East, and West), taking into account transitions involved in the post-Soviet era and the movement toward greater political, economic, and cultural integration among the various nations involved. Students also may concentrate, within the major, on Hellenic studies, European Union studies, or Russian, East European, and Central Asian studies.

Bachelor of Arts

Suggested First- and Second-Year College Courses: Progress toward two years of a modern European language. A survey course on modern Europe.

Department Admission Requirements

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

Major Requirements

60 credits as follows:

- 10 credits of a modern European language at the third-year level or beyond
- 20 credits of core courses, including JSIS 201, JSIS A 301, JSIS A 302, and an approved survey course on modern Europe
- One quarter (10 credits minimum, at least 9-10 weeks) of study in Europe
- 15 credits from approved list of electives, including at least one course designated as a pre-modern elective and one course designated as a global elective.
- Either JSIS A 494, Senior Seminar or JSIS A 495, Senior Thesis. The senior-thesis option (JSIS A 495) constitutes the major's research-intensive track. Criteria and admission procedures are described at jsis.washington.edu/advise/catalog/eur_ba.shtml.
- See adviser for specific course options.

Minors

European Studies

Minor Requirements: 25 credits, to include:

- Foreign language through the sixth quarter
- 15 credits of core courses including JSIS 201 (5), JSIS A 301 (5) and a survey course on modern Europe (5)
- 10 credits from approved list of electives

Russian, Eastern European, and Central Asian Studies

Minor Requirements: 30 credits from course in at least three disciplines, to include:

- JSIS A 301 (5 credits)
- An approved modern REECAS survey course chosen from the approved list* (5 credits)
- 15 credits of electives at the 300 level or above, chosen from the approved list*
- Study of a regional language is encouraged, but not required. Maximum 10 credits of BCS, Czech, Estonian, Kazakh, Latvian, Lithuanian, Polish, Russian, Uighur, or Uzbek language beyond the first-year level may be applied toward the 30-credit total.
- Minimum 15 credits completed in residence at the UW

- Minimum 2.00 cumulative GPA in courses applied to the minor
- Minimum 18 credits outside student's major
- Participation in service learning and Study Abroad programs in completing minor requirements is encouraged.

* For list of approved REECAS courses, see . Since the program from time to time adds, subtracts, or reclassifies approved courses, students who plan their studies on the basis of an earlier list may fulfill requirements as specified on that list.

International Studies

Sara R. Curran, Chair

The general program in international studies gives students a comprehensive and interdisciplinary perspective on world problems and an ability to analyze the subtle interactions of politics, economics, and culture within the global system.

Bachelor of Arts

Suggested First- and Second-Year College Courses: 30 credits of a single foreign language. ECON 200, and either ECON 201 or JSIS 123/GEOG 123

Department Admission Requirements

- Admission is competitive, based on overall GPA, grades in the social sciences, a written statement of goals, language background, and any international experience. Before applying, students must complete ECON 200, ECON 201, or JSIS 123/GEOG 123 and either JSIS 200 or JSIS 201. Grades in these courses are given special consideration.
- Application deadline is the third Friday of autumn, winter, and spring quarter; students are notified by the sixth Friday of the quarter in which they apply. Transfer students must be enrolled at the UW before applying to the major.

Major Requirements

Foreign-language competency through the second-year college level, plus 70 credits as follows:

- ECON 200 and either ECON 201 or JSIS 123/GEOG 123; JSIS 200, JSIS 201, JSIS 202, JSIS B 330, JSIS 495, JSIS 498
- Three or four upper-division courses in an approved option
- Three upper-division interdisciplinary courses in international studies from an approved core list
- A research paper of approximately 25 pages to be completed in one of the courses in the student's approved option or in one of the approved interdisciplinary courses
- Majors are required to maintain a GPA of at least 2.50, both overall and in the program, and to earn a minimum 2.0 grade in all required Jackson School prefix courses.

Minor

Minor Requirements: 30 credits as follows:

- 10 credits chosen from JSIS 200, JSIS 201, JSIS 202
- 15 credits in JSIS B-prefix courses, including at least 10 credits at the 300 or 400 level (courses with other JSIS prefixes are not eligible, but JSIS 478 may be counted).
- 5 additional credits chosen from courses in any of these prefixes: JSIS A, JSIS B, JSIS C, JSIS D
- Minimum 2.0 grade required in each course applied toward the minor.

Jewish Studies

Noam Pianko, Chair

Jewish studies takes an interdisciplinary approach to the global study of Jews, exploring the rich diversity of their cultures, their philosophies, their religious practices, their histories, their roles in politics, and other areas of contemporary life.

Areas of concentration include ancient cultures and sacred texts, modern literature and culture, Jewish languages, American Jewish studies, Sephardic studies, European Jewish studies, and Israel and Middle East studies.

Bachelor of Arts

Suggested First- and Second-Year College Courses: JSIS C 210, JSIS C 250/HIST 250. Courses that develop writing skills. Courses in international studies and world history (ancient, medieval, and modern). Modern European languages, e.g., French, German, Italian, Spanish. Progress toward two years of Hebrew.

Department Admission Requirements

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

Major Requirements

50 credits as follows:

- Introductory Courses (15 credits):* JSIS C 210, JSIS C 250/HIST 250, JSIS 201
- Jewish Studies Track (20 credits):* Approved courses in either the Judaic Cultural Tradition or the Jewish People in the Modern World
- Hebrew Language and Instruction (15 credits):* A minimum of 15 credits selected from an approved list of courses appropriate to the student's track. Students must be proficient in the Hebrew language through second-year level. Students who place above second-year level in Hebrew may choose courses from one or both Jewish Studies tracks to fulfill all or part of this requirement.

The lists of Jewish studies courses are maintained by the Jewish studies program as part of its website. For the current list of such courses, see jsis.washington.edu/advise/catalog/jewish_b.shtml

Minor

Minor Requirements: 30 credits as follows:

- JSIS C 210 and JSIS C 250/HIST 250 (10 credits)
- 15 credits of Jewish studies electives, chosen from the list of approved humanities/social science electives*
- 5 additional credits chosen from the list of approved humanities/social science electives or from courses in modern or Biblical Hebrew*
- 15 credits of the minor must be taken in residence at the UW.

* The list of Jewish studies electives is maintained by the Jewish studies program. For the current list of such courses, see jsis.washington.edu/advise/undergraduate/minors.shtml.

Latin American and Caribbean Studies

Jose Antonio Lucero, Chair

The Latin American and Caribbean studies major combines language study with work in history, the humanities, and the social sciences. It provides a comprehensive, interdisciplinary understanding of this major world region, emphasizing themes such as economic development, popular movements, cultural analysis, and hemispheric relations. At the same time, it gives students the option to develop their own particular disciplinary and thematic interests.

Bachelor of Arts

Suggested First- and Second-Year College Courses: Substantial progress toward completing the language requirement described below. Courses in any of the following disciplines that deal with Latin America and the Caribbean: history, literature, economics, geography, sociology, political science.

Department Admission Requirements

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

Major Requirements

52 credits plus language training, as follows:

1. Training in two foreign languages of Latin America and the Caribbean, to include the sixth quarter (or equivalent) of one language chosen from Spanish, Portuguese, or French, and the third quarter (or equivalent) of a second of these languages
2. JSIS 201
3. *Latin American History (10 credits):* Courses to be selected from an approved list.*
4. *Contemporary Latin America (15 credits):* Courses drawn from a range of disciplines including anthropology, comparative literature, geography, international studies, and Spanish. See program website for a complete list of courses.
5. *Electives (15 credits):* Courses on Latin America, the Caribbean, and international studies selected from an approved list*
6. *Interdisciplinary Seminar:* JSIS A 486, JSIS A 492, or another course chosen from an approved list of research seminars
7. JSIS 493: Senior paper or project

* Lists of Latin American and Caribbean studies courses are maintained by the Latin American and Caribbean studies program as part of its website. For the current list of such courses, see jsis.washington.edu/advise/catalog/latam_ba.shtml.

Minor

Minor Requirements: 30 credits as follows, plus foreign language:

1. One year of Spanish or Portuguese, or equivalent proficiency
2. At least 5 credits in history chosen from an approved list*
3. At least 15 credits chosen from an approved list of courses on contemporary Latin America*
4. At least 10 additional credits chosen from the history or contemporary Latin America lists, or from an approved list of electives*
5. At least 20 of the 30 credits must be completed at the UW (UW foreign study programs included).
6. Minimum 2.0 grade required in each course applied toward the minor.

* The list of Latin American and Caribbean studies courses is maintained by the Latin American and Caribbean studies program. For the current list, see <http://jsis.washington.edu/advise/undergraduate/minors.shtml>. Since the program from time to time adds, subtracts, or reclassifies approved courses, students who have planned their studies on the basis of an earlier list may fulfill the requirements of the minor as specified on that list.

Middle East Studies

Ellis J. Goldberg, Chair

The undergraduate curriculum in Middle East studies provides a grounding in the modern Middle East and a view

of how this region fits into the world community politically, historically, and economically. To achieve this understanding, students take courses in the social sciences and the humanities, and are strongly encouraged to study a Middle Eastern language.

Minor

Minor Requirements: 28-30 credits as follows:

1. Two courses chosen from JSIS A 210/NEAR E 210, JSIS A 215/NEAR E 213, ANTH 318, HIST 161, or HIST 163
2. 20 credits of electives chosen from the approved list.*
3. Study of a Middle East language is encouraged, but not required. A maximum 5 credits in Arabic, modern Hebrew, Persian, or Turkish language beyond the first-year level may be applied toward the 20 credits of approved electives. No credits from any first-year language course may be counted.
4. No more than 12 credits counted in the minor may also be counted toward requirements of a major.
5. Minimum 15 credits of 300-/400-level courses
6. Minimum 15 credits completed in residence at the UW Seattle campus
7. Minimum 2.00 cumulative GPA in courses applied to the minor.

* The list of Middle East electives is maintained by the Middle East studies program. For the current list of such courses, see <http://jsis.washington.edu/advise/undergraduate/minors.shtml>.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The majors offered in the School of International Studies emphasize development of critical thinking and provide a challenging framework for research and writing. Graduates attain competency in foreign language and an understanding of the political, economic, and cultural underpinnings of the global system and specific world regions. This background lays a foundation for advanced study in professional and academic disciplines, and for careers in the evolving global community. Graduates work in a wide range of jobs, depending on their interests and skills, including: Foreign Service officers, international trade specialists, political analysts, human rights associates, research assistants, social studies and language teachers, international student advisers, foreign study coordinators, program officers/managers for international non-profits and NGOs, foreign exchange specialists, international sales representatives/managers, import/export brokers, marketing analysts, associate editors/publicists, international news writers/journalists.

Instructional and Research Facilities: More than 1.5 million volumes in the University library system are related to international studies. The library has a large current international and domestic newspaper collection, with an emphasis on Slavic, South, and Southeast Asian papers and a selection of European papers. Specialized facilities include the East Asia Library, with a comprehensive collection of manuscripts, books, and serials on China, Japan, and Korea. The University's library holds an extensive collection of books and serials relating to South Asia. The library participates in the U.S. Library of Congress Public Law 480 program, which supplies current publications from India, Pakistan, and Sri Lanka; and is a member of the South Asian Microfilm Program of the Center for Research Libraries, providing access to a large collection of microfilm newspapers, journals, and documents on South Asia.

Jackson School undergraduates can draw upon an extensive roster of more than 500 UW Study-Abroad programs and exchanges, in 70 countries, to enrich their studies.

- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* The School's Office of Career Services provides resources for students exploring job and internship opportunities. The Jackson School has limited funds available for students who serve as unpaid interns in nonprofit and governmental agencies. The Leslieanne Shedd Memorial Internship Fund honors a Jackson School alumna killed while serving with the CIA. The Dorothy Fosdick Internship Fund is sponsored by the Henry M. Jackson Foundation in memory of the senator's foreign policy adviser. The George E. Taylor Internship Endowment supports students engaged in community-based internships. The Fathi-DiLuck Endowment supports unpaid internships with organizations in the greater Seattle area.
- *Department Scholarships:* Ivy Hovey Fitch Endowed Scholarship, Neal and Helen Fosseend Endowed Scholarship, David Hughes Endowed Scholarship (tuition); Vincent H. Gowen Scholarship (undergraduate-China); Margaret Mykut Scholarships; Ayako Betty Murakami Scholarship (Japan); I. Mervin and Georgiana Gorasht Scholarship, Arthur A. Jacobovitz Scholarship, Richard M. Willner Memorial Scholarship, and Jewish Studies Advisory Board Scholarship (Jewish Studies); Katherine M. Tyler Endowed Fellowships (Asia); Eugene and Marilyn Domoto Webb Scholarship and Marilyn Domoto Webb Fellowship (Comparative Religion); Margaret Mykut scholarships, Alice Wanamaker scholarships, and Jao scholarships (undergraduate study abroad). See also the funding opportunities described under Internships.
- *Student Organizations/Associations:* Jackson School Student Association

GRADUATE PROGRAM

Graduate Program Information

111 Thomson, Box 353650

(206) 543-6001

jsisinfo@uw.edu

The Jackson School offers graduate training leading to the Master of Arts in International Studies and Doctor of Philosophy degrees in a large number of fields. In addition to the PhD, nine programs that lead to a Master of Arts in International Studies degree: seven world area-studies programs, a comparative religion program, and a comparative and thematic program in international studies that concentrates on the interaction of international, economic, political, and cultural processes with states and societies around the world. The area-studies programs include China studies; Japan studies; Korea studies; Middle East studies; Russian, East European, and Central Asian studies; South Asian studies; and Southeast Asian studies. The comparative and thematic international studies program can be taken as a concurrent degree program with several professional schools. Specific requirements vary from one program to another, but all stress interdisciplinary study within the context of the historical cultures, contemporary situations, and languages either of the world areas or comparatively.

Master of Arts in International Studies

Admission Requirements

Applicants must meet the requirements of the Graduate School: a 3.00 GPA in the last 90 quarter (60 semester) graded credits and a baccalaureate degree from an accredited university. Submission of the scores of the gen-

eral Graduate Record Examination is required. Applicants must also meet the requirements of the specific Jackson School program to which they are applying. Most require or strongly recommend previous study of an appropriate foreign language.

Degree Requirements

Students must meet Graduate School requirements for the Master of Arts, as well as individual Jackson School program requirements. Programs are designed to be completed in two years.

See also descriptions of research facilities on Russia, East Europe, and Central Asia as well as South Asia under the appropriate headings below.

China Studies

Madeleine Yue Dong, Chair

The China studies program provides a broad understanding of the Chinese people and their culture, historical development, and contemporary problems. The curriculum emphasizes the attainment of facility in Chinese language, a grounding in history, and a familiarity with the approaches of the social sciences to China studies. The cultural aspects of China are covered through offerings of several departments, with special strengths in art history and literature. The breadth of offerings allows students to select courses to meet career goals in business, government, or other professions, or to prepare for further graduate study in an academic discipline.

Admission Requirements

See above under Master of Arts in International Studies. While not required for admission, some previous study of Chinese language is highly recommended.

Degree Requirements

36 credits, plus language training.

Chinese language training through the third year; two seminars: JSIS A 521-JSIS A 522 plus 26 credits in discipline study related to China from at least two different disciplines; two seminar papers or a thesis; comprehensive oral examination.

Comparative Religion

James K. Wellman, Chair

The comparative religion program leading to the Master of Arts in International Studies offers an interdisciplinary curriculum in the study of religion, with several choices for areas of concentration. The required core seminars focus on methodology and comparative perspective in the study of religion. For the remaining course requirements, primary and secondary curricular concentrations are available in Buddhism, Hinduism, Judaism, Islam, Christianity, Biblical and Near Eastern religion, and religion and culture; further secondary curricular concentrations are available in Greco-Roman religions, religions in America, East Asian indigenous traditions, African traditions, and Native American traditions.

Admission Requirements

See above under Master of Arts in International Studies. The Comparative Religion faculty reserve the right to determine in each case whether an applicant has sufficient language preparation and background in the study of religion for acceptance into the program.

Degree Requirements

Completion of the third year in a language of the primary sources in the chosen concentration, and first-year reading proficiency in a secondary foreign language necessary for

reading published research (e.g., German, French); certification of basic competency in the history of world religions; JSIS B 501, JSIS B 502; JSIS B 598, a colloquium course, each quarter; one course focused on historical relations between religious traditions; at least four courses in a major concentration and two in a minor; one or two final research paper(s); and a comprehensive examination including both oral and written segments.

International Studies

Sara R. Curran, Chair

The general program in international studies provides students with broad knowledge and skills in analyzing international affairs. Designed for students entering many different professional fields, the program trains them in international and comparative studies in a multidisciplinary setting. Students are prepared to undertake sophisticated analyses of international affairs and typically hold positions after graduation with the international divisions of federal and state governments, international divisions of banks, trading companies, policy-study institutes, corporations with international operations, and international development and educational organizations. About half of all students are enrolled in a concurrent graduate professional-degree program. This adds approximately one year to the student's course of study.

Admission Requirements

See above under Master of Arts in International Studies. Those applying concurrently to a professional program (Foster School of Business, Public Affairs, Marine Affairs, Environmental and Forest Sciences, Law, or Public Health) must also be accepted by the professional school. For non-concurrent applicants, preference is given to those who have a professional interest, or previous professional experience or education. Prior study of a foreign language and preparation in intermediate-level microeconomics and macroeconomics are highly recommended.

Degree Requirements

Japanese or Chinese language through the third year or any other modern foreign language through the second year; JSIS 500, JSIS 501, and JSIS 511; courses in two of the following three foci: a regional studies focus, a professional focus, or international studies field focus (minimum three classes—9 credits—for each focus); two seminar papers or a thesis; and an oral examination. Students in concurrent graduate-degree programs also must meet Graduate School requirements for the second degree.

Japan Studies

Marie Anchordoguy, Chair

The graduate program in Japan studies gives students in-depth knowledge of many facets of Japan, including its history, political economy, society, and language. Coursework helps prepare students for careers in business, government, journalism, secondary-school teaching, and a wide variety of other professional fields. The program is specifically designed (1) for students with bachelor's degrees in a discipline who need language and interdisciplinary training on Japan to pursue their career goals, and (2) as preparation for doctoral work in an academic discipline involving Japan for students who have had little or no training on Japan or in the language. A concurrent degree program with the Foster School of Business (MAIS/MBA) is offered and other combinations (e.g., with Public Affairs and Law) can be arranged.

Admission Requirements

See above under Master of Arts in International Studies. At least one year of prior training in Japanese language is strongly recommended.

Degree Requirements

46 credits, plus language training.

Japanese language through the third year level; JSIS A 555; 46 additional credits in discipline (non-language training) course work including at least one history course and one social science course. Up to 15 credits from advanced Japanese language classes may be counted toward these 46 credits.

Korea Studies

Clark W. Sorensen, Chair

The graduate program in Korea studies offers courses in Korean language, history, and society. Regular offerings are supplemented by visiting faculty from political science, economics and economic development, folklore, and literature. The program emphasizes the study of Korea in the context of East Asian civilization and the modern world economy, not simply as a single country in isolation from its neighbors. The objective of the program is to provide students with a broad background which is of use for further graduate study, or in a variety of professions such as teaching, business, and government.

Admission Requirements

See above under Master of Arts in International Studies. Previous language training is recommended.

Degree Requirements

36 credits, plus language training.

Korean language through the third year of instruction; HS-TAS 482, JSIS A 566, JSIS A 584, and JSIS A 585; 15 credits in discipline study of East Asia or international studies; two seminar papers or an essay of distinction; comprehensive oral examination.

Middle East Studies

Ellis Goldberg, Chair

The Middle East program is designed for students who wish to study the region within an interdisciplinary framework, focusing especially on the social, political, economic, and legal systems of the Middle East and/or Islamic Central Asia. To provide a thorough grounding in this region, students take courses in the social sciences, humanities, and a Middle Eastern or Central Asian language.

Admission Requirements

See above under Master of Arts in International Studies. Although knowledge of a Middle Eastern or Central Asian language is not a prerequisite for admission, it is advisable for applicants to have had at least the equivalent of one year's study of the language in which they plan to concentrate. Students accepted with no language training may wish to begin their language study in an intensive summer program.

Degree Requirements

Three 3-credit or two 5-credit Middle Eastern language courses beyond the second-year (native speakers as well as non-native speakers); 20 credits on the modern Middle East from at least two social science or humanities disciplines; one approved Jackson School course; two courses in one social science discipline or in one professional school other than courses taken for preceding require-

ments; either a thesis and an oral examination, or two seminar papers and a four-hour written examination.

Russian, East European, and Central Asian Studies

Scott Radnitz, Chair

Designed primarily for students with bachelor's degrees in a discipline, the program offers a background for professional pursuits in government and nongovernmental organizations, journalism, business, or teaching, or for advanced graduate study leading to the PhD degree in a discipline or in International Studies. The program includes language training, a concentration of study in a chosen discipline, and a combination of courses in other disciplines that deal with aspects of the area. Students usually focus on one region (Russia, East Europe, the Baltic States, or Central Asia), although the program provides flexibility to take courses on another region.

Admission Requirements

See above under Master of Arts in International Studies. A prerequisite for all applicants is two years of college-level language courses or the equivalent. For those focusing on Russia the language must be Russian; for other regions of the former Soviet Union and East Europe, two years of a language of the region, or another relevant language.

Degree Requirements

48 credits, plus language training.

Including the two years required for entry, four years of a language of the region being studied or two years each of two relevant languages (four years of Russian required for Russian focus); JSIS A 504; JSIS A 514, and JSIS A 515; 30 credits in disciplines other than language, with 15-20 credits in a discipline of concentration; 5 credits in a minor field and 10-15 credits in other REECAS-related courses; a thesis (9 credits of JSIS 700); and an oral interdisciplinary examination.

Research Facilities

The University of Washington is a major center for research on Eastern Europe, Russia, and the independent states of the former Soviet Union, notably the Baltic States and the countries of Central Asia. In addition to extensive holdings in Russian, East European, and Baltic language materials, the library has one of the best Central Asian language collections in the country and the largest collection of Latvian books outside Latvia. The strengths of the program are complemented by strong programs in East Asian and Middle Eastern Studies.

Graduate Certificate in Russian, East European, and Central Asian Studies

The Graduate Certificate in Russian, East European, Central Asia Studies (REECAS) is designed for graduate students to acquire in-depth knowledge of REECA regions and to develop interdisciplinary analytical and academic skills by taking sixteen student-credit hours at the 500 level or above. The certificate is an added qualification for students already pursuing professional, master's, or doctoral degrees.

Eligible students include: matriculated graduate students, matriculated professional students, and international scholars and fellows engaged in research and funded training programs at UW.

Requirements (16 credits): JSIS A 504; two elective REECA focused courses (10 credits); certificate capstone (1 credit).

A maximum of 6 of these credits may apply to a student's degree program (these "double counted" credits must be elective coursework in the degree program).

South Asian Studies

Anand Yang, Chair

The South Asian studies program is designed for students whose career objectives involve teaching and research in a traditional discipline with geographical interests within South Asia (i.e., India, Pakistan, Bangladesh, Sri Lanka, Tibet, and Nepal); those planning to enter professional-training programs (e.g., education, business administration, journalism, law, or public affairs); or students planning a career in government service (e.g., the Foreign Service) who wish to acquire a special understanding of the South Asia area.

Admission Requirements

See above under Master of Arts in International Studies.

Degree Requirements

Completion of the third year of a South Asian language to include at least 7 credits at the 400 level or above; JSIS A 508, JSIS A 509, JSIS A 510; 21 credits in coursework from at least two different departments, focused primarily on South Asia or in courses taught by South Asia faculty on topics relevant to the student's specializations (students may take a maximum of 10 credits not focused on South Asia, nor taught by South Asia faculty, to help fulfill disciplinary or professional objectives); two seminar papers or a thesis; a comprehensive oral examination.

Research Facilities

The University of Washington library holds an extensive collection of books and serials relating to South Asia. The library participates in the U.S. Library of Congress Public Law 480 program, which supplies current publications from India, Pakistan, and Sri Lanka; and is a member of the South Asian Microfilm Program of the Center for Research Libraries, providing access to a large collection of microfilm newspapers, journals, and documents on South Asia.

Graduate Certificate in South Asian Studies

The certificate, an added qualification for students already pursuing professional, master's, or doctoral degrees, helps students acquire in-depth knowledge of South Asia and develop interdisciplinary, analytical, and academic skills by taking four relevant courses. Eligible participants include matriculated graduate students, matriculated professional students, non-matriculated graduate students, and international scholars and fellows engaged in research and funded training programs at UW.

Requirements (16 credits): JSIS A 508; JSIS A 509; one elective South-Asia-focused course (5); JSIS A 513, capstone portfolio (1).

Southeast Asian Studies

Laurie J. Sears, Chair

The Southeast Asian Studies program offers students a framework within which to carry out interdisciplinary study of the peoples and nations of insular and mainland Southeast Asia -- Brunei, Burma, Cambodia, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand, Timor Loro'sae, and Vietnam. The curriculum combines training in one or more Southeast Asian languages with study of various aspects of modern and classical Southeast Asian civilizations.

Admission Requirements

See above under Master of Arts in International Studies.

Degree Requirements

36 credits, plus language training.

Completion of the third year of a Southeast Asian language; JSIS A 506, JSIS A 580/HSTAS 530, JSIS A 582/HSTAS 532; 21 credits in coursework from at least two different departments, focused primarily on Southeast Asia or in courses taught by Southeast Asia faculty on topics relevant to the student's specializations (students may take a maximum of 5 credits not focused on Southeast Asia, nor taught by Southeast Asia faculty, to help fulfill disciplinary or professional objectives); a thesis or a non-thesis project (e.g., papers, documentary film, or performance project).

Doctor of Philosophy

Saadia M. Pekkanen, Director

The Jackson School PhD program seeks to integrate the renowned area-based capabilities of its existing graduate programs, with leading-edge scholarship and practice in the field of international studies. Its objective is to create scholars combining a deep knowledge of areas and regions in the context of contemporary global themes, policy challenges, and real-world problems.

The Jackson School PhD in International Studies is framed around four foundational fields that provide cohesion across our existing area-based graduate programs and courses: (1) "Religions, Cultures, and Civilizations (RCC)," which exposes students to the diversity of cultural and religious life anchored in concrete studies of world areas, histories, cultural and political movements, as well as religious institutions and practices; (2) "States, Markets, and Societies (SMS)," which exposes students to theoretical and empirical debates about the engagement of states with their societies and with transnational actors in their historical, political, and social settings; (3) "Peace, Violence, and Security (PVS)," which exposes students to theoretical and foreign policy debates about global security challenges, conflicts, and violence, as well as issues of their prevention; and (4) "Law, Rights, and Governance (LRG)," which exposes students to theoretical and policy debates about the causes and consequences of legal evolution, rule of law, and a broad range of governance concerns in world affairs.

The Jackson School PhD Program offers a two-track option for the dissertation. One track involves writing three thematically-linked article-length research papers; the other track requires writing one book-length monograph. Students choose the appropriate track in consultation with their advisers. Doctoral candidates are required (i) to situate their dissertations under an overarching theme/topic in one of the four foundational fields of the PhD Program, and (ii) to also ground them in one of the existing area-based MAIS degrees in the Jackson School.

Admission Requirements

1. Master's Degree
2. *Statement of Purpose:* detailing research question/interests in at least one of the four foundational fields of the PhD program and at least one of the area-based MAIS programs; and also identifying relevant JSIS faculty member(s) for research supervision
3. *Writing Sample:* published or unpublished sample/excerpt (not to exceed 40 pages) demonstrating ability to write critically and analytically
4. Curriculum Vitae
5. Three Letters of Recommendation
6. All Undergraduate and Graduate Transcripts
7. *Language:* in most fields of study prior language study is an asset, and stronger applicants normally have knowledge of relevant language sufficient for research
8. *All Test Scores:* GRE General Test Scores and TOEFL (for international students) sent directly by the Educational Testing Service

Degree Requirements

Along with Graduate School requirements, 100 credits minimum as follows:

1. Approval of 28 transfer credits corresponding to previous graduate level work; completion of 45 JSIS PhD program credits including introduction to international and area studies course, research tutorial, two field seminars, two specialization courses, two methods courses; and completion of 27 dissertation credits
2. Submission of proposed course of study form, Quarterly Progress Review (QPR) meetings with the director of the PhD program, and Annual Progress Review (APR) reports to the PhD program committee
3. Satisfactory performance in the research tutorial, including formal capstone presentation
4. Submission of request for establishing doctoral Supervisory Committee
5. Satisfactory performance in the PhD general examination, consisting of three written examinations (two in PhD program fields, one in area-based field), and an oral examination
6. Establishment of official doctoral reading committee
7. Satisfactory performance in dissertation prospectus defense to doctoral reading committee
8. Preparation and writing of doctoral dissertation (either three thematically-linked article-length research papers or one multi-chapter book-length monograph) acceptable to doctoral reading committee
9. Satisfactory performance in a final examination, consisting of oral defense of the written dissertation

Research Facilities

Along with entry to the UW library system with one of the most extensive collection of materials related to international and area studies in the world, students have access to the wide range of research resources, facilities, and networks of formal programs in the Jackson School, including those on Africa, Canada, China, Comparative Religion, Europe, Japan, Jewish Studies, Korea, Latin America and the Caribbean, Middle East, Russia, East European and Central Asia, South Asia, and Southeast Asia. Students also have access to programs and resources of Title-VI National Resource Centers (NRCs) in the Jackson School, including the Canadian Studies Center, Center for Global Studies, Center for West European Studies, East Asia Center, The Ellison Center for Russian, East European and Central Asian Studies, Middle East Center, South Asia Center, and Southeast Asia Center. Students can also avail themselves of the resources of other centers at the Jackson School, including the Center for Human Rights, Center for Korea Studies, East Asia Resources Center, European Union Center of Excellence, and the Latin American and Caribbean Studies Center. Students can also draw on the Jackson School's affiliation with the Center for Statistics and the Social Sciences (CSSS) for training and research purposes.

Research and training facilities for specific areas include the following: For East Asia, students have access to the East Asia Library, with a comprehensive collection of manuscripts, books, and serials on China, Japan, and Korea. In addition, the University is affiliated with the Inter-University Program for Chinese Language Studies in Beijing, language programs in Japan and the People's Republic of China sponsored by the Council on International Educational Exchange, the Inter-University Center for Japanese Language Studies in Yokohama, and other programs which provide intensive language training for advanced undergraduate and graduate students. For descriptions of research facilities in other areas, see Russia, East Europe, and Central Asia as well as South Asia under the appropriate headings above.

Financial Aid

Determinations about financial awards are made at the time of admission and during the course of a student's time at JSIS. Funding guarantees for consecutive years is contingent upon satisfactory academic progress. All accepted doctoral candidates are automatically considered for fellowships, teaching assistantships, and research assistantships. Financial support is available on a competitive basis to U.S. citizens and permanent residents in the form of Title VI Foreign Language and Area Studies Fellowships. Additional funding comes from the master's-level programs as well as other sources in the Jackson School.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

International Studies Core And Gateway Courses

JSIS 123 Introduction to Globalization (5) I&S, DIV M. SPARKE Provides an introduction to the debates over globalization. Focuses on the growth and intensification of global ties. Addresses the resulting inequalities and tensions, as well as the new opportunities for cultural and political exchange. Topics include the impacts on government, finance, labor, culture, the environment, health, and activism. Offered: jointly with GEOG 123.

JSIS 187 Study Abroad: Global (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 188 Study Abroad: Canadian Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 189 Study Abroad: African Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 190 Study Abroad: Asian Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 191 Study Abroad: East Asian Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 192 Study Abroad: South Asian Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 193 Study Abroad: Southeast Asian Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 194 Study Abroad: European Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 196 Study Abroad: Latin American and Caribbean Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 197 Study Abroad: Middle Eastern Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 200 States and Capitalism: The Origins of the Modern Global System (5) I&S Kasaba, Migdal, Yang Origins of the modern world system in the sixteenth century and its history until World War I. Interacting forces of politics and economics around the globe, with particular attention to key periods of expansion and crisis. Offered: A.

JSIS 201 The Making of the 21st Century (5) I&S Bachman, Callahan, Migdal, Radnitz Provides a historical understanding of the twentieth century and major global issues today. Focuses on interdisciplinary social science theories, methods, and information relating to global processes and on developing analytical and writing skills to engage complex questions of causation and effects of global events and forces. Recommended: JSIS 200. Offered: WSp.

JSIS 202 Cultural Interactions in an Interdependent World (5) I&S Robinson, Sorensen, Warren, Wellman Cultural interaction among societies and civilizations, particularly Western and non-Western. Intellectual, cultural, social, and artistic aspects; historical factors. Offered: Sp.

JSIS 203 Rise of Asia (5) I&S Anchordoguy, Bachman, Giebel, Sorensen Key themes in the study of Asia, with focus on the present. Topics include: the notion of "Asia;" cultural and religious similarities and differences; comparison of colonial experiences under Western and Asian powers; World War II and liberation; postwar patterns of economic and political development; social patterns and issues. Offered: A.

JSIS 385 Junior Honors Seminar (5) I&S Porter Designed to facilitate writing of honors thesis through methodological and bibliographical research. Required of honors candidates.

JSIS 387 Study Abroad - International Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 388 Study Abroad: Canadian Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 389 Study Abroad: African Studies (1-5, max. 15) I&S For participants in study abroad program. Specific content varies. Courses do not automatically apply to major/minor requirements.

JSIS 390 Study Abroad: Asian Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 391 Study Abroad: East Asian Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 392 Study Abroad: South Asian Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 393 Study Abroad: Southeast Asian Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 394 Study Abroad (1-5, max. 15) I&S For participants in Study Abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 396 Study Abroad: Latin American Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 397 Study Abroad: Middle Eastern Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 478 Special Topics (1-5, max. 15) I&S Content varies from quarter to quarter.

JSIS 480 Special Topics (1-5, max. 15) I&S Content varies.

JSIS 481 Special Topics (1-5, max. 15) I&S

JSIS 482 Special Topics (1-5, max. 15) I&S Content varies.

JSIS 483 Special Topics (1-5, max. 15) I&S Content varies.

JSIS 484 Special Topics (1-5, max. 15) I&S Course content varies.

JSIS 485 Special Topics (1-5, max. 15) I&S Topics vary.

JSIS 486 Special Topics in Southeast Asian Studies (1-5, max. 15) I&S Content varies.

JSIS 487 Special Topics (1-5, max. 15) I&S Content varies.

JSIS 488 Special Topics (1-5, max. 15) I&S

JSIS 489 Special Topics (1-5, max. 15) I&S Topics vary.

JSIS 491 Senior Honors Seminar (5-) I&S Porter Study of issues related to students' thesis topics. Develops thesis-writing skills. Open only to Jackson School honors students.

JSIS 492 Senior Honors Seminar (-5) I&S Students write a senior thesis working with their individual writing advisers.

JSIS 493 Senior Research (2) Independent research and writing under supervision of a faculty member. Open only to International Studies majors.

JSIS 494 Journal Workshop for Editors (1/2) Prepares students to be peer reviewers and editors for academic journals. Introduces the format and management processes of scholarly, peer-reviewed publications, as well as training in practical editing skills. Includes opportunities to work for the Jackson School Journal of International Studies. Credit/no-credit only. Offered: W.

JSIS 495 Task Force (5) I&S Small-group seminars address current problems in international affairs, each focusing on one specific policy question and producing a joint task force report. Restricted to senior majors in International Studies. Prerequisite: JSIS 200; JSIS 201; JSIS 202.

JSIS 497 Internship (1-5, max. 15) Credit for the completion of an approved internship in international studies. Credit/no-credit only.

JSIS 498 Readings in International Studies (5) I&S Reading and discussion of selected works of major importance in interdisciplinary international studies. Restricted to majors in International Studies.

JSIS 499 Undergraduate Research (1-5, max. 15)

JSIS 500 Origins of the Global System (5) Kasaba, Migdal Explores the development of global interdependence from the fifteenth century to World War II; the interrelationship of politics and economics; and international political economy from contextual, institutional, and historical perspectives. Offered: A.

JSIS 501 Seminar: Comparative International Studies (5) Bachman, Kasaba, Poznanski Focuses on comparison across geographical areas including comparative political economy, comparative cultures, and comparative institutions. Provides familiarity with the comparative method of inquiry, an understanding of the interplay between area studies and cross-regional theories, and skills in conducting comparative research and writing. Prerequisite: ECON 200; ECON 201. Offered: W.

JSIS 511 Research Design and Methods for International Studies (5) Chiro, Curran Review of the approaches to posing and answering research questions in the disciplines affiliated with international studies. Explores epistemological approaches and associated methodologies to prepare students to effectively read across the literature of international studies, develop their own research design based on a research question, and write a research proposal. Offered: Sp.

JSIS 513 Teaching International Studies (2, max. 4) Migdal For current and prospective teaching assistants. Includes teaching writing, leading effective discussions, the art of

evaluation, and teaching critical reading skills; videotaping of actual teaching sessions of participants in class. Credit/no-credit only.

JSIS 578 Special Topics (2-5, max. 15) Course content varies. Offered occasionally by visiting or resident faculty.

JSIS 582 Special Topics (2-5, max. 10) Course content varies. Offered occasionally by visitors or resident faculty.

JSIS 583 Special Topics (1-5, max. 15) Special topics in Asian Studies. Course content varies by instructor.

JSIS 584 Special Topics (2-5, max. 15) Course content varies. Offered occasionally by visiting or resident faculty.

JSIS 585 Special Topics (2-5, max. 15) Course content varies. Offered occasionally by visitors or resident faculty.

JSIS 586 Special Topics (1-5, max. 15) Sears Course content varies.

JSIS 587 Special Topics (3-5, max. 15) Course content varies.

JSIS 589 Special Topics (2-5, max. 15) Course content varies. Offered occasionally by visitors or resident faculty.

JSIS 591 Colloquium in International Studies (1-, max. 2) Migdal, Kasaba Required colloquium for first-year Master in International Studies (MAIS) students. Informal introduction to the faculty and major avenues of research in international studies. Credit/no-credit only.

JSIS 592 Colloquium in International Studies (-1, max. 2) Migdal, Kasaba Required colloquium for first-year Master in International Studies (MAIS) students. Informal introduction to the faculty and major avenues of research in international studies. Credit/no-credit only.

JSIS 593 Colloquium in International Studies (-1, max. 2) Migdal, Kasaba Required colloquium for first-year Master in International Studies (MAIS) students. Informal introduction to the faculty and major avenues of research in international studies. Credit/no-credit only.

JSIS 594 International and Area Studies (2) Hamilton, Kasaba, S. Pekkanen Exposes students to the four-fold thematic intellectual rubric of the school, and to the wide range of teaching and research agendas represented in the Jackson School. Required common course for all first-year graduate and doctoral students. Credit/no-credit only. Offered: A.

JSIS 595 Research Tutorial ([1-12]-, max. 12) Introduces students to social science research methods that may be applicable to their research agenda. Focuses on reading, discussion, commentary, writing, and especially rewriting under close and targeted supervision by the professor. Offered: jointly with LAW B 554.

JSIS 596 Field Seminar in Religions, Cultures, and Civilizations (5) Robinson, Wellman Exposes students to the diversity of cultural and religious life through world area studies; histories; cultural and political movements; and religious institutions and practices. Topics include religions, cultures, power, colonialism, empire, communities, nations, states, identities, alterities, civilizations, social movements, resistance, development, and security.

JSIS 597 Field Seminar in States, Markets, and Societies (5) Hamilton, R. Pekkanen, Radnitz Exposes students to theoretical and empirical debates about engagement of states with their societies and with transnational actors in their historical, political, and social settings. Topics include state formation, social change, development, state-market relations, globalization, identities, ethnicities, gender, revolutions, democratization, corruption, clientalism, civil societies, NGOs, and social movements. Offered: jointly with SOC 597.

JSIS 598 Field Seminar in Peace, Violence, and Security (5) Chiro, S. Pekkanen Exposes students to theoretical and foreign policy debates about global security challenges, conflicts, and violence, and issues of their prevention. Topics include balance of power, nationalism, ethnic conflict, genocide, offense-defense balance, weaponry,

intelligence, invasions, interventions, peacekeeping, arms control, and national security.

JSIS 599 Field Seminar in Law, Rights, and Governance (3-5) K. FRIEDMAN, A. GODOY, S. PEKKANEN, M. SPARKE Exposes students to theoretical and policy debates about the causes and consequences of legal evolution, rule of law, and a broad range of world governance concerns. Topics include human rights, markets, commerce, climate, environment, migration, institutions, justice, order, and rule of law. Offered: jointly with LAW B 568.

JSIS 600 Independent Study or Research (*-)

JSIS 602 International Studies Practicum (2-3, max. 6) Professional practicum for student in International Studies graduate programs. Credit/no-credit only.

JSIS 700 Master's Thesis (*)

JSIS 800 Doctoral Dissertation (*)

International Studies Area Studies

JSIS A 101 Israel: Dynamic Society and Global Flashpoint (5) I&S Introduces the people, institutions, and culture of Israel is the context of larger global forces. Examines domestic, regional, and international elements, both historically and in the contemporary period, that have shaped Israel's culture, politics, and special role in world affairs. Topics include nationalism, ethnicity, politics, religion, film, literature, and culture. Offered: jointly with NEAR E 150.

JSIS A 110 Introduction to Russian Culture and Civilization (5) VLPA/I&S Introduction to Russian culture and history from pre-Christian times to the present, as seen through literary texts, music, film, visual art, and historical works. All lectures and written materials in English. No prior knowledge of Russian necessary. Offered: jointly with RUSS 110.

JSIS A 121 Introduction to Human Rights in Latin America (5) I&S, DIV Godoy Overview of human rights issues and how they have evolved in recent Latin American history, from the military dictatorships of the authoritarian period to contemporary challenges faced in the region's democracies.

JSIS A 202 Introduction to South Asian History, 1500 - present (5) I&S The Islamic impact, British conquest, and contemporary India. Emphasis on the rise of nationalism, social organization, and contemporary life and history. Offered: jointly with HSTAS 202.

JSIS A 205 Filipino Histories (5) I&S Offered: jointly with HSTCMP 205.

JSIS A 206 Contemporary India and Pakistan (5) I&S Dhanvan, Kale Interdisciplinary introduction to the field of South Asian Studies. Overview of the topographic, social, and linguistic geography and history of India, Pakistan, Bangladesh, Sri Lanka, and Nepal. Examines politics, economy, social structure, religion, cultural production and the arts, popular culture, and transnationalism.

JSIS A 207 Asian Civilizations: Traditions (5) VLPA/I&S Porter Interdisciplinary introduction to the civilizations of Asia, particularly those of India, China, Japan, and Korea. Explores the religion, philosophy, literature, art, and social and political thought of these civilizations from ancient times to the 17th century.

JSIS A 210 Introduction to Islamic Civilization (5) VLPA/I&S Major developments in Islamic civilization from advent of Islam in seventh century to present. Islamic history, law, theology, and mysticism, as well as the politics, cultures, and literatures of the various Islamic societies. Offered: jointly with NEAR E 210.

JSIS A 212 History of Korean Civilization (5) I&S From earliest times to the present. Development of Korean society and culture in terms of government organization, social and economic change, literature, and art. Offered: jointly with HSTAS 212.

JSIS A 213 The Korean Peninsula and World Politics (5) I&S Ha Introduces Korean politics, economics, society, and

international relations. Overviews the development in politics, economy, and society since the late nineteenth century. Addresses the evolution of Korea in the international society by comparing Korea experience with that of China and Japan. Offered: jointly with POL S 213.

JSIS A 215 Introduction to the Modern Middle East (5) I&S Major social and political trends in the Middle East during the 18th, 19th, and 20th centuries. Basic principles of Islam and its diversity, changing balance of power during the early modern period; European colonialism and withdrawal; pan-Arabism, nationalism, feminism and religious resurgence. Offered: jointly with NEAR E 213.

JSIS A 220 Introduction to East European Studies (5) I&S *Felak* Introduction to the history of post-1945 Eastern Europe focusing on political, economic, social, cultural, and diplomatic issues. Countries surveyed include Albania, Bulgaria, Czechoslovakia, Hungary, Poland, Romania, and Yugoslavia. Offered: jointly with HSTEU 220.

JSIS A 221 History of Southeast Asia (5) I&S, DIV Surveys Southeast Asian civilizations at the outset of Western colonial rule; the colonial impact on the traditional societies of Burma, Thailand, Cambodia, Laos, Vietnam, Malaysia, Indonesia, and the Philippines; nineteenth- and twentieth-century nationalist and revolutionary movements; emergence of Southeast Asia as a region in the modern world. Offered: jointly with HSTAS 221.

JSIS A 224 Culture and Media Forms (5) VLPA/I&S Explores French, Francophone, and European culture in history through a focus on varied and evolving media forms: manuscripts, printed books, digital media, visual forms, etc. Taught in English. Offered: jointly with FRENCH 224.

JSIS A 236 Development and Challenge in Greater China (5) I&S *Chan* Studies the geography of development processes, patterns, and problems in "Greater China": mainland China, Taiwan, and Hong Kong. Covers physical geography, history, and economic and political systems, with major focus on geographical issues in China's development: agriculture, population, industry and trade, and relations with Hong Kong and Taiwan. Offered: jointly with GEOG 236.

JSIS A 241 Japanese Civilization (5) I&S Japan's civilization, including its origins, government, literature, economic institutions, material culture, social organization, and religions, in relation to the development of Japan as a society and nation. Cannot be taken for credit if SISEA 341 previously taken. Offered: jointly with HSTAS 241.

JSIS A 242 Introduction to Contemporary Japan (5) I&S R. *Pekkanen* Interdisciplinary social science introduction to various aspects of contemporary Japan, such as its politics, economics, and society. Designed to be taken either as a first course on Japan for majors or as a single-course introduction to Japan., suitable for non-majors. No prior background on Japan is necessary.

JSIS A 244 Imperialism and Anti-Colonialism in Asia (5) I&S, DIV Introduction to Western imperialism expansion, conquest, and colonial rule in Asia; the anti-colonial, nationalist resistances they engendered; and the resultant cultural, political, economic, and intellectual transformations in Asian societies. Covers post-1800 violence, racial hierarchies, human rights abuses, post-colonial memories, persistent strategies of domination, and structural inequities. Offered: jointly with HSTAS 244.

JSIS A 245 Human Rights in Asia (5) I&S, DIV *Callahan, Giebel* Introduction to recent and ongoing human rights issues in South, Southeast, and East Asia. Focuses on how human rights politics have played out in domestic political arenas. Provides exposure to views/insights into the historical context in which human rights claims, abuses, and debates arise. Offered: jointly with HSTAS 245.

JSIS A 260 Fashion, Nation, and Culture (5) VLPA/I&S *Gaylard* Introduction to Italian culture focusing on fashion and manners from the late Middle Ages to today. Explores common assumptions about nation, gender, clothes,

make-up, and manners, through literary and visual analysis. In English. Offered: jointly with ART H 260/ITAL 260; W.

JSIS A 265 The Viet Nam Wars (5) I&S *Giebel* Recent Vietnamese history and struggles for independence and national unification vis-a-vis French colonialism, Japanese occupation, American intervention, and internal divisions. Covers historical roots and contemporary contexts of revolution and war, objectives and motivations of participants, and the enormous human costs. Emphasizes socio-cultural changes and wars' legacies. Offered: jointly with HSTAS 265.

JSIS A 270 Native Peoples of the Pacific Northwest (5) I&S, DIV C. *COTE, D. MILLION* Examines indigenous societies on the Pacific Northwest's western slope, from southeast Alaska to California, including social structures and relations, subsistence strategies, belief systems, and changes over time, both before and after non-Natives' arrival. Offered: jointly with AIS 270.

JSIS A 280 Indigenous Encounters: Politics, Culture, and Representation in Latin America (5) I&S *Garcia* Explores the cultural and political transformations advanced by indigenous groups and their advocates in Latin America. Examines the concept of indigeneity, the cultural politics of indigenous mobilization, and the challenges of political economic models based on resource extraction and dispossession. Offered: jointly with CHID 280.

JSIS A 301 Europe Today (5) I&S *Ingebritsen, Lang* A multidisciplinary approach to contemporary Europe focusing on social, political, cultural, and economic change, with special reference to developments in the countries of the European Union, Scandinavia, and those in Eastern Europe in the post-Soviet era. Offered: A.

JSIS A 302 The Politics and Cultures of Europe (5) I&S *Lang* Builds upon themes and topics introduced in JSIS A 301. Provides rigorous and specialized investigation of European political institutions, societies, and cultures in the modern era. Prerequisite: JSIS A 301.

JSIS A 303 Divided Lands/Divided Lives: An Environmental History of South Asia (5) Focuses on the mobilization of South Asian tribal, peasant, and ethnic communities around ecological issues to secure social equity in the colonial and post-colonial period. Examines how the complex interactions of states and peoples have changed the ways in which nature itself is conceptualized. Offered: jointly with HSTAS 303.

JSIS A 315 Southeast Asian Civilization: Buddhist and Vietnamese (5) I&S C. *KEYES* Civilizations of Theravada Buddhist societies in Burma, Thailand, Cambodia, and Laos and in Vietnamese societies of Southeast Asia. Culture of tribal peoples who live on peripheries of these societies. Cultural transformations consequent upon the war in Indochina and resettlement of Indochinese refugees in United States. Offered: jointly with ANTH 315.

JSIS A 316 Modern South Asia (5) I&S Twentieth-century history and society of Indian subcontinent. Topics include nationalism, rural and urban life, popular culture, gender, and environmental politics. Offered: jointly with ANTH 316.

JSIS A 320 Greek History: 7000 BC to Present (5) I&S History of Greece from its Neolithic village origins to the present. Examines the different forms of one of the most resilient cultures in the human story. Offered: jointly with HSTCMP 320.

JSIS A 321 Government and Politics of Canada (5) I&S Critical analysis of parliamentary institutions, political parties, and the federal system in Canada. Offered: jointly with POL S 341.

JSIS A 322 International Political Economy of Latin America (5) I&S V. *MENALDO* Exploration of politics underlying Latin America's economic development. Topics covered include import-substituting industrialization, mercantilism, the debt crisis, neoliberalism, market integration, and poverty. Review of major theoretical perspectives such as

modernization theory, dependency, and the new political economy. Offered: jointly with POL S 322.

JSIS A 324 Human Rights in Latin America (5) I&S, DIV A. *GODOY* Overview of human rights issues and their recent evolution in Latin American history; military dictatorships; contemporary challenges in the region's democracies. Human rights concerns in relation to broader sociopolitical context. Recommended: knowledge of modern Latin American history. Offered: jointly with LSJ 322.

JSIS A 339 Social Movements in Contemporary India (5) I&S P. *RAMAMURTHY* Covers issues of social change, economic development, and identity politics in contemporary India studied through environmental and women's movements. Includes critiques of development and conflicts over forests, dams, women's rights, religious community, ethnicity, and citizenship. Offered: jointly with ANTH 339/GWSS 339.

JSIS A 340 Government and Politics of South Asia (5) I&S Comparison of problems of national integration and political development in India, Pakistan, and Sri Lanka. Offered: jointly with POL S 340.

JSIS A 341 Political Violence and the Post-Colonial State in South Asia (5) I&S, DIV Examines theoretical approaches to the analysis of collective, state, and anti-state violence in post-colonial South Asia through the study of specific cases of political violence in modern India, Pakistan, Sri Lanka, and Nepal. Offered: jointly with ANTH 341.

JSIS A 342 Government and Politics of Latin America (5) I&S Analysis of the political dynamics of change in Latin America comparing various national approaches to the political problems of modernization, economic development, and social change. Offered: jointly with POL S 342.

JSIS A 343 Politics and Change in Southeast Asia (5) I&S Government and politics in the countries of Southeast Asia, with attention given to the nature of the social and economic environments that condition them. Offered: jointly with POL S 343.

JSIS A 344 The Baltic States and Scandinavia (5) I&S Survey of the cultures and history of Estonia, Latvia, and Lithuania from the Viking Age to the present, with particular attention to Baltic-Scandinavian contacts. Offered: jointly with SCAND 344.

JSIS A 345 Baltic Cultures (5) VLPA/I&S Cultures and peoples of Estonia, Latvia, and Lithuania. Baltic literature, music, art, and film in social and historical context. Traditional contacts with Scandinavia and Central and East Europe. Offered: jointly with SCAND 345.

JSIS A 346 Alternative Routes to Modernity (5) I&S Routes to modernity followed by non-Western societies between 1600 and 1900. Historical experiences of non-Western societies seen in the context of European history and of development theory. Emphasizes primary sources and techniques for posing theoretical questions of historical data. Offered: jointly with HSTAS 348.

JSIS A 348 European Union as Global Actor (5) I&S Surveys the European Union's evolution as a global actor and emergence as a potential superpower with increasingly unified foreign and defense policies. Covers institutions and interests that have driven this process; specific examples of European Union global engagement; and the potential implications for U.S. foreign policy. Offered: jointly with POL S 348.

JSIS A 351 Scandinavia, the European Union, and Global Climate Change (5) I&S Reviews the history of climate change, the role of Swedish scientist Svante Arrhenius in defining greenhouse effects, Scandinavian policy response, and the role of the European Union in global climate change. Offered: jointly with SCAND 351; WSp.

JSIS A 355 Social Change in Latin America (5) I&S Explores cultures, identities, political economy, and popular mobilization in Latin America. Examines relations of power and production between social classes and ethnic groups,

as well as ideologies and intellectual movements. Offered: jointly with SOC 355.

JSIS A 356 Canadian Society (5) I&S Origins to the present in its North American setting; political development, cultural evolution, and emergence of multinationalism; economic base; arts and literature; problems of the environment; Canadian foreign relations.

JSIS A 360 Contemporary Spain (5) VLPA/I&S *Raneda* Social, political, and cultural developments in Spain since the end of the Franco dictatorship in 1975. Extensive use of Spanish Web sites. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330. Offered: jointly with SPAN 360.

JSIS A 364 Modern Greece: 1821 to the Present (5) I&S Politics and society of Greece from War of Independence to the present. Emergence and development of the Greek state; Greece in the world wars; civil war and post-war politics; military dictatorship; transition to democracy; recent developments. No prior study of Greece assumed. Offered: jointly with HSTEU 364.

JSIS A 367 Southeast Asian Activism and Social Engagement (5) I&S *Rafael* Investigates how Southeast Asian activism is tied to the histories of political struggle within Southeast Asia and to questions of diasporic Asian American identity. Engages in group research projects exploring the meaning of social activism within local communities. Offered: jointly with HSTCMP 367.

JSIS A 370 Han Chinese Society and Culture (5) I&S *S. HARRELL* Themes in the society and culture of the Han Chinese people. Concepts of self; personal interaction; family, gender, and marriage; communities and the state; religion and ritual; class, social categories, and social mobility; culturalism, nationalism, and patriotism. Offered: jointly with ANTH 370.

JSIS A 375 History of Canada (5) I&S General survey and analysis of political, economic, social, and cultural aspects of Canadian history from the foundation of New France to present; Canadian-American relations, the rise of Quebec nationalism, and the development of the Canadian West. Offered: jointly with HSTAA 377.

JSIS A 376 Violence, Myth, and Memory (5) VLPA/I&S, DIV *Benitez, Sears* Explores how images and ideas of power, violence, and global modernity circulate in films and novels, memories and discourses about U.S. relations with Vietnam, the Philippines, and Indonesia. Topics include foundational myths, colonial and post-colonial encounters, historiography and narrative, and nationalist and ethnic identity formations. Offered: jointly with C LIT 376.

JSIS A 379 Turkic Peoples of Central Asia (3) I&S History of the Turkic peoples, AD 552 to present. Emphasis on current status of Turkic peoples in Central Asia. Geographical distribution, demographic data, reactions and adaptations to changes resulting from the 1917 revolution. Turkic viewpoint on past and present developments. Offered: jointly with NEAR E 375.

JSIS A 401 Asia and the World (5) I&S *Bachman* Overview of major issues and developments in the interactions of Northeast and Southeast Asia and the world. Topics include economic development and integration, sources of instability, and historical patterns of relations. Particular focus on major current issues related to the region. Prerequisite: JSIS 201, JSIS 202.

JSIS A 402 The Middle East in the Modern World (5) I&S *Kasaba* Economic, political, and cultural ties between the Middle East and the modern world between the eighteenth century and the present. Particular attention to the transformation of societies, formation of modern states, the relationship between Islam and democracy, and gender and society in the Middle East.

JSIS A 403 Politics of Representation in Modern China (5) I&S *A. ANAGNOST* Focuses on issues of representation and power in twentieth century China. Combines substantive information on modern Chinese society and culture

with recent debates in social theory and the politics of representation. Major themes include Chinese nationalism, body politics, popular culture, and everyday practice. Offered: jointly with ANTH 444.

JSIS A 404 Religion in China (5) I&S *Tokuno* Covers major doctrinal and practical themes and patterns and their historical developments in Confucianism, Daoism, Buddhism, and popular religion; their mutual interactions and influences as well as the relationship between the state and religion. Recommended: China or Asia related course(s) in the social sciences, history, or literature.

JSIS A 405 Social Transformation of Modern East Asia (5) I&S *Sorensen* Comparative study of social change in China, Japan, Korea, and Vietnam since 1945. Concentration on small-scale social units in rural and urban areas under both communist and capitalist political systems. Recommended: two history or anthropology of East Asia courses. Offered: jointly with ANTH 449.

JSIS A 406 China's Environment (5) I&S *S. HARRELL* Analysis of contemporary environmental problems in China, including population, food, water supply, pollution, biodiversity, and environmental activism. Combines natural science and social science perspectives. Prerequisite: either ANTH 210, ENVIR 201, JSIS 200, JSIS 201, or JSIS 202. Offered: jointly with ANTH 406.

JSIS A 407 Global Futures in East Asia (5) I&S *A. ANAGNOST* Explores interlinked modernity projects in China, Japan, Korea, and Taiwan and how the education of youth figures in projects of national development and international economic competition. Recommended: prior courses in socio-cultural anthropology and East Asian studies. Offered: jointly with ANTH 407; AWSpS.

JSIS A 408 Government and Politics of China (5) I&S *WHITING* Post-1949 government and politics, with emphasis on problems of political change in modern China. Offered: jointly with POL S 442.

JSIS A 412 South Asian Social Structure (5) I&S Examines caste, class, and community in modern India. Transitions from colonial typology to analysis of social change, diversity, stability, and caste hierarchy in rural society. Current debates on class and community in Indian society, rural and urban, explored through themes of identity, structure, and mobility. Prerequisite: one 200-level ANTH course. Offered: jointly with ANTH 412.

JSIS A 413 African Studies Seminar (5, max. 15) I&S Interdisciplinary seminar focusing upon one particular aspect of the African continent. Emphasis may be humanistic, social scientific, or historical. African Studies faculty and visiting scholars lecture on areas of their own expertise.

JSIS A 416 North Atlantic Treaty Organization (5) I&S Explores the history of NATO since 1949. Case studies include German unification; evolving security relationship between NATO, the USSR, and its successor states; process of NATO enlargement; emergence of human rights as a priority in NATO's security interactions with non-member states; and NATO's role in ethno-nationalist-religious conflicts in the Balkans.

JSIS A 417 Political Economy of India (5) I&S Analysis of relationships among processes of economic change, political institutions, and structures of political power in contemporary India. Includes contrasting approaches to Indian economic development, land reform, radical and agrarian political movements, and role of foreign aid. Offered: jointly with POL S 417.

JSIS A 418 Eastern Europe: the Political Economy of the Region (5) I&S *Poznanski* Focus on the classical command-type economy and the most recent economic and political transition in Eastern Europe. Analysis of current institutional reform, privatization, and trade relations.

JSIS A 419 Southeast Asian Knowledge and the Politics of Information (5) I&S *Henchy* Overview of information resources in and about Southeast Asia, including evaluation of those sources within various theoretical articulations

(scholastic, cultural, and political). Pedagogical implications of the life cycle of information; critique of these implications from various theoretical and cultural viewpoints.

JSIS A 420 Post-Soviet Security (5) I&S *Radnitz* Examines security issues in Eurasia, emphasizing human over international security. Focuses on problems stemming from the collapse of the Soviet Union, covering topics such as weak states, civil wars, nationalism, corruption, and authoritarianism. Includes Russia's relations with former Soviet republics and U.S.-Russian relations.

JSIS A 422 First Nations Filmmaking in Canada (5) VLPA *Cote* Examines First Nations video production in Canada; how film is utilized as a medium for addressing issues significant to First Nations. First Nations filmmakers "decolonize" the screen by providing real and positive images of First Nations people that correspond to their cultural and social experiences. Offered: jointly with AIS 465.

JSIS A 423 History of Modern Japan (5) I&S Political, social, economic, and cultural development of Japan from the late Tokugawa period to the present with special emphasis on the cultural impact of the West. Recommended: JSIS A 242. Offered: jointly with HSTAS 423.

JSIS A 424 The Emergence of Postwar Japan (5) I&S *Pyle* The making of modern Japan; World War II and surrender; American occupation; postoccupation rebuilding; emergence as an industrial power. Recommended: JSIS A 242. Offered: jointly with HSTAS 424.

JSIS A 425 European Media Systems (5) I&S Examines media systems in selected countries in Europe and policy issues that link (or divide) members of the European Union and other major media producers. Media studied in context of the contemporary economic, social, political, and cultural milieu in which they operate. Offered: jointly with COM 425.

JSIS A 426 First Nations Government and Politics in Canada (5) I&S *Cote* Focuses on First Nations government and politics in Canada. Examines development of First Nations political governing structures with an introduction to the values, perspectives, concepts, and principles in Native political cultures. Explores federal Indian policy in context of First Nations strategies to become self-governing. Offered: jointly with AIS 461.

JSIS A 427 Anthropology of the Post-Soviet States (5) I&S *L. BILANIUK* Analysis of Soviet and post-Soviet culture and identity. Historical transformations in Soviet approaches to ethnicity and nationality; contemporary processes of nation building and interethnic conflict. Examination of culture through the intersection of social ritual, government policies, language, economic practices, and daily life. Regional focus varies. Offered: jointly with ANTH 425.

JSIS A 429 Eco-Capitalism (5) I&S *Ingebritsen* Explores the idea of environmentalism and sustainability across societies. Compares and contrasts how prominent authors in the field assess the risks and opportunities of human effects on climate and ecology. Questions explored include: will ecological solutions be critical to the revival of the global economy? Why do place such as Europe adapt more readily to environmental challenges? Offered: jointly with SCAND 479.

JSIS A 430 Security Affairs of Russia and Eurasia (5) I&S *Jones* Surveys history of Soviet military and Soviet empire from 1917 to 1985, breakup of the USSR during 1985 to 1991, and the emergence of new security issues among those Eurasian states that formally constituted the national components of the USSR and its communist military allies.

JSIS A 431 Demographic Issues in Asia (3-5) I&S *Hirschman, Lavelly* Contemporary Asian countries face a number of issues with demographic components, including environmental and resource issues, ethnic rivalries, international migration, and public health. Addresses a set of these issues by focusing on the demography of one or more countries in Asia. Offered: jointly with SOC 434.

JSIS A 433 Paris: Architecture and Urbanism (3/5) VLPA/I&S Spans the architectural history of Paris, from its Gallic, pre-Roman origins in the second century BCE through the work of twenty-first century architects. Focuses on changing patterns of the physical fabric of the city and its buildings, as seen within the context of the broader political, social, economic, and cultural history. Offered: jointly with ARCH 458/ART H 494.

JSIS A 434 International Relations of South Asia (5) I&S Interrelationships of domestic, interstate, and extraregional forces and their effects upon the resolution or expansion of interstate conflicts in South Asia. Offered: jointly with POL S 434.

JSIS A 435 Japanese Government and Politics (5) I&S Government and politics of Japan with emphasis on the period since 1945. Recommended: JSIS A 242. Offered: jointly with POL S 435.

JSIS A 436 Political Parties in Japan and East Asia (5) I&S R. Pekkanen Focus on political parties in Japan. Combines theoretical readings on political parties with intensive study of Japanese political parties. Recommended: either JSIS A 242, JSIS A/POL S 435, or JSIS A 424/HSTAS 424. Offered: jointly with POL S 429.

JSIS A 437 International Relations of Japan (5) I&S S. Pekkanen Comprehensive examination of Japan's international relations. Covers issues such as trade, security, environment, aid, and human rights. Investigates Japan's participation in international organizations, including the UN, World Bank, IMF, and WTO. Examines Japan's relations with the United States, the European Union, Asia, Latin America, Africa, and other regions. Recommended: JSIS A 242. Offered: jointly with POL S 424.

JSIS A 438 Social and Political Geographies of South Asia (5) I&S Introduces the social and political geographies of South Asia through reference to agrarian change in India. Outlines key concepts related to the reproduction of inequality in the region, particularly theories of caste, class, gender, and religious communalism, and examines the mechanisms through which these inequalities are reproduced in South Asia. Offered: jointly with GEOG 436.

JSIS A 439 Politics of Divided Korea (5) I&S Governments, politics, and economy of South and North Korea, the inter-Korea relations, and the two Koreas' relationship with the major powers - especially the United States - with emphasis on the post-cold war period. Offered: jointly with POL S 439.

JSIS A 441 Quebecois Literature (5) VLPA Readings of novels, plays, and occasionally, poetry. Special attention paid to how Quebecois authors represent in their works the complex socio-political reality of their culture. Conducted in French. French majors required to read and write in French; all others may read and write in English. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307. Offered: jointly with FRENCH 441.

JSIS A 442 War and Occupation in Northern Europe: History, Fiction, and Memoir (5) VLPA/I&S The study of literary representations (fiction, memoirs, and personal narratives) dealing with World War II and the occupation of the Nordic and Baltic countries. Offered: jointly with SCAND 445.

JSIS A 443 Medieval Russia: 850-1700 (5) I&S Development of Russia from earliest times to the reign of Peter the Great. Offered: jointly with HSTAM 443.

JSIS A 444 Imperial Russia: 1700-1900 (5) I&S Development of Russia from Peter the Great to Nicholas II. Offered: jointly with HSTEU 444.

JSIS A 445 The Rise and Fall of the Soviet Union (5) I&S Russia and the USSR from Nicholas II to the present. Offered: jointly with HSTEU 445.

JSIS A 447 Literature and Society in Southeast Asia (5, max. 10) VLPA/I&S C. LOWE Focus on either Vietnam or Thailand. Provides students with opportunity to explore how those living in Southeast Asia have reflected on the

radical social changes their societies have undergone through novels, short stories, and poetry. Prerequisite: either one 200-level ANTH course or LING 203. Offered: jointly with ANTH 445.

JSIS A 448 Modern Korean Society (5) I&S Sorensen Social organization and values of twentieth-century Korea. Changes in family and kinship, gender relations, rural society, urban life, education, and industrial organization since 1900. Differences between North and South Korea since 1945. Recommended: HSTAS 212/JSIS A 212. Offered: jointly with ANTH 448.

JSIS A 449 Anthropology of Modern Japan (5) I&S Examines the problem of modernity in Japan since the late nineteenth century, with emphasis on contemporary Japan. Critically addresses previous anthropological work concerning patterns of Japanese "culture." Particular focus on the influence of modern forms of power, media, and exchange in the construction of present-day Japan. Offered: jointly with ANTH 443.

JSIS A 452 Global Asia (5) I&S S. WELLAND Explores how Asia has been constructed through transnational interactions such as imperialism, anti-colonialism, tourism, diaspora, and global capitalism. Topics include the cultural construction of similarity and difference, politics of representation, and political economy of global circulations of people and things. Prerequisite: one 200-level ANTH course. Offered: jointly with ANTH 442/GWSS 446; W.

JSIS A 454 History of Modern China (5) I&S Social, cultural, political, economic, and intellectual transformations and continuities in China from the end of the imperial period to the present. Offered: jointly with HSTAS 454.

JSIS A 455 Baltic States Since 1991 (5) I&S Intensive interdisciplinary survey of social, political, and economic developments in Estonia, Latvia, and Lithuania since 1991. Offered: jointly with SCAND 455.

JSIS A 456 Topics in Chinese Social History (5) I&S Surveys major issues and approaches to the study of the role of the Chinese people in China's historical development. Historical focus of course varies with instructor. Recommended: either HSTAS 211, HSTAS 452, HSTAS 453, or HSTAS/JSIS A 454. Offered: jointly with HSTAS 456.

JSIS A 457 Current Issues in the Arab Media (5, max. 15) VLPA/I&S Hamd Critical discussions on the dominant issues confronting the Arab world today. Examines Arab societies as they face the challenges of contemporary globalism. Emphasizes language proficiency and cultural competence. Taught in Arabic. Recommended: third-year Arabic. Offered: AWSp.

JSIS A 458 Israel: Politics and Society (5) I&S, DIV Migdal Examines how parts of the mosaic of Israel's ethnic groups and religions have interacted over time to create today's society. Focus on politics, especially interaction of the state with the mosaic society. The religious divide; the Jewish ethnic divide; Palestinians in Israel; war and its effect on Israel; the long road to peace.

JSIS A 459 United States-China Relations (5) I&S Bachman Surveys the history of United States-China relations and examines the evolution of bilateral relations, particularly since 1949. Focus on the period since 1972 and the major issues as they have evolved since that time, including trade, human rights, security, and Taiwan. Offered: jointly with POL S 419.

JSIS A 460 Cities in China: Past and Present (5) I&S Dong Economic, political, social, and cultural functions of the city in modern Chinese history. Changes in China's urban system. The city as cultural center and focus of literary and cinematic representation. Attention to architecture, commerce, urbanization, the role of capital cities in the power of the state. Offered: jointly with HSTAS 460.

JSIS A 461 Ramayana in Comparative Perspective (5) VLPA Pauwels Examines and compares different versions (mainly South Asian) of the Ramayana, including the widely popular television version. Focuses on some famous and

controversial passages, with special attention to gender issues. Incorporates background readings from the most recent research. Offered: jointly with ASIAN 494.

JSIS A 462 Islam, Mysticism, Politics and Performance in Indonesian Culture (5) VLPA/I&S Examines how Indonesia, the world's fourth most-populous country, with the largest Islamic population, weaves together local practices and influences from India and Persia. Offers ways of understanding modern Indonesian performing arts, religion, and politics. Offered: jointly with HSTAS 466.

JSIS A 463 Topics in Southeast Asian History and Society (5) I&S Introduces major issues within the history and culture of one country of Southeast Asia. Content varies. Topics may include religion, economics, colonialism, perspectives on gender, labor history, literatures, popular culture, and performing arts. Focuses on a different Southeast Asian country each time offered.

JSIS A 464 Contemporary Society in the People's Republic of China (5) I&S Lavelly Separate development of rural and urban social institutions in the People's Republic of China since 1949 from a sociological perspective. Family and marriage, social control, educational institutions. Dilemmas of contemporary China and reasons for institutional change. Offered: jointly with SOC 464.

JSIS A 465 International Humanitarian Law (5) I&S Lorenz Investigates International Humanitarian Law (sometimes called the Law of Armed Conflict), the field concerned with rules developed by civilized nations to protect the victims of armed conflict, including the Geneva Conventions. Case studies include the conflict between Israel and the Palestinians, as well as developments in Afghanistan and Iraq.

JSIS A 466 Comparative Politics and Korea Studies (5) I&S Ha Approaches Korean politics, political economy, and society from a comparative perspective. Examples of major comparative questions based on Korean case include democratization, strong state dynamics, civil society, and impact of globalization. Offered: jointly with POL S 480.

JSIS A 467 China's Rise and Its Global Implications (5) I&S Bachman Examines the consequences of China's dramatic rise - three decades of very high rates of economic growth - on China and on the World. Fundamental concerns are how China's rise is changing the institutions and practices of the world order, and whether China is increasingly socialized into global norms. Prerequisite: JSIS 202.

JSIS A 470 Minority Peoples of China (5) I&S, DIV S. HARRELL Interaction between China and the peoples of its periphery, including inner Asia, Tibet, northern mainland Southeast Asia, and aboriginal peoples of Taiwan. Emphasis on ethnicity, ethnic group consciousness, and role of the Chinese state. Prerequisite: one 200-level ANTH course; LING 203; either ANTH 370/JSIS A 370 or HSTAS 454. Offered: jointly with ANTH 470.

JSIS A 471 New Orders in East Asia (5) I&S Pyle Rise and fall of successive international systems in East Asia over the past 150 years: Sino-centric, imperialist, Washington Treaty system, Japan's East Asian order, Yalta system, cold-war system. Post-cold-war search for a new order. Special attention to triangular relations among the United States, China, and Japan. Recommended: JSIS A 242.

JSIS A 472 Science, Technology, and Innovation Policies in East Asia (5) I&S Anchordoguy Role of state and technological change in economic development. Analyzes state and corporate technology policies historically. Basic technology concepts, institutions, and policies in Japan, South Korea, Taiwan, and China. Examines sources of Asia's rise in world of technology and explores whether conditions for its success will continue. Recommended: one JSIS course. Offered: jointly with I BUS 461.

JSIS A 473 Political Economy of Postwar Japan (5) I&S Anchordoguy Political and economic problems of Japan since 1945. Utility of competing theoretical approaches to analysis of government and economy of Japan. Policy-making processes and effects of policies adopted. Some

knowledge of postwar Japan desirable. Recommended: JSIS A 242.

JSIS A 474 Civil Society in Japan and East Asia (5) I&S R. Pekkanen Examines a wide range of nongovernmental organizations (NGOs) nonprofits, and voluntary groups under the unifying rubric of civil society. Theoretical introduction to civil society and ideas of social capital. Investigates general aspects of civil society, focusing on its specific characteristics in Japan and other parts of Asia. Recommended: JSIS A 242.

JSIS A 475 Japanese Society (5) I&S Discusses rapidly changing Japanese society and history of its unique aspects. Readings and lectures in sociology, anthropology, economics, and politics; emphasis on Japanese search for cultural identity and prevalent interpretations of Japanese society and behavior. Recommended: JSIS A 242.

JSIS A 477 Readings on Political Economy of Japan and Northeast Asia (5) Anchoroguy Analyzes major Political Economy issues in Japan, Korea, and China, such as the state's role in industrial development, trade and investment in Asia, trade and security relations with the United States, and Asian models of capitalism.

JSIS A 478 Japanese Business and Technology (5) I&S Anchoroguy Examination of Japan's postwar enterprise system in its historical context. Topics include corporate and financial structure, production and distribution, trade and investment policies, government-business relations, system of innovation, technological developments, prospects for the future. Offered: jointly with I BUS 462.

JSIS A 479 Contemporary Central Asian Politics (5) I&S Radnitz Examines the politics of contemporary post-Soviet Central Asia. Analyzes issues relevant to the region in comparative perspective, including democratization, religion, terrorism, civil society, economic reform, ethnic identity, and international influences. Uses theory to shed light on current policy debates. Offered: jointly with POL S 479.

JSIS A 480 Kierkegaard and Decadence in European Literature (5) VLPA Reading and discussion of core texts by Søren Kierkegaard, as well as a consideration of the relationship between Kierkegaardian thought and the literary practice of various writers of Scandinavian and European decadence. Offered: jointly with SCAND 480.

JSIS A 481 August Strindberg and European Cultural History (5) VLPA/I&S Examines the work of Swedish dramatist, novelist, and painter August Strindberg, in the context of European literary movements and history of ideas from 1880 to 1912, and Strindberg's influence on twentieth-century drama and film. Offered: jointly with SCAND 481.

JSIS A 482 Knut Hamsun and Early European Modernism (5) VLPA Reading and discussion of significant novels by Knut Hamsun, whose oeuvre is considered in the context of works by other European modernist writers. Offered: jointly with SCAND 482.

JSIS A 483 Technology and Culture in the Making of Contemporary Empires (5) I&S Benitez, Rodríguez-Silva Explores struggles shaping organization of US empire in the early twentieth century, focusing on sites where empire's material, cultural, and ideological boundaries were drawn and contested. Includes race, gender and class as colonial formation; technologies of imperial governance such as public health, citizenship, and territory. Offered: jointly with HSTCMP 483.

JSIS A 485 Culture, Politics, and Violence in Latin America (5) I&S, DIV García Examines notions of "otherness" and the power to label as central to understanding inequality, human rights, and social struggle. Uses academic texts, films, documentaries, historical fiction, plays, and testimonials to interrogate the complexities of violence and social justice in Latin America, one of the most unequal regions in the world. Offered: jointly with CHID 487.

JSIS A 486 Photography and Cultural Studies in Latin America (5) VLPA/I&S Steele Interdisciplinary exploration of the connections between visual anthropology (ethnogra-

phy through photography and film), documentary and art photography, and colonial and post-colonial discourse in Latin America during the twentieth century. Prerequisite: either SPAN 303 or SPAN 316; SPAN 322. Offered: jointly with SPAN 486.

JSIS A 487 Japanese Trade Politics (5) I&S R. Pekkanen Survey of Japan's foreign trade diplomacy. Examines evolution of Japan's trade patterns in exports and foreign direct investment with key partners. Covers institutional and legal frameworks of Japan's trade relations, such as bilateral fora, regional options including free trade agreements, and multilateral venues such as the WTO. Recommended: either JSIS A 437 or POL S 424. Offered: jointly with POL S 418.

JSIS A 489 The Mexico-U.S. Border in Literature and Film (5) VLPA/I&S Steele Analysis of the Mexico-U.S. Border region in literature and film of the 1990s and early 2000s. Includes migration, tourism, NGOs, globalization, transnational commerce, multiculturalism, and politics of gender, sexuality, and race. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Offered: jointly with SPAN 489.

JSIS A 491 Methodologies in Near Eastern Studies (5) Investigates prevalent approaches through a survey of scholarship on Near and Middle Eastern civilizations across time periods, cultures, and communities. Examines discourses developed on polytheistic and monotheistic religions, imperial and nationalist social systems, and ideological frameworks, such as Orientalism. Offered: jointly with NEAR E 491.

JSIS A 492 Latin American Studies Seminar (5, max. 15) I&S

JSIS A 494 Senior Seminar (5) I&S Introduction to research into European topics and to the analysis of problems.

JSIS A 495 Thesis Seminar (5) I&S Writing and discussion of senior thesis. Offered: Sp.

JSIS A 498 Seminar: Canadian Problems (5) I&S Major issues pertaining to Canadian society, government, and economic development.

JSIS A 504 Bibliography and Research Methods (5) Introduction to bibliographic and other scholarly resources in field; development of research techniques. Some use of relevant language required. Required of all first-year MAIS students. Offered: A.

JSIS A 506 Study of Southeast Asia (5) Lowe Focuses on questioning what it means to create knowledge about the region.

JSIS A 508 Interdisciplinary Study of South Asia I (5) Examines key themes and debates about the development of South Asian cultural and political formations. Examines how different scholarly disciplines, particularly those in the social sciences, analyze political transitions, social change, and cultural transformations in South Asia through the twentieth century. Offered: W.

JSIS A 509 Interdisciplinary Study of South Asia II (5) Kale Examination of key themes and debates about the development of South Asian cultural and political formations. Examines how different scholarly disciplines, particularly those in the social sciences, analyze political transitions, social change, and cultural transformations in South Asia through the twentieth century. Offered: W.

JSIS A 510 South Asian Studies Research Design Seminar (5) Robinson Interdisciplinary seminar for graduate students in which research and writing on individual research topics are critically developed. Designed to provide each student with an opportunity to synthesize his or her studies on South Asia. Prerequisite: JSIS A 508; JSIS A 509 or permission of graduate program coordinator.

JSIS A 512 Russian, East European and Central Asian Studies Certificate Capstone (1) Includes the preparation and presentation of the student portfolio required for the Russian, Eastern European, and Central Asian Studies certificate. Credit/no-credit only. Offered: AWSp.

JSIS A 513 Capstone Portfolio (1) Includes the preparation and presentation of the student portfolio required for the South Asia Certificate.

JSIS A 514 Thesis Seminar I (2-) Mikkelsen Review of research techniques: preparation for drafting master's thesis. Required of all first-year MAIS students. Offered: Sp.

JSIS A 515 Thesis Seminar II (-2) Mikkelsen Seminar to complete draft of master's thesis. Some use of relevant language required. Required of all second-year MAIS students. Offered: W.

JSIS A 516 North Atlantic Treaty Organization (5) Explores the history of NATO since 1949. Case studies include German unification; evolving security relationship between NATO, the USSR, and its successor states; process of NATO enlargement; emergence of human rights as a priority in NATO's security interactions with non-member states; and NATO's role in ethno-nationalist-religious conflicts in the Balkans.

JSIS A 519 Southeast Asian Knowledge and the Politics of Information (5) VLPA/I&S Henchy Reviews information resources in and about Southeast Asia, including evaluating those sources within various theoretical articulations (scholastic, cultural, and political). Covers the pedagogical implications of the life cycle of information; and critique of these implications from various theoretical and cultural viewpoints.

JSIS A 520 Post-Soviet Security (5) Radnitz Examines security issues in Eurasia, emphasizing human over international security. Focuses on problems stemming from the collapse of the Soviet Union, covering topics such as weak states, civil wars, nationalism, corruption, and authoritarianism. Includes Russia's relations with former Soviet republics and U.S.-Russian relations.

JSIS A 521 Seminar: Introduction to the Interdisciplinary Study of China (5-) Bachman, Dong, Guy

JSIS A 522 Seminar: Introduction to the Interdisciplinary Study of China (-5) Bachman, Dong, Guy

JSIS A 526 The Security of China (5) Bachman Examines how the Chinese state conceptualizes its national security interests and how it pursues strategies designed to achieve those interests. Topics include use of force, military modernization, civil-military relations, and defense industrialization. Offered: jointly with POL S 526.

JSIS A 529 Eco-Capitalism (5) Ingebritsen Explores the idea of environmentalism and sustainability across societies. Compares and contrasts how prominent authors in the field assess the risks and opportunities of human effects on climate and ecology. Questions explored include: will ecological solutions be critical to the revival of the global economy? Why do place such as Europe adapt more readily to environmental challenges? Offered: jointly with SCAND 579.

JSIS A 531 Social Movements in Contemporary India (5) P. RAMAMURTHY Covers issues of social change, economic development, and identity politics in contemporary India studied through environmental and women's movements. Includes critiques of development and conflicts over forests, dams, women's rights, religious community, ethnicity, and citizenship. Offered: jointly with ANTH 539/GWSS 539.

JSIS A 532 The Chinese Political System (5) S. WHITING Examination of key approaches, interpretations, and secondary literature in the study of contemporary Chinese politics. Offered: jointly with POL S 532.

JSIS A 534 Indonesian Histories, Oral Traditions, and Archives (5) Explores the inscription of Indonesian histories and stories. Focuses on oral traditions, oral testimonies, and archives. Investigates how oral and written testimonies enter historical archives. Explores theoretical work on literary and performance traditions as they relate to nationalism and Islam in Indonesia. Offered: jointly with HSTAS 534.

JSIS A 535 International Relations of Modern China (5) Foreign policy of the People's Republic of China: historical antecedents; domestic and international systemic determinants; and Chinese policies toward major states, regions, and issues. Prerequisite: a course on contemporary Chinese politics or history, or permission of instructor. Offered: jointly with POL S 535.

JSIS A 536 Political Parties in Japan and East Asia (5) *R. Pekkanen* Focus on political parties in Japan. Combines theoretical readings on political parties with intensive study of Japanese political parties. Recommended: either JSIS A 242, JSIS A 423, JSIS A 424, or JSIS A 473.

JSIS A 537 International Relations in Japan (5) *S. Pekkanen* Comprehensive examination of Japan's international relations. Covers issues such as trade, security, environment, aid, and human rights. Investigates Japan's participation in international organizations, including the UN, World Bank, IMF, and WTO. Examines Japan's relations with the United States, the European Union, Asia, Latin America, Africa, and other regions. Not open to students who have taken JSIS A 437.

JSIS A 540 Japanese Law (4) Basic institutions and processes of the Japanese legal system. Historical development and traditional role of law, reception of Western law, and cultural and structural factors that influence the function of law and legal institutions. Offered: jointly with LAW B 540.

JSIS A 541 Chinese Law (4) Introduction to the institutions and processes of the Chinese legal system. Focuses on the contemporary system and its role in relation to political, economic, and social developments. Examines legal aspects governing foreign trade and investment in China. Offered: jointly with LAW B 541.

JSIS A 543 Japan, the United States, and New Orders in Asia (5) *Pyle* Seeks historical understanding of establishment of new order in contemporary East Asia. Analyzes the imperialist, Washington conference, and cold war systems and explores the present post-cold war search for a new order. Prerequisite: one course in modern Japanese history, political economy, or political science.

JSIS A 544 Reading Seminar on Middle East Studies (2) Middle Eastern historiography, Islamic law, Islamic theology, relations between the Middle East and the world economy, political structures, social movements in the Middle East. Credit/no-credit only.

JSIS A 545 Reading Seminar on Middle East Studies (2) Middle Eastern historiography, Islamic law, Islamic theology, relations between the Middle East and the world economy, political structures, social movements in the Middle East. Credit/no-credit only.

JSIS A 546 Reading Seminar on Middle East Studies (2) Middle Eastern historiography, Islamic law, Islamic theology, relations between the Middle East and the world economy, political structures, social movements in the Middle East. Credit/no-credit only.

JSIS A 548 National Security of Japan (5) *S. Pekkanen* Focuses on the changing landscape of Japan's national security concerns—the actors, institutions, and circumstances that have brought issues of defense and rivalry to the center stage of Japanese politics. Topics include nationalism, militarization, pacifism, United States-Japan security alliance, Sino-Japanese competition, constitutional revision, collective defense, and spy satellites.

JSIS A 551 International Relations of Northeast Asia (5) *Hellmann* Comprehensive survey of contemporary international relations of Northeast Asia with emphasis on Russia, Japan, China, and the United States. Multidisciplinary approach placing contemporary problems in historical context, drawing on modern social science theories. Connections between defense and economics are examined. Prerequisite: permission of instructor. Offered: jointly with POL S 539.

JSIS A 552 Industrialization and International Relations (5) *Ha* Examines internal-external linkage with a focus on industrialization and international relations. Comparative perspective on the question of how industrialization shapes distinctive international perspectives in terms of perception, strategies, and foreign policy behaviors. Countries covered: South Korea, Japan, Prussia, the Soviet Union, and China. Offered: jointly with POL S 560.

JSIS A 555 Introduction to Japanese Studies (3-6, max. 6) *Anchoroguy* Interdisciplinary introduction to the study of Japan, with emphasis on historical development. Required seminar for first-year graduate students.

JSIS A 560 Seminar in Turkish Studies (2, max. 12) Recent research and writings focused on the Ottoman Empire and modern Turkey. Credit /no credit only. Credit/no-credit only.

JSIS A 563 Approaches to East European Politics (3-5) Selected concepts and methodologies useful for the analysis of politics and social structure in the socialist countries of east-central and southeastern Europe. Prerequisite: permission of instructor. Offered: jointly with POL S 537.

JSIS A 566 Comparative Politics and Korea Studies (5) *Ha* Approaches Korean politics, political economy, and society from a comparative perspective. Examples of major comparative questions based on Korean case include democratization, strong state dynamics, civil society, and impact of globalization. Offered: jointly with POL S 580.

JSIS A 573 Political Economy of Post War Japan (5) *Anchoroguy* Political and economic problems of Japan since 1945. Utility of competing theoretical approaches to analysis of government and economy of Japan. Policy-making processes and effects of policies adopted. Recommended: some knowledge of postwar Japan.

JSIS A 574 Civil Society in Japan and East Asia (5) *R. Pekkanen* Examines a wide range of nongovernmental organizations (NGOs), nonprofits, and voluntary groups under the unifying rubric of civil society. Theoretical introduction to civil society and ideas of social capital. Investigates general aspects of civil society, focusing on its specific characteristics in Japan and other parts of Asia. Not open to students who have taken JSIS A 474.

JSIS A 575 Seminar on Japanese Society (5) Interdisciplinary seminar with class-led discussions on readings from anthropology, history, sociology, and nondiscipline-specific articles on Japanese society. Prerequisite: background on Japan. Not open to students who have taken JSIS A 475.

JSIS A 576 Modern Chinese History (5) Introduction to the major English-language literature on modern Chinese history and to the major historiographical issues of the period. Prerequisite: HSTAS 454 or equivalent, and permission of instructor. Offered: jointly with HSTAS 579.

JSIS A 577 Readings on Political Economy of Japan and Northeast Asia (5) *Anchoroguy* Analysis of major issues in Japan and also in Korea and China, such as the state's role in industrial development, trade and investment in Asia, trade and security relations with the U.S., and Asian models of capitalism.

JSIS A 578 Japanese Business and Technology (5) *Anchoroguy* Examination of Japan's postwar enterprise system in its historical context. Topics include corporate and financial structure, production and distribution, trade and investment policies, government-business relations, system of innovation, technological developments, prospects for the future. Offered: jointly with I BUS 562.

JSIS A 579 Contemporary Central Asian Politics (5) *Radnitz* Examines the politics of contemporary post-Soviet Central Asia. Analyzes issues relevant to the region in comparative perspective, including democratization, religion, terrorism, civil society, economic reform, ethnic identity, and international influences. Uses theory to shed light on current policy debates. Offered: jointly with POL S 579.

JSIS A 580 Field Course in Southeast Asian History (5) Introduces major English-language works on Southeast Asian history and to the major historiographical issues of the era. Offered: jointly with HSTAS 530.

JSIS A 581 Science, Technology, and Innovation Policies in East Asia (5) *Anchoroguy* Role of state and technological change in economic development. Analyzes state and corporate policies historically. Technology concepts, institutions, and policies in Japan, South Korea, Taiwan, and China. Examines sources of Asia's rise in world technology and explores conditions for its successful continuation. Recommended: one JSIS course. Offered: jointly with I BUS 561.

JSIS A 582 Seminar in Southeast Asian History (5) Selected topics in Southeast Asian history and historiography. Includes preparation for theses and doctoral dissertations on Southeast Asian History. Offered: jointly with HSTAS 532.

JSIS A 584 Survey of Korean Society (5) *Sorensen* Introduction to the social and political institutions of North and South Korea with an opportunity to master the most important literature on modern Korea. Focuses on the twentieth century with the major emphasis on the post-1945 period. Offered: A.

JSIS A 585 Research Seminar: Modern Korea (6) *Ha* Advanced instruction in problems and methods of research in Korean history. Foreign language not required. Prerequisite: permission of instructor.

JSIS A 586 Islam, Mysticism, Politics, and Performance in Indonesia (5) Examines how Indonesia, the world's fourth most-populous country, with the largest Islamic population, weaves together local practices and influence from India and Persia. Offers ways of understanding modern Indonesian performing arts, religion, and politics. Offered: jointly with HSTAS 566.

JSIS A 587 Japanese Trade Politics (5) *S. Pekkanen* Survey of Japan's foreign trade diplomacy. Examines evolution of Japan's trade patterns in exports and foreign direct investment with key partners. Covers institutional and legal frameworks of Japan's trade relations, such as bilateral fora, regional options including free trade agreements, and multilateral venues such as the WTO. Not open to students who have taken JSIS A 487.

International Studies Global and Thematic Courses

JSIS B 100 Issues in International Studies (5, max. 15) *I&S Bachman, Curran, Yang* Offers an introduction to some contemporary salient issues in international and global affairs, focusing on one or two major developments or questions.

JSIS B 103 Society and the Oceans (5) *I&S/NW* Explores the social and policy dimensions of the ocean environment and ocean management policy. Pays attention to how human values, institutions, culture, and history shape environmental issues and policy responses. Examines case studies and influential frameworks, such as the ocean as "tragedy of the commons." Offered: jointly with ENVIR 103/SMEA 103.

JSIS B 180 Introduction to Global Health: Disparities, Determinants, Policies, and Outcomes (5) *I&S S. GLOYD, M. SPARKE* Provides an introduction to global health, including: the burden and distribution of disease and mortality; the determinants of global health disparities; the making of global health policies; and the outcomes of global health interventions. Offered: jointly with G H 101/GEOG 180; W.

JSIS B 216 Science and Society (5) *I&S/NW Chaloupka* Investigation of the relationship between science, technology, and society. Nuclear physics and molecular biology serve as concrete examples of fields with significant impact on society. Offered: jointly with PHYS 216; Sp.

JSIS B 301 War (5) I&S Origins and conduct of war; readings from anthropology, political science, economics, and history, as well as novels and some recent works on the arms-control controversy. Modern forms of warfare, including guerrilla war, world war, and nuclear war. Offered: jointly with SOC 301.

JSIS B 310 State-Society Relations in Third World Countries (5) I&S, DIV Bachman, Callahan Relationships among political, social, and economic changes in Asia, Africa, and Latin America. Problems of economic and political development, revolution and reform, state-society relations, imperialism and dependency. Offered: jointly with POL S 320.

JSIS B 311 Myth of War (5) I&S Poznanski Explores war as a concept in international political economy. Examines interpretations of war as put forth by proponents of the key theoretical constructs of mercantilism, liberalism, and Marxism. Explores contemporary challenges to the prevailing, dominant theories of war.

JSIS B 315 Law, State, and Society (5) I&S Migdal Examination of both state law and non-state law (rules and ways of ordering behavior such as customary law, religious law, and social conventions). Focuses on the ways non-state law interacts with and affects state law and is affected by state law.

JSIS B 324 Immigration (5) I&S Friedman Introduces key theoretical debates in international migration. Examines immigrants' political, economic, religious, and social integration into host societies, and continued ties to homelands. Experiences of voluntary and involuntary immigrants, of the second generation, and of incorporation into America and Europe. Designed around interdisciplinary texts and fieldwork in Seattle.

JSIS B 330 International Political Economy (5) I&S Hamilton, Ingebritsen, Latsch Establishment, maintenance, and decay of the post-1945 international economic order. Political economy of international trade, monetary relations, inflation, and North-South relations. Prerequisite: JSIS 201 which may be taken concurrently; either ECON 201, GEOG 123 or JSIS 123 any of which may be taken concurrently.

JSIS B 331 Political Economy of Development (5) I&S Latsch, Poznanski Growth, income distribution, and economic development in less-developed countries today. Policies concerning trade, industrialization, the agricultural sector, human resources, and financing of development. Prerequisite: either ECON 201, GEOG 123 or JSIS 123, any of which may be taken concurrently.

JSIS B 332 Political Economy of International Trade and Finance (5) I&S Poznanski Theoretical and historical analysis to explore the causes and effects of the rise and decline of four major international trade and monetary regimes. Foundations and emerging features of the new international trade and monetary regime and its implications for the world economy.

JSIS B 333 Gender and Globalization: Theory and Process (5) I&S, DIV Ramamurthy Theoretical, historical, and empirical analysis of how current processes of globalization are transforming the actual conditions of women's lives, labor, gender ideologies, and politics in complex and contradictory ways. Topics include feminist exploration of colonialism, capitalism, economic restructuring policies, resistance in consumer and environmental movements. Offered: jointly with GWSS 333.

JSIS B 335 Geography of the Developing World (5) I&S Characteristics and causes, external and internal, of Third World development and obstacles to that development. Special attention to demographic and agricultural patterns, resource development, industrialization and urbanization, drawing on specific case studies from Asia, Africa, and Latin America. Recommended: either GEOG 123 or GEOG 230. Offered: jointly with GEOG 335.

JSIS B 337 Collective Violence and the State (5) I&S, DIV Comparative study of how and why genocides have occurred in modern times. Examines how ethnic, religious,

and nationalist conflicts have sometimes led to violent conflict, and how political leaders and governments have mitigated or exacerbated them, sometimes engaging in state sponsored mass killing. Offered: jointly with POL S 337.

JSIS B 338 Biosecurity (5) I&S Lowe Examines relations between life and safety as a new focus of study in the human sciences. Pays attention to the reframing of international health, food security, environmental change, migration, etc., in security terms. Focuses on both present practical issues of biosecurity and the concept of "security" itself.

JSIS B 344 Migration in the Global Economy (5) I&S Mitchell Analyzes the relationship between human mobility in the late twentieth century and changes in the global economy. Allows students to gain familiarity with scholarly research on international migration from a diversity of approaches and methods. Offered: jointly with GEOG 344.

JSIS B 345 Women and International Economic Development (5) I&S, DIV P. RAMAMURTHY Questions how women are affected by economic development in Third World and celebrates redefinitions of what development means. Introduces theoretical perspectives and methods to interrogate gender and development policies. Assesses current processes of globalization and potential for changing gender and economic inequalities. Offered: jointly with ANTH 345/GWSS 345.

JSIS B 350 Environmental Norms in International Politics (5) I&S Ingebritsen Surveys development of international environmental consciousness from 1960s to present. Models of "green development"; ways in which norms for resource use have entered global politics. Patterns of state compliance with international environmental agreements, and why states fall short of meeting their international obligations. Offered: jointly with ENVIR 360/SCAND 350.

JSIS B 351 The Global Environment (5) I&S Explores the environment in international perspective emphasizing the social implications of living in an economically globalized and environmentally interconnected world. Examines these implications through examples of toxics and the human body, biodiversity conservation, climate change, disease, and environmental problems. Credit/no-credit only.

JSIS B 364 Violence, Myth, and Memory (5) VLPA/I&S Sears Explores how images and ideas of power, violence, and global modernity circulate in memories and discourses about US relations with Vietnam, the Philippines, and Indonesia. Topics include foundations myths, colonial and postcolonial encounters, historiography and narrative, and nationalist and ethnic identity formations. Offered: jointly with HSTAS 364; Sp.

JSIS B 365 World Cities (5) I&S Kasaba, Sparke Factors that have propelled New York, London, and Tokyo into key positions in the organization of the late twentieth century international system. Asks historical and comparative questions and discusses the reasons behind the diminished position of cities such as Venice, Vienna, and Istanbul in that system.

JSIS B 366 Comparative Law, Societies, and Courts: Global and Local Perspectives (5) I&S Barzilai Explores global issues of comparative law, societies, politics, and courts. Uses criteria, methodologies, and theories to compare legal settings internationally. Covers: what is 'comparative law'; families of law; history of comparative law; models of judicial review; legal cultures; and models of regulation. Can not be taken for credit if student has already taken LSJ/POL S 367. Offered: jointly with LSJ 366.

JSIS B 370 Privacy (5) I&S S. Pekkanen Explores how individuals, corporations, and governments respond to privacy challenges in the digital age. Examines evolution of the idea of privacy using case studies of actual privacy policies, legal cases, and real-world situations. Covers legal, political, and social facets of this fundamental human issue. Offered: jointly with LSJ 370/POL S 370; Sp.

JSIS B 375 Geopolitics (5) I&S Sparke An introduction to both political geography and geopolitics, addressing the

fundamental links between power and space. Topics covered include: theories of power, space, and modernity; the formation of modern states; international geopolitics in the aftermath of the Cold War; the post-colonial nation-state; and the geopolitics of resistance. Offered: jointly with GEOG 375.

JSIS B 385 Industry and the State (5) I&S Hamilton, Whiting Builds on states and markets approach of 200 and 201 through specific examination of effects of industry and industrial structure on political outcomes and roles of state. Emphasis on late-developing and newly developing economies. Prerequisite: JSIS 200; JSIS 201.

JSIS B 386 Law and Politics of International Trade (5) I&S S. Pekkanen Survey of global trade politics in the context of the World Trade Organization (WTO), with attention to positive and negative aspects of its governance. Examines the impact of the WTO legal framework on trade relations among developed and developing countries. Covers topics such as dispute settlement, development, safeguards, antidumping, intellectual property, and regionalism.

JSIS B 388 Political Economy of Industrialized Nations (5) I&S Theoretical bases of various political economic systems of industrialized nations. Several major issues these political economies currently face; usefulness and limits of economic analyses within broader perspective of political economy. Prerequisite: either ECON 201, GEOG 123 or JSIS 123 any of which may be taken concurrently.

JSIS B 406 Political Islam and Islamic Fundamentalism (5) I&S, DIV Robinson Study of resurgence, since mid-1970s, of political Islam and what has come to be called Islamic fundamentalism, especially in the Middle East. Topics include the nature and variety of political Islam today, causes and implications of the current resurgence, and comparison with previous resurgences. Offered: jointly with POL S 432.

JSIS B 407 Political Islam and Contemporary Islamist Movements (5) I&S Robinson Examines Islamist movements (which seek to reform Muslim society through the capture and the modern state and the establishment of Islamic law) to understand how they impact regional political and global political Islam. Prerequisite: either HIST 161, NEAR E 211, NEAR E 212, JSIS C 211, JSIS C 212, JSIS B 406/POL S 432, JSIS A 215, or JSIS A 402, any of which may be taken concurrently. Offered: Sp.

JSIS B 416 Putting the World on the Couch: Psychoanalysis and International Studies (5) I&S Porter Explores the relation of trauma to memory and cultural production, focusing on historical, literary, and filmic treatments of hysteria and repression, shell shock, and the effects of war, terrorism, and psychic trauma. Uses psychoanalytical theory to analyze the commentary on international issues that lies in texts, films, and other cultural phenomena.

JSIS B 417 Enter the Dragon: Seminar on World Cultures Through the Asian Martial Arts (5) I&S Novetzke Examines how the martial arts have preserved religious, cultural, and philosophical aspects of the world areas of their origin, as well as the new cultures and international communities that have adopted and reinvented their practices and philosophies, including India, China, Japan, Korea, Brazil, and Euro-America. Offered: jointly with CHID 417.

JSIS B 419 Comparative Media Systems (5) I&S Provides students an understanding of policies that shape national communication processes and systems. Uses comparative analysis to identify both similarities and differences among media structures of nations at different levels of development. Primary emphasis on broadcast media. Offered: jointly with COM 420/POL S 468.

JSIS B 420 Failed States (5) I&S Radnitz Critically examines the causes and consequences of state failure. Analyzes theories about the rise of the modern state and the precondition for "successful" states to form and endure, then examines theories and case studies of modern failed state.

JSIS B 421 National Security and International Affairs (5) I&S Jones Major military aspects of contemporary international politics. Uses and limitations of military capabilities for sustaining a stable international order and national security. Processes by which states detect and assess threats to their security; practice of deterrence; transfer of arms among states; pursuit of arms control. Recommended: either one JSIS or international relations course.

JSIS B 422 International Trade and Security (5) I&S Examines international trade's potential threat to national security. Covers basic elements and limitations of export controls used to protect national security and international stability. Focuses on export controls to prevent proliferation of weapons of mass destruction, and to limit other governments' ability to develop capabilities that jeopardize regional or international stability.

JSIS B 423 Practicing American Foreign Policy (5) I&S Develops familiarity with tools available to promote international objectives of the United States. International case studies selected to illustrate the diverse considerations inherent in the policy process and evaluate the strengths and weaknesses of the national institutions involved. Prerequisite: JSIS 201.

JSIS B 424 International Law and Arms Control (5) I&S Jones Surveys the political, legal, and technological history of 20th-century arms control agreements with emphasis on the treaties which ended the Cold War. Examines current issues of law, politics, military strategy, and technology in regard to weapons of mass destruction and related topics in international security.

JSIS B 426 World Politics (5) I&S The nation-state system and its alternatives, world distributions of preferences and power, structure of international authority, historical world societies and their politics. Offered: jointly with POL S 426.

JSIS B 427 Weapons of Mass Destruction: Development, Deployment, and Detection (5) I&S Fuller Practical understanding of the development of nuclear, biological, and chemical weapons plus missile delivery systems. Proliferation detection technology and its limitations. Case studies of past and current arms control agreements and non-proliferation programs.

JSIS B 428 The Media and Peace (5) I&S Investigates the complex relationships among the media, journalistic practice, and our understanding and pursuit of peace. Offered: jointly with COM 428.

JSIS B 429 Nuclear Nonproliferation and International Safeguards (5) I&S Examines the technologies of nuclear energy, the institutions that have been deployed to address the security threats related to peaceful uses of nuclear energy, and the issues and challenges confronting those institutions today.

JSIS B 431 International Negotiation Simulation (5) I&S Research and writing in small groups to prepare policy documents on a current international issue, followed by simulated negotiations with students representing different nations, following instructions from and reporting to national leaders.

JSIS B 433 Environmental Degradation in the Tropics (5) I&S/NW Christie Considers theories and controversies of environmental degradation in the tropics, ecological and social case studies of Central American rain forests and Southeast Asian coral reefs, and implications of environmental management techniques. Offered: jointly with ENVIR 433/SMEA 433.

JSIS B 436 Ethnic Politics and Nationalism in Multi-Ethnic Societies (5) I&S Provides a broad theoretical base, both descriptive and analytical, for the comparative study of ethnicity and nationalism. Examples drawn from ethnic movements in different societies. Some previous exposure either to introductory courses in political science or to courses in ethnicity in other departments is desirable. Offered: jointly with POL S 436.

JSIS B 437 Global Diasporas (5) I&S Friedman Studies the concept, process, and lived practice of diaspora in comparative global perspective. Surveys the theoretical literature. Examines the ramifications of transnational movements for notions of diasporic identities and citizenship; implications of diaspora for economic development and political movements; and the utility of the concept of diaspora as an analytical tool.

JSIS B 441 Forced Migrations (5) I&S, DIV Friedman Provides an interdisciplinary understanding of the causes, characteristics, and consequences of forced migration experiences across the global system. Explores how international policy makers, humanitarian workers, and scholars have constructed forced migration as a problem for analysis and action, including some of the ethical dilemmas involved. Recommended: either JSIS B324 or JSIS F 344.

JSIS B 446 History, Memory, and Justice (5) I&S Giebel Focuses on the complex interactions between history and historical representation, remembrance and commemoration, memory and identity, and notions of justice and reconciliation. Addresses these issues on methodological, theoretical, and practical grounds, drawing on examples from various genres, periods, and world regions.

JSIS B 467 Nations and States in the Modern World (5) I&S Development of national consciousness in the "old nations" of Europe before the French Revolution. Replacement by new nationalism, spreading into East Central Europe, Russia, Ibero-America, Asia, and Africa. Offered: jointly with HSTCMP 467.

JSIS B 468 Theatre as a Site of History and Memory (5) VLPA/I&S Sears Explores Asian theatre traditions as sites of memory, testimony, and archive using ethnographic and historiographical approaches. Includes service-learning components and collaborative performance projects. Offered: jointly with HSTCMP 468.

JSIS B 469 Law and Rights in Authoritarian Regimes (5) I&S S. WHITING Explores role of law and courts and nature of rights in authoritarian regimes. Questions addressed include why authoritarian regimes promote "rule-of-law", who is empowered by law, and the political consequences of "rule-of-law" promotion. Recommended: LSJ 366/JSIS B 366 or POL S 367/LSJ 367. Offered: jointly with LSJ 469/POL S 469.

JSIS B 472 Electoral Systems (5) I&S R. Pekkanen Explores a fundamental link between citizens and political representation: how electoral systems shape party systems, what kinds of people become candidates, how parties work, representation, and policy. Covers effects and mechanics of the various voting systems. Offered: jointly with POL S 472.

JSIS B 476 Comparative International Political Economy (5) I&S Pozanski Comparative analysis of four major approaches to international political economy: mercantilism, Marxism, liberalism, and evolutionary approach. Focus on international cooperation, social change, and economic institutions. Theoretical analysis of the four paradigms and applications to historic and current issues in international political economy: hegemonic cycle, post-communist transition, and cross-national income inequality.

JSIS B 520 Failed States (5) Radnitz Critically examines the causes and consequences of state failure. Analyzes theories about the rise of the modern state and the precondition for "successful" states to form and endure, then examines theories and case studies of modern failed state.

JSIS B 522 International Trade and Security (5) Examines international trade's potential threat to national security. Covers basic elements and limitations of export controls used to protect national security and international stability. Focuses on export controls to prevent proliferation of weapons of mass destruction, and to limit other governments' ability to develop capabilities that jeopardize regional or international stability.

JSIS B 523 Seminar on Religious and Political Violence (5) Robinson Employs ethnographic studies and anthropological

theory to examine the relationships between culture and power in the analysis of religious and political violence. Topics include modernity; secularisms and fundamentalisms; ritual, sacrifice, and martyrdom; law, rights, and subject-making. Offered: jointly with ANTH 523.

JSIS B 524 International Law and Arms Control (5) Surveys the political, legal, and technological history of twentieth century arms control agreements with emphasis on the treaties which ended the Cold War. Examines current issues of law, politics, military strategy, and technology in regard to weapons of mass destruction and related topics in international security.

JSIS B 525 Special Topics in Race, Ethnicity, and Nationalism (5, max. 10) Topics vary, but focus on the politics of race, ethnicity, and nationalism viewed from a broad, comparative, interdisciplinary perspective. Emphasizes cross-cultural, and the geographical coverage may be regional or global.

JSIS B 526 Political Islam and Islamic Fundamentalism (3/5) Robinson Examines political Islam as a modern phenomenon produced at the intersections between localized and globalized political cultures and between political, religious, and social authority. Focuses on anthropological studies to examine how Islamic publics produce moral judgments about political practices. Offered: jointly with ANTH 526.

JSIS B 527 Weapons of Mass Destruction: Development, Deployment, and Detection (5) Fuller Practical understanding of the development of nuclear, biological, and chemical weapons plus missile delivery systems. Proliferation detection technology and its limitations. Case studies of past and current arms control agreements and non-proliferation programs.

JSIS B 529 Nuclear Nonproliferation and International Safeguards (5) Examines the technologies of nuclear energy, the institutions that have been deployed to address the security threats related to peaceful uses of nuclear energy, and the issues and challenges confronting those institutions today.

JSIS B 531 International Negotiation Simulation (5) Examines international trade's potential threat to national security. Covers basic elements and limitations of export controls used to protect national security and international stability. Focuses on export controls to prevent proliferation of weapons of mass destruction, and to limit other governments' ability to develop capabilities that jeopardize regional or international stability.

JSIS B 534 International Affairs (3) Provides a broad understanding of international issues and United States policy. Students explore U.S. foreign policy and theories of major international actors in international trade, security, and strategic concerns, refugee policy, conflict resolution, development assistance, and the environment. Offered: jointly with PB AF 530/POL S 534.

JSIS B 536 Analysis, Information, and the Politics Shaping American Foreign Policy (5) Chirot Explores competing interests and sources of information in the making of American foreign policy. Examines the origins of the national security state after World War II; decision making during the Cold War and Viet Nam War; the crisis of 9/11; and current strategies for analyzing information and handling foreign policy crises.

JSIS B 537 Global Diasporas (5) Friedman Studies the concept, process, and lived practice of diaspora in comparative global perspective. Surveys the theoretical literature. Examines the ramifications of transnational movements for notions of diasporic identities and citizenship; implications of diaspora for economic development and political movements; and the utility of the concept of diaspora as an analytical tool.

JSIS B 541 Forced Migrations (5) Friedman Provides an interdisciplinary understanding of the causes, characteristics, and consequences of forced migration experiences

across the global system. Explores how international policy makers, humanitarian workers, and scholars have constructed forced migrations as a problem for analysis and actions, including some of the ethical dilemmas involved.

JSIS B 542 Seminar: State and Society (5) *Migdal* Examines the mutually conditioning relationship between states and the societies they seek to govern. Studies states as large, complex organizations and their interactions with society on different levels. Shows that interactions on any level affect the nature of the state on other levels as well. Offered: jointly with POL S 542.

JSIS B 549 International Investment Law and Practice (4/5) *Pekkanen* Examines the rise of international investment law and practice, including topics such as Bilateral Investment Treaties (BITs), standards of treatment, investor-state arbitrations, and social and political controversies related to the governance of foreign direct investment (FDI) in developed and developing countries. Offered: jointly with LAW E 549.

JSIS B 553 Environment and Health in the World Trade Organization (5) *S. Pekkanen* Conflicts between global environmental and public health on the one hand and international trade expansion on the other in the World Trade Organization (WTO). Focuses on the state of GATT/WTO jurisprudence and its interaction with sovereign laws and regulations. Cases include asbestos, reformulated gasoline, beef hormones, shrimp-turtle, and genetically modified organisms.

JSIS B 556 International Human Rights Clinic ([1-12]-, max. 12) *Godoy* Interdisciplinary clinical training in international human rights. Includes seminar component on legal issues, practice skills, and reflections on human rights projects. Fieldwork on human rights projects tests, develops, and enhances skills training through real-world human rights practice with cross-campus, U.S., and international partnerships. Credit/no-credit only. Offered: jointly with LAW E 556; AWSp.

JSIS B 569 Law and Rights in Authoritative Regimes (5) Explores role of law and courts and the nature of rights in authoritarian regimes. Questions addressed include why authoritarian regimes promote “rule-of-law”, who is empowered by law, and the political consequences of “rule-of-law” promotion. Offered: jointly with POL S 569.

JSIS B 572 Electoral Systems (5) *R. Pekkanen* Explores a fundamental link between citizens and political representation: how electoral systems shape party systems, what kinds of people become candidates, how parties work, representation, and policy. Covers effects and mechanics of the various voting systems. Offered: jointly with POL S 572.

JSIS B 575 Advanced Political Geography (5, max. 10) *Sparke* Provides resources for theorizing how politics shapes and is shaped by geographical relationships. Examines how politics are situated in complex material and discursive geographies that are partly reproduced through political negotiations. Examines interrelationships of contemporary capitalism with other complex systems of social and political power relations. Offered: jointly with GEOG 575.

JSIS B 586 Law and Politics of International Trade (5) *S. Pekkanen* Survey of global trade politics in the context of the World Trade Organization (WTO), with attention to positive and negative aspects of its governance. Examines the impact of the WTO legal framework on trade relations among developed and developing countries. Covers topics such as dispute settlement, development, safeguards, antidumping, intellectual property, and regionalism.

International Studies Comparative Religion and Jewish Studies

JSIS C 130 Justice, Service, and Activism in the Jewish Tradition (5) *I&S, DIV Panko* Focuses on thinking critically about justice and social activism by integrating classroom and community learning. Uses the rich textual tradition of

Judaism and the experiences of American Jewish social activists as a prism for considering the possibilities and challenges of pursuing social justice around the globe.

JSIS C 145 Introduction to Judaism (5) *I&S Jaffee, Panko* Basic ideas and motifs of Judaism: God, Covenant, Law, Life Cycle (birth, marriage, family life, sexual laws, role of women, death); Cycle of the Year (Sabbath, holidays, festivals); Holy Land, prayer, Messianism.

JSIS C 175 Popular Film and the Holocaust (5) *VLPA* Introduces films about the Holocaust with particular emphasis on popular films. Develops the requisite tools for analyzing films, a historical perspective of the Holocaust, and the problems involved in trying to represent a historical event whose tragic dimensions exceed the limits of the imagination. Offered: jointly with GERMAN 195.

JSIS C 198 Study Abroad: Jewish Studies (1-5, max. 15) *I&S* For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS C 199 Study Abroad: Comparative Religion (1-5, max. 15) *I&S* For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS C 201 Introduction to World Religions: Western Traditions (5) *I&S Wellman* History of religions, concentrating on religious traditions that have developed west of the Indus. Primary attention to the Semitic religions (Judaism, Christianity, Islam) and to their ancient world background with emphasis on basic conceptual and symbolic structures.

JSIS C 202 Introduction to World Religions: Eastern Traditions (5) *I&S Novetzke, Pauwels* History of religions, concentrating on religions that have developed in South Asia and East Asia. Primary attention to Hinduism and Buddhism; other important Asian religions are discussed in relation to them, with emphasis on basic conceptual and symbolic structures.

JSIS C 205 Religion, Violence, and Peace: Patterns Across Time and Tradition (5) *I&S, DIV* Investigates the complex relationship between violence and peace in a variety of religious traditions. Examines case studies from the ancient Near East, medieval East Asia, and the contemporary West from the standpoint of lived experiences and contemporary theories derived from several academic disciplines. Offered: jointly with HUM 205/NEAR E 205; W.

JSIS C 211 Islam (5) *VLPA/I&S* Introduction to important cultural and historical aspects of Islam, focusing on basic concepts and developments such as prophethood, Quran and Hadith, canon and law, ritual, social theory, Sufism, theology, and sectarianism. Special attention to comparison of varied Muslim practices and beliefs, and their relation to textual and personal authority. Offered: jointly with NEAR E 211.

JSIS C 212 Introduction to the Quran (5) *VLPA/I&S* Emphasis on the historical context of the Quran, the history of the text, its collection, organization, and interpretation. In English. Offered: jointly with NEAR E 212.

JSIS C 220 Introduction to the New Testament (5) *VLPA/I&S Williams* Modern scholarly methods of research and analysis in dealing with New Testament books and their interpretation. Genres of various books (gospel, epistle, sacred history, apocalypse); problems of the relationships among author, material, and intended audience; relationships between theme and image.

JSIS C 240 Introduction to the Hebrew Bible: Old Testament (5) *VLPA/I&S* Examines the Hebrew Bible (Old Testament) in translation and its relationship with literatures of ancient Near East. Comparisons drawn between Biblical text and literary works of Canaan, Egypt, Greece, Mesopotamia. Emphasis on the sophisticated literary techniques employed by Biblical writers. Offered: jointly with NEAR E 240.

JSIS C 250 Introduction to Jewish Cultural History (5) *I&S* Introductory orientation to the settings in which Jews have marked out for themselves distinctive identities as a people, a culture, and as a religious community. Examines Jewish cultural history as a production of Jewish identity that is always produced in conversation with others in the non-Jewish world. Offered: jointly with HSTCMP 250.

JSIS C 254 American Religions (5) *I&S Wellman* Seeks to understand religious diversity in the American context and the varieties of religions in the American historical horizon including religious minorities, American Protestants, public religious expressions, and new American religions.

JSIS C 264 Sacred Music in the European Tradition (5) *VLPA* Surveys European and American sacred music from the twelfth to twentieth centuries, examining the important role of music in religious worship. Considers the means composers used to make musical works sound the way they do to convey the messages of the texts through music. Offered: jointly with MUSIC 264.

JSIS C 269 The Holocaust: History and Memory (5) *I&S, DIV* Explores the Holocaust as crucial event of the twentieth century. Examines the origins of the Holocaust, perpetrators and victims, and efforts to come to terms with this genocide in Europe, Israel, and the United States. Offered: jointly with HSTCMP 269.

JSIS C 295 The Contributions of German Jews to German Culture (5) *VLPA/I&S, DIV* Contribution, assimilation, and alienation of German-speaking Jews - such as Karl Marx, Sigmund Freud, and Franz Kafka - emphasizing the multi-cultural nature of that which is understood as “German culture.” Offered: jointly with GERMAN 295.

JSIS C 305 Religious Thought Since the Middle Ages (5) *I&S* Development of religious thought in the West from the Middle Ages to the twentieth century. History of focal ideas: God, man, knowledge, and authority during this period and the relation of changes in these ideas to the ways in which basic issues in religious thought have been conceived. Recommended: JSIS C 201.

JSIS C 307 Religion and World Politics (5) *I&S A. GILL* Explores the intersection of religion and politics in various regions of the world, including the United States, Europe, Middle East, Latin America, and other regions. Presents an historical perspective on religion alongside contemporary issues in religion, politics, and church-state relations. Offered: jointly with POL S 307.

JSIS C 312 Jewish Literature: Biblical to Modern (5) *VLPA/I&S, DIV A* Study of Jewish literature from Biblical narrative and rabbinic commentary to modern prose and poetry with intervening texts primarily organized around major themes: martyrdom and suffering, destruction and exile, messianism, Hasidism and Enlightenment, Yiddishism and Zionism. Various critical approaches; geographic and historic contexts. Offered: jointly with ENGL 312.

JSIS C 320 Comparative Study of Death (5) *I&S* Death analyzed from a cross-cultural perspective. Topics include funerary practices, concepts of the soul and afterlife, cultural variations in grief, cemeteries as folk art, and medical and ethical issues in comparative context. American death practices compared to those of other cultures. Offered: jointly with ANTH 322.

JSIS C 321 Comparative Religion (3) *I&S* Anthropological approaches to religious experience and belief with emphasis on conceptual issues such as ritual, symbolism, identity, ecstatic experience, and revitalization movements in the context of globalization. Also addresses the diversity of religious expression in American culture and how that compares with other societies. Offered: jointly with ANTH 321.

JSIS C 322 The Gospels and Jesus of Nazareth (5) *I&S Williams* Gospel material from early Christianity, including both canonical and noncanonical gospels. Relation of gospels to analogous literature from the Hellenistic-Roman period. Recommended: either ENGL 310 or JSIS C 220.

JSIS C 325 Contemporary Judaism in a Global Context (5) I&S *Pianko* Explores the dynamic interactions between contemporary social, political, and intellectual forces and today's changing religious landscape. Critical analysis of the ways in which religious ideologies and communities transform themselves in relationship to geographical contexts and historical processes. Examines Jews and Judaism as a lens for considering changes to religious life.

JSIS C 329 Religion, Identity, and Cultural Pluralism (5) I&S, DIV The role of religion in shaping personal and communal identity in a pluralistic society. Themes include current dimensions of American pluralism, effects of ethnicity, immigration, and electronic communication on building religious communities, and issues of conflict, violence, and reconciliation. Offered: jointly with ANTH 330.

JSIS C 336 American Jewish History Since 1885 (5) I&S Political, social, economic, religious history of American Jewish community from great eastern European migration to present. Integration of immigrant community into general American community; rise of nativism; development of American socialism; World War I and II; and reactions of American Jews to these events. Offered: jointly with HSTAA 336.

JSIS C 352 Hinduism (5) I&S *Novetzke, Pauwels* Varieties of Hindu religious practice; the diverse patterns of religious thought and action among contemporary Hindus. Includes ritual behavior, village Hinduism, tantrism, sadhus, yoga, sects, the major gods and their mythologies, religious art, and the adjustments of Hinduism to modernity. Recommended: either JSIS C 202 or one South Asian culture course.

JSIS C 354 Buddhism (5) I&S *Cox, Tokuno* Buddhism as a religious way and as a way of thinking; the forms of Buddhism known in South Asia (India, Sri Lanka) and those introduced from there to Tibet and other parts of Central Asia. Includes the "Three Jewels" (i.e., the Buddha or Awakened Person, the Teaching [Dharma], and Community [Sangha]) around which Buddhism is traditionally articulated. Recommended: either JSIS C 202 or one Asian cultures course.

JSIS C 356 Buddhism and Society: The Theravada Buddhist Tradition in South and Southeast Asia (5) I&S Religious tradition of Theravada Buddhism (as practiced in Sri Lanka, Burma, Thailand, Laos, and Cambodia). Variations in ethical orientations developed through Theravada Buddhist ideas. Recommended: either JSIS C 202 or one eastern religions course. Offered: jointly with ANTH 352.

JSIS C 357 Jewish American Literature and Culture (5) VLPA *Butwin* Examines the literary and cultural production of American Jews from the colonial period to the present time. Considers ways in which American Jews assimilate and resist assimilation while Jewish writers, filmmakers, playwrights, and graphic novelists imitate and alter American life and literature. Offered: jointly with ENGL 357; AWSp.

JSIS C 358 Modern Jewish Thought (5) I&S *Jaffee, Pianko* Major trends in Jewish religious thought since the European Enlightenment, focusing on encounters between Judaism and the modern world. Includes Haskalah; varieties of religious reform and accommodation; Zionism; socialism; the philosophy of Rosenzweig, Buber, and Kaplan; and theological responses to the Holocaust. Recommended: either HIST 250/JSIS C 250, HSTEU 469/JSIS C 463, JSIS C 201, or JSIS C 145.

JSIS C 360 Jews, Greeks, and Romans in the Ancient World (5) VLPA *Stroup* Examines the interactions between populations of Jews, Greeks, and Romans in the ancient Mediterranean from the late Bronze Age through the early Talmudic period, informed by perspectives from literature (religious and secular), art, and archaeology. Offered: jointly with CLAS 360.

JSIS C 367 Medieval Jewish History (5) I&S Social and intellectual history of the Jews in western Europe to the

fifteenth century. Jews under Islam and Christianity; the church and the Jews; the Crusades and their legacy; intellectual achievements; conflict and cooperation. Offered: jointly with HSTAM 367.

JSIS C 368 Modern European Jewish History (5) I&S Surveys European Jewish history from the Spanish expulsion (1492) to World War I (1914). Considers diversity of European Jewries and the factors that cohered them. Examines how European Jewries ordered their lives, shaped gender and class norms, and interacted with the societies in which they lived. Offered: jointly with HSTEU 368.

JSIS C 369 The Jewish Twentieth Century in Film (5) VLPA/I&S *Stein* Surveys twentieth-century Jewish history in its European, American, and Middle Eastern contexts by examining films produced in these settings. Considers central events that shaped modern Jewish culture: the changing geography of Europe and the Middle East, mass migrations, the Holocaust, shifting meanings of race, culture, and religion. Offered: jointly with HSTCMP 369.

JSIS C 377 The American Jewish Community (5) I&S, DIV *Burstein* Development and current status of American Jewish community; immigration; changes in religious practice, institutions in response to circumstances in American society; creation of new types of secular communal organizations; assimilation; confrontation with antisemitism; family life; social, economic mobility; religious, secular education; intermarriage, and future of community. Offered: jointly with SOC 377.

JSIS C 378 Contemporary Jewish American Identities (5) I&S, DIV *Friedman* Introduction to the debates about post-Holocaust Jewish identities in multicultural America. Explores whether a distinctive Jewish community is headed toward assimilation, experiencing revival, or merely transforming the multiple ways Jewish experience is lived. Topics include new Jewish immigrants, the new Orthodox, Black Jews, Jewish feminism, children of Holocaust survivors. Offered: jointly with SOC 378.

JSIS C 379 Doing Jewish Identity Studies (5) I&S *Friedman* Involves the student in researching the diverse Jewish identities of young people today. Includes background reading on Jewish identities in the United States; interviewing young Jewish adults; transcribing and interpreting interviews; and crafting a qualitative research paper. Covers research skills, as well as sensitivity to Jewish community values and concerns.

JSIS C 380 Theories in the Study of Religion (5) I&S *C. NOVETZKE, J. WELLMAN* Provides a variety of approaches to the study of religion centered on examining the relationship between religion and modernity in the tradition of post-enlightenment, Euro-American scholarship. Examines theories of religion across disciplines: history, anthropology, sociology, Marxism, feminism, postmodernism, political theology, and Freudian psycho-analytical theory. Offered: jointly with CHID 380.

JSIS C 398 Study Abroad - Jewish Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS C 399 Study Abroad - Comparative Religion (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS C 400 The Jewish Mystical Tradition (5) I&S *Jaffee* Jewish esoteric thought from antiquity to early modern times. Emergence of Spanish Kabbalah. The thought of Isaac Luria and its immense influence in Jewish history through other movements—specifically the mystical messiah, Sabbetai Sevi, and the rise of Hasidism. Recommended: either JSIS C 201 or JSIS C 145.

JSIS C 405 Scripture in Judaism (5) I&S *Jaffee* Explores the phenomenon of religious interpretation of sacred books by attending to the destiny of the Bible as read within Judaism. Begins with the canonization of the biblical text itself

and continues into the rationalist and mystical interpretive innovations of the Middle Ages. Recommended: either HIST 250/JSIS C 250, JSIS C 201, or JSIS C 145.

JSIS C 408 The World of the Early Church (5) I&S *Williams* Early Christian church within the context of the Greco-Roman sociopolitical, philosophical, and religious environment. Covers the period from about AD 100 to 300. Christian thinkers and documents studied include both the classical "orthodox" and the "heretical." Recommended: either HIST 307, JSIS C 220, or JSIS C 328.

JSIS C 409 The Age of St. Augustine (5) I&S Christian church in the fourth and fifth centuries as a major institution in the Roman Empire. Great figures of patristic theology, such as Athanasius, Gregory Nazianzus, Gregory of Nyssa, and Augustine. Recommended: either HIST 307, JSIS C 320, or JSIS C 328.

JSIS C 410 Law in Judaic Experience (5) I&S *Jaffee* Place and function of law in Jewish social and personal experience. Discusses the various ideological justifications of the law in biblical and rabbinic literature, examines representative texts, and explores theological reflection on law by medieval and modern thinkers. Recommended: JSIS C 201; either JSIS C 145; JSIS C 400 or JSIS C 405.

JSIS C 412 Gnosticism and Early Christianity (5) I&S *Williams* Impact of Gnosticism on the development of Christianity and several other religious groups of that period. Readings dating from the first through the third centuries AD.

JSIS C 413 Modern Christian Theology (5) I&S Modern Protestant and Catholic thought since the nineteenth century: Kierkegaard, Barth, Bultmann, Rahner, Lonergan, and other major figures. Recommended: JSIS C 305.

JSIS C 418 Jewish Philosophy (5) I&S *M. ROSENTHAL* Introduces the central concepts and themes of Jewish philosophy. Focuses either on debates within a particular historical period - e.g., medieval or modern; or on a topic - e.g., reactions to the Enlightenment or to the Holocaust. Prerequisite: at least one previous course in philosophy. Offered: jointly with PHIL 418.

JSIS C 430 Scripture and Law in Islam (5) VLPA/I&S Examines concept and use of scripture in Islam, with special attention to issues of canon and commentary, heavenly books, talismanic uses, and the place of scripture in ritual. In English. Offered: jointly with NEAR E 430.

JSIS C 438 Jewish Women in Contemporary America (5) I&S, DIV *Friedman* Examines how Jewish women's identities are socially constructed and transformed in contemporary America, using social histories, memoirs, and ethnographies to analyze scholars' approaches to Jewish women's lives. Topics include the role of social class, religion, migration, the Holocaust, and race relations in Jewish women's lives. Offered: jointly with GWSS 438.

JSIS C 445 Greek and Roman Religion (5) VLPA/I&S *Holmann, Levaniouk* Religion in the social life of the Greeks and Romans, with emphasis placed on their public rituals and festivals. Attention is given to the priesthoods, personal piety, rituals of purification and healing, and the conflict of religions in the early Roman Empire. Many lectures illustrated by slides. Recommended: JSIS B 201. Offered: jointly with CLAS 445.

JSIS C 449 The Biblical Prophets (3) VLPA/I&S Explores the Biblical prophets (in translation) within their Near Eastern contexts. Historicity, literary and rhetorical sophistication, and ideological agendas. Seeks to uncover the meaning and distinctiveness of Israelite prophecy within the context of the larger Near East. No knowledge of the Bible required. Offered: jointly with NEAR E 453.

JSIS C 452 Art, Religion, and Politics in the Early Christian Period, 300-700 AD (3) VLPA/I&S *Kartsonis* Evolution of the art of the early Christian period (300-700 AD) in the context of contemporary religious, political, and cultural developments. Recommended: some background in Byzantine art or history. Offered: jointly with ART H 452.

JSIS C 454 Israel: The First Six Centuries BCE (3) VLPA/I&S Traces the Israelites, from the Babylonian destruction of the Jerusalem Temple (586 BCE) to events following the destruction of the second Temple (first century CE). Focuses on primary historical and literary sources as well as archaeological and artistic evidence. No knowledge of Hebrew or the Bible required. Offered: jointly with NEAR E 454.

JSIS C 456 Perceptions of the Feminine Divine in Hinduism (5) VLPA Pauwels Explores implications of the perception of a feminine divine for gender issues in South Asia. Includes historical overview of goddess worship in South Asia, mythologies, philosophical systems, cults, and rituals associated with the major goddesses, the phenomena of suttee, goddess possession, and women's goddess rituals at the village level.

JSIS C 457 The History of Biblical Interpretation (3) VLPA/I&S Traces Biblical interpretation and translation technique from the earliest translations of the Hebrew Bible (Old Testament) to the various historical literary, deconstructionist, and holistic strategies of more recent times. Adopts a "hands-on" approach to the material and explores various hermeneutics by applying them in class. Offered: jointly with NEAR E 457.

JSIS C 459 Topics in the Buddhism of Tibet (3) I&S Topics in the development of Buddhism of Tibet. Includes the relationship between reasoning and religious thought; the concept of a person; the formation of the different schools of Tibetan Buddhism; the notion of lineage; the master-disciple relationship in the tantric tradition. Recommended: either ANTH 352, JSIS C 202, JSIS C 356, or JSIS C 354.

JSIS C 462 Anti-Semitism As a Cultural System (5) I&S, DIV Jaffee Comparative study of various anti-Semitic cultural systems from ancient to modern times. Topics include how anti-Semitism can be defined as a cultural phenomenon; the conditions that explain the circulation of anti-Semitic traditions in a given society; the conditions under which social conflict with Jews becomes anti-Semitism.

JSIS C 463 Enlightenment, Emancipation, Antisemitism: History of the Jews, 1770-1914 (5) I&S, DIV The Jewish experience in the modern world from the European Enlightenment to the First World War. Focus on the debates surrounding Jewish emancipation, the reception of Jews within European society, modern antisemitism, nationalist movements, mass migration, and war.

JSIS C 465 The Jews of Eastern Europe (5) I&S Jewish society in Poland, Russia, the Hapsburg Lands, and Romania from the late Middle Ages to the Holocaust. Offered: jointly with HSTEU 465.

JSIS C 466 The Sephardic Diaspora: 1492-Present (5) I&S, DIV Examines the history and culture of Sephardic Jewry from the expulsion from the Iberian Peninsula in 1492 to the present. Explores the creation of Sephardic communities in the Dutch and Ottoman Empires, Western Europe, the Americas, and Africa, and the history of the conversos and "hidden Jews." Offered: jointly with HSTCMP 469.

JSIS C 468 The Jews in Spanish History (5) I&S Sephardic Jews in Spanish politics, economy, and culture, emphasizing the medieval Golden Age and the Inquisition. Offered: jointly with HSTEU 464.

JSIS C 470 Economic History of the Jews (5) I&S Explores the history, economics, and politics of mercantile minorities, the Jews. Topics include the economics of religion, migration, Zionism, Arab-Israeli relations, and Israeli high-tech. Prerequisite: minimum grade of 2.0 in ECON 300. Offered: jointly with ECON 470.

JSIS C 472 Seminar: Topics in Early Christianity (5) I&S Williams Topics vary. Recommended: one early Christian history or literature course.

JSIS C 489 Special Topics (1-5, max. 15) I&S Content varies.

JSIS C 490 Special Topics (1-5, max. 15) I&S Topics vary with each offering.

JSIS C 491 Seminar: Topics and Issues in Judaism (5) I&S Jaffee Topics vary. Recommended: JSIS B 145; either JSIS B 400, JSIS D 405, or JSIS B 410.

JSIS C 493 Honors Thesis (5) I&S Required course for Comparative Religion honors students.

JSIS C 495 Seminar in Jewish Studies (5) I&S Jaffee History of Jewish Studies as an organized field of academic inquiry. Explores the implications for Jewish Studies of its present setting within the context of the humanities and the social sciences.

JSIS C 497 Field Archaeology (1-10, max. 20) Professionally-guided archaeological fieldwork at a recognized archaeological dig in the United States or abroad. Offered: S.

JSIS C 501 Approaches to the Study of Religion (5) Major approaches employed by modern scholarship in the study of religion, including historical, phenomenological, anthropological, sociological, and psychological. Prerequisite: admission to the comparative religion MAIS program or permission of instructor. Offered: A.

JSIS C 502 Religion in Comparative Perspective (5, max. 15) Analysis of selected theme or symbols in relation to several different religious traditions. Topics vary. Prerequisite: admission to the comparative religion MAIS program or permission of instructor. Offered: W.

JSIS C 504 Religion and Culture (5) Study of the relations between religion and culture, with attention to the role of religion in defining conceptions of order and grounding socio-political and artistic traditions.

JSIS C 520 Seminar On Early Christianity (5) Williams Problems in the history and literature of early Christianity.

JSIS C 528 Christian Theology (5) Study of exemplary figures in the history of Christian religious thought. Prerequisite: JSIS B 413.

JSIS C 580 Seminar in Hinduism Studies (5) Pauwels Introduction to the academic study of Hinduism for graduate students. Examines major problems currently addressed in the academic study of Hinduism and the methods used. Provides a historical perspective on past scholarship. Offered: jointly with ASIAN 580.

JSIS C 590 Special Topics (2-5, max. 15) Offered occasionally by visitors or resident faculty. Course content varies.

JSIS C 598 Colloquium in Comparative Religion (1, max. 6) Required colloquium for graduate students in comparative religion program. Introduction to faculty research and to major methods and disciplines in the study of religion. Credit/no-credit only.

International Studies (JSIS D)

JSIS D 140 Russia from the Tenth Century to the Present (5) I&S Russian political, social, and economic history from the tenth century to the present. Offered: jointly with HSTEU 140.

JSIS D 217 Renaissance, Enlightenment, Revolution: Major Works in English (5) VLPA/I&S Introduction to major figures of French culture from the Middle Ages to the eighteenth century, their contributions to the intellectual life of the Western world. Readings include Montaigne, Descartes, Rousseau, Voltaire, and Moliere. In English. Offered: jointly with FRENCH 211.

JSIS D 317 Scandinavian Crime Fiction (5) VLPA Nestingen Studies Scandinavian crime-fiction literature and cinema since 1965, approaching crime fiction as a changing cultural artifact. Analyzes major issues and texts in the genre and its public status, while also training students in critical approaches to study of popular literature and culture. Offered: jointly with SCAND 315; Sp.

JSIS D 323 Globalization and You (5) I&S M. SPARKE Offers an evidence-based analysis of globalization that addresses how individuals are affected personally as well as

economically amidst the market-led processes of global integration. Offered: jointly with GEOG 323; A.

JSIS D 354 Modern China: From Empire to Republics (5) Dong Surveys the major historical events and discourses of twentieth century China and lays a foundation for understanding contemporary China. Themes include reforms; revolutions; colonialism and imperialism; state and society; and social and cultural changes. Offered: jointly with HSTAS 354.

JSIS D 429 International Population (5) I&S Lavelly Demographic situation of the world and of major world regions. The demographic transition. Topics include public health, policies of fertility and mortality control, international migration, relation of population growth to economic development, social change, and resource constraints. Exploration and manipulation of international demographic data.

JSIS D 432 Technology and Culture in the Making of Contemporary Empires (5) I&S Benitez, Rodriguez-Silva Explores the struggles that shaped organization of the U.S. empire at the turn of the twentieth century, focusing on how empire's material, cultural, and ideological boundaries were drawn. Topics include race, gender, and class as colonial formations; technologies of imperial governance such as public health, citizenship and territory; and popular culture. Offered: jointly with C LIT 432.

JSIS D 435 Population and Modernization (3) I&S Hirschman, Lavelly Examines role of demographic factors in the process of social modernization and economic growth. The approach is both historical, focusing on populations of developed countries since 1700, and analytic, stressing the attempts made by different disciplines to model demographic relationships, with attention to less-developed regions. Offered: jointly with SOC 432.

JSIS D 443 Class and Culture in East Asia (5) I&S, DIV Examines the nexus between culture and systems of social stratification/class in East Asia, with an emphasis on Taiwan, Korea, Japan, and China. Topics include class formation, mechanisms of social mobility and reproduction, markers of status and hierarchy, resistance, and the formation of class identity. Offered: jointly with ANTH 446.

JSIS D 445 Politics and Society in Eastern Europe (5) I&S Political and social issues in lands east of the Elbe, treating some historical problems but focusing particularly on developments since 1945. Includes all communist states of Eastern Europe and their successors. Offered: jointly with POL S 445.

JSIS D 450 Political Economy of Women and Family in the Third World (5) I&S Theoretical and empirical aspects of the political economy of women and the family in the Third World during the process of development, with a focus on labor. Main theoretical approaches examined and applied to case studies from Asia and Latin America. Offered: jointly with SOC 450.

JSIS D 451 Cultural Geography of Latin America (5) I&S Interdisciplinary senior seminar examining how physical and social geographies are culturally constructed and interconnected with subjectivities and power in Latin America. Topics include identity formation grounded in particular territories and the social constitution of space via an interplay of material and cultural forces. Offered: jointly with GEOG 451.

JSIS D 453 Art, Religion, and Politics in Byzantium, 700-1453 AD (3) VLPA/I&S Kartsonis Evolution of the art of Byzantium (700-1453 AD) in the context of contemporary religious, political, and cultural developments. Recommended: some background in Byzantine art or history. Offered: jointly with ART H 453.

JSIS D 468 Deeply Divided Societies (5) I&S Migdal Ethnic conflict seen from two perspectives: 1. the study of theoretical approaches as a means of understanding deeply divided societies; 2. a focus on one or more specific conflicts. Recommended: either JSIS 201 or POL S 204.

JSIS D 472 Peoples and Cultures of Central and Inner Asia (5) I&S Introduces Central and Inner Asia with a multidisciplinary, comparative survey of the cultures and societies of contemporary China's Inner Asia (Mongolia, Xinjiang-Eastern Turkestan, Tibet, and Manchuria), the contemporary Muslim Central Asian republics (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan), and the adjacent areas of Afghanistan and Iran. Offered: jointly with ANTH 422/NEAR E 472.

JSIS D 473 Introduction to Localization and Project Management (5) Covers basic concepts of translation, localization, and internationalization. Explores rationales for localizing products; history and future of the industry; workflows, professional roles, and localization tools. Includes the application of central concepts of localization to real-life situations; and introduction to the basics of localization project management. Offered: jointly with FRENCH 473; S.

JSIS D 474 Localization: Technology and Tools (5) Covers basic concepts of localization and internationalization. Examines how technology and tools are applied to solving translation and localization scenarios in the real world. Includes daily tasks and basic steps; machine translation; community localization; and experience with actual localization tools. Offered: jointly with FRENCH 474; S.

JSIS D 511 Chinese History: Research Methods and Bibliographic Guides (3, max. 6) Guy Introductory research seminar dealing with the methodological and bibliographical problems concerning all periods and aspects of Chinese history from the earliest times to the nineteenth century. Prerequisite: two years of classical or modern Chinese.

JSIS D 512 Law, Globalization, and Multinational Corporations (3) An interdisciplinary workshop that examines the role of multinational corporations in a global society. Topics include the legal construct of the multinational corporation, the multinational and the state, the multinational and human rights, and the multinational in the international arena. Offered: jointly with LAW E 512.

JSIS D 517 Foreign Trade and Investment Law of the People's Republic of China ([1-4]-, max. 4)

JSIS D 530 Religion and Literature (5) The relation of religious thought to the study of imaginative literature. Includes both critical theory and practical criticism of exemplary texts.

JSIS D 533 Seminar on Contemporary Chinese Politics (5) Research on selected problems in contemporary Chinese politics. Prerequisite: POL S 532, or permission of instructor. Offered: jointly with POL S 533.

JSIS D 549 Government Regulation of Business in Japan (3) Offered: jointly with LAW B 549.

JSIS D 553 Chinese Legal Tradition (3) Offered: jointly with LAW B 553.

JSIS D 564 Seminar: Problems of Social and Political Development in Eastern Europe (3-6, max. 6) Research seminar dealing with selected problems of continuity and change in eastern Europe. Prerequisite: some previous course work on eastern Europe.

JSIS D 572 Peoples and Cultures of Central and Inner Asia (5) Offered: jointly with ANTH 522/NEAR E 572.

International Studies Language Courses

JSIS E 111 Elementary Modern Greek (5) Fundamentals of oral and written modern Greek. Offered: A.

JSIS E 112 Elementary Modern Greek (5) Fundamentals of oral and written modern Greek. Recommended: either JSIS E 111 or GREEK 401. Offered: W.

JSIS E 113 Elementary Modern Greek (5) Fundamentals of oral and written modern Greek. Recommended: either JSIS E 112 or GREEK 402. Offered: Sp.

JSIS E 211 Second-Year Modern Greek (5) VLP Continuation of JSIS E 111, 112, 113. Intensive practice in speak-

ing, reading, and writing. Recommended: either JSIS E 113 or GREEK 403. Offered: A.

JSIS E 212 Second-Year Modern Greek (5) VLP Continuation of JSIS E 111, 112, 113. Intensive practice in speaking, reading, and writing. Recommended: JSIS E 211. Offered: W.

JSIS E 213 Second-Year Modern Greek (5) VLP Continuation of JSIS E 111, 112, 113. Intensive practice in speaking, reading, and writing. Recommended: JSIS E 212. Offered: Sp.

JSIS E 428 Perspectives on East Asia for Teachers (3, max. 6) I&S Substantive concepts, resources, and materials employed in teaching about East Asia. Requirements may vary in relation to the background of participants.

JSIS E 429 East Asia for Educators (6, max. 18) I&S Bernson Provides pre-service and in-service elementary, middle, and high school educators with a grounding in China, Japan, or Korea studies and in curricular strategies for bringing the study of the country of focus into the educator's classroom. Offered: S.

JSIS E 478 Readings in the Social Sciences in Japanese (3-5) I&S Introduction to articles and short works in economics, history, political science, and other social sciences. Assignments chosen from major Japanese monthlies and academic works. All readings in Japanese. Prerequisite: JAPAN 313.

JSIS E 547 Readings on Japan in the Social Sciences (5) Seminar discussing articles in Japanese in economics, history, political science, and other social sciences. Assignments from major Japanese monthlies and academic works. Prerequisite: JAPAN 313 or equivalent and permission of instructor.

Labor Studies

Adviser
101 Smith, Box 353530
(206) 543-7946
hbcls@uw.edu

Minor

The Labor Studies minor brings together a series of courses on labor in core social-science departments. It provides students an interdisciplinary program of study focusing on the importance of labor to the economic, social, political, and cultural evolution of modern societies.

Minor Requirements: 25 credits, to include the following:

1. HIST 249/POL S 249/SOC 266 (5 credits)
2. 20 additional credits from courses related to labor studies, with no more than 10 credits from one department. See department website for current list: depts.washington.edu/pcls/resources-courses.html.
3. Minimum 2.0 grade required for each course applied toward the minor.

Law, Societies, and Justice

42 Gowen

The program in Law, Societies, and Justice provides an interdisciplinary liberal arts education focusing on the roles of law and law-like systems in structuring social life. Courses challenge students to understand the multiple forms of law – criminal, civil, administrative, and constitutional – and the multiple roles law plays in the conduct of social

action. Courses stress the importance of examining law in comparative perspective, and of recognizing the increasing significance of rights discourse in shaping how law is understood and practiced. Faculty are trained in several social science disciplines, and hence students learn to analyze law from multiple perspectives.

UNDERGRADUATE PROGRAM

Adviser
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(206) 543-2396
lsjadv@uw.edu

Law, Societies, and Justice offers the following programs of study:

- The Bachelor of Arts degree with a major in law, societies, and justice.
- A minor in law, societies, and justice

Bachelor of Arts

Suggested First- and Second-Year College Courses: Courses that emphasize development of reading, writing, and especially analytical skills. Also, classes that provide background knowledge of modern world history, politics, institutions, and political theory.

Department Admission Requirements

1. Admission is competitive, based on the following: GPA, with emphasis on grades received in courses required for admission and for completion of major requirements (applicants accepted normally present cumulative UW GPAs above 2.50); personal statement representing the student's interest in and commitment to becoming a Law, Societies, and Justice major; other evidence of a commitment to the study of society, justice, and law. Admitted applicants often show evidence of success in social science courses. (See department website or academic adviser for recommended social science courses.)
2. Minimum 2.00 cumulative UW GPA
3. Completion of one of the following courses: LSJ 320/POL S 368, LSJ 321/ANTH 323 or LSJ 322/JSIS A 324; either LSJ 200 or LSJ 363/POL S 363; LSJ 367/POL S 367 or LSJ 366/JSIS B 366; LSJ 375 or SOC 372
4. Completion of one English composition course. (Further evidence of writing skills in the social sciences is encouraged.)
5. Students may apply autumn, winter, or spring quarters. Applications for admission are due no later than the second Friday of the quarter. Students are notified of admission decisions by the sixth week of the quarter in which they apply.
6. Interested students are encouraged to apply for the LSJ major as soon as possible after meeting the prerequisites. Satisfactory progress to degree may be considered when making admission decisions.

Major Requirements

Minimum 53-55 credits as follows:

1. Completion of the four LSJ core courses: LSJ 320/POL S 368, LSJ 321/ANTH 323, or LSJ 322/JSIS A 324; LSJ 363/POL S 363 or LSJ 200; LSJ 367/POL S 367 or LSJ 366/JSIS B 366; LSJ 375 or SOC 372. (20 credits)
2. Three courses from one of the two designated subfields of study (comparative legal institutions; and rights) and two courses from the other subfield. See program website or advisers for list of approved courses. (23-25 credits)

3. One LSJ departmental seminar. Departmental seminar cannot count simultaneously towards the LSJ subfield requirements. (5 credits)
4. Completion of LSJ 401, which includes completion of 100 hours of volunteer experience or internship in a field related to LSJ. (5 credits)

Minor

Minor Requirements (Law, Societies, and Justice): 28-30 credits, to include:

1. Two courses from the following: LSJ 320/POL S 368, or LSJ 321/ANTH 323, or LSJ 322/JSIS A 324; LSJ 363/POL S 363 or LSJ 200; LSJ 367/POL S 367 or LSJ 366/JSIS B 366; LSJ 375 or SOC 372. (10 credits)
2. Two courses from each LSJ major subfield. (Major subfields are "comparative legal institutions" and "rights." Courses fulfilling subfield requirements are outlined on the departmental website and handouts. (18-20 credits).

Minor Requirements (Disability Studies): 30 credits

1. *Core Courses:* DIS ST 230/LSJ 230/CHID 230; DIS ST 433/LSJ 433/CHID 433; DIS ST 434/LSJ 434/CHID 434 (15 credits)
2. *Capstone Course Requirement:* DIS ST 435 (5 credits).
3. *Disability Studies Electives:* See LSJ adviser or disability studies program website for list of allowable classes (10 credits)

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The Law, Societies, and Justice curriculum emphasizes the development of a range of analytic and communicative skills. Courses challenge students to develop the capacities to: read and interpret texts, including theoretical, empirical, and legal documents; comprehend and contrast arguments; develop and defend arguments; contrast theoretical arguments with empirical realities; assess contemporary practices of justice delivery against contemporary conceptions of justice. Students are required to express these skills in both verbal and written forms, through active class discussions and well-constructed writing assignments. Development of these skills assists students in a range of possible future endeavors, including a wide array of careers in law and justice.
- *Instructional and Research Facilities:* Students have access to the Political Science/Law, Societies, and Justice/School of International Studies writing center for most classes. Research opportunities are available on an individual and group basis with many professors.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* LSJ requires each of its majors to complete an internship for credit. Internship aims: (1) to provide students with insights into the workings of law in practice; (2) to scrutinize and 'test' some of the theories and concepts found in the literature against 'real world' practice; (3) to advance career development and goals, and (4) to provide 100 hours of local community service. Student assignments vary, and include government agencies, non-profit social service organizations, private law firms, rights-focused organizations, and other sites that focus on issues connected to LSJ coursework. It is the student's responsibility to find an internship, although the LSJ adviser can help find a suitable one. Students are required to write two papers according to specific guidelines for internship course credit.

Many LSJ faculty regularly invite majors to assist them in the development and execution of research endeavors.

These provide students an unparalleled opportunity to understand the challenges and mechanics of high-level research.

- *Department Scholarships:* The Stromberg Study Abroad Fund provides financial assistance to LSJ majors who pursue Study Abroad opportunities in socio-legal studies.
- *Student Organizations/Associations:* The Law, Societies, and Justice Student Association sponsors regular events of interest to LSJ students, including career panels and service events.

Of Special Note: The required departmental seminar emphasizes close reading of texts, active class discussions, and well-reasoned analytic writing, providing an opportunity to establish a close connection to faculty and other students, and to hone analytic and communicative skills.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsctat/

LSJ 200 Introduction to Law, Societies, and Justice (5) I&S K. BECKETT, S. HERBERT Explores the central role of law in social processes; investigates the primary types of legal regimes and compares them across different national and international contexts; contrasts legal with non-legal forms of social ordering; investigates the structure and practice of human rights law.

LSJ 230 Introduction to Disability Studies (5) I&S, DIV J. WOIAK Introduces the field of disability studies. Focuses on the theoretical questions of how society predominantly understands disability and the social justice consequences. Examines biological, social, cultural, political, and economic determinants in the framing of disability. Offered: jointly with CHID 230/DIS ST 230.

LSJ 301 Internship (1-5, max. 5) Participation in an approved internship. Credit/no-credit only.

LSJ 310 Research in Law, Societies, and Justice (1-5, max. 15) I&S Supervised introductory individual and/or seminar-based research on some aspect of society and justice.

LSJ 320 The Politics and Law of International Human Rights (5) I&S, DIV J. MAYERFELD Studies the international human rights movement in its legal and political context. Focuses on institutions which influence, enable, and constrain the international promotion of human rights. Offered: jointly with POL S 368.

LSJ 321 Human Rights Law in Culture and Practice (5) I&S, DIV A. OSANLOO Introduces the complexities of issues surrounding human rights. Examines human rights concerns through critical analyses, taking into account legal, social, economic, and historical variables. Offered: jointly with ANTH 323.

LSJ 322 Human Rights in Latin America (5) I&S, DIV A. GODOY Overview of human rights issues and their recent evolution in Latin American history; military dictatorships; contemporary challenges in the region's democracies. Human rights concerns in relation to broader sociopolitical context. Recommended: knowledge of modern Latin American history. Offered: jointly with JSIS A 324.

LSJ 327 Women's Rights as Human Rights (5) I&S R. CICHOWSKI Women's rights in comparative perspective, focusing on varying settings that alter the meaning and practical application. Domestic level: areas including abortion politics to trafficking in women. International level: areas including equality claims before European supranational judicial bodies, rape as war crime in international law. Offered: jointly with POL S 327.

LSJ 329 Immigration, Citizenship, and Rights (5) I&S, DIV C. PINEDO-TURNOVSKY A sociological examination of citizenship. Focus on how immigration law and policies shape

divers meanings, practices, and statutes, of citizenship in varied context. Topics include migration theories, state control, stage of legal status, relationship to race and gender ideology, as well as labor and civil society, in shaping membership and rights.

LSJ 330 Beyond Civil Rights: Law, Culture, and Change (5) I&S Assessment of the contemporary politics of civil rights as shaped by an identity politics that is both significant and passe. Recommended: either LSJ 363 or one course in either AES or GWSS. Offered: jointly with AES 330.

LSJ 331 The Politics of Race and Ethnicity in the United States (5) I&S, DIV M. FRANCIS Introduction to the history and development of racial hierarchy, focusing on how race and ethnicity shape political institutions (e.g., the Constitution, political parties, voting systems). Examination of political relationships between Whites, African Americans, Latinos, and Asian Americans. Case studies of minority representation and the politics of welfare, crime, immigration, and terrorism. Offered: jointly with POL S 317.

LSJ 332 Disability and Society (5) I&S Concentrates on contemporary issues in disability studies, focusing on the thematic frameworks of rights, identities, values, and science/medicine. Recommended: DIS ST 230/LSJ 230/CHID 230. Offered: jointly with CHID 332/DIS ST 332.

LSJ 360 Introduction to United States Constitutional Law (5) I&S G. LOVELL Growth and development of the United States Constitution as reflected in decisions of the Supreme Court; political, social, and economic effects. Offered: jointly with POL S 360.

LSJ 361 United States Courts and Civil Liberty (5) I&S G. LOVELL Cases and literature bearing on protection of constitutionally guaranteed private rights, with particular reference to the period since 1937. Offered: jointly with POL S 361.

LSJ 363 Law in Society (5) I&S Inquiry into how law matters in social practice. Examines general theories of law, the workings of legal institutions, and the character of legally constituted practices and relationships in diverse terrains of social life. Instructor: McCann. Offered: jointly with POL S 363.

LSJ 366 Comparative Law, Societies, and Courts: Global and Local Perspectives (5) I&S Barzilai Explores global issues of comparative law, societies, politics, and courts. Uses criteria, methodologies, and theories to compare legal settings internationally. Covers: what is 'comparative law'; families' of law; history of comparative law; models of judicial review; legal cultures; and models of regulation. Can not be taken for credit if student has already taken LSJ/POL S 367. Offered: jointly with JSIS B 366.

LSJ 367 Comparative Law and Courts (5) I&S R. CICHOWSKI Introduction to comparative judicial politics, focusing on the relationship between law and politics in cross-national perspective, as well as on the functioning of supranational and international legal entities in the international system. May not be taken for credit if student has taken LSJ/JSIS B 366. Offered: jointly with POL S 367.

LSJ 370 Privacy (5) I&S S. Pekkanen Explores how individuals, corporations, and governments respond to privacy challenges in the digital age. Examines evolution of the idea of privacy using case studies of actual privacy policies, legal cases, and real-world situations. Covers legal, political, and social facets of this fundamental human issue. Offered: jointly with JSIS B 370/POL S 370; Sp.

LSJ 375 Crime, Politics, and Justice (5) I&S J. WENDER Reviews the major components - police, courts, and corrections - of the U.S. criminal justice system; investigates critical factors that shape criminal procedure; considers the relationship between criminal procedure and wider concerns of justice.

LSJ 376 Drugs and Society (5) I&S K. BECKETT, J. WENDER Explores the questions of drug use and abuse, social and political factors that shape response to their use, and the social conditions under which drug use is likely to have ad-

verse consequences. Also covers U.S. drug control policy, the political economy of legal and illegal drugs, and political aspects of drug use. Offered: jointly with SOC 376.

LSJ 377 Punishment: Theory and Practice (5) I&S Examines the philosophical reasoning that underlies punishment practices such as sentencing, imprisonment, or capital punishment. Considers policy issues in these areas in light of theories about morality and human nature. Helps students learn how to analyze punishment policies from ethical and philosophical perspectives.

LSJ 378 Policing the City (5) I&S S. *HERBERT* Investigates how and why formal and informal order is established in urban areas, how this order produces advantages and disadvantages, and possibilities of alternative visions of order. Topics include formal means of control (zoning, laws, policing, building codes) and informal means of control (gossip, ostracism, peer pressure, local politics). Offered: jointly with GEOG 378; A.

LSJ 380 Contemporary Issues in Comparative Legal Institutions (5, max. 10) I&S Covers theoretical, empirical, and comparative aspects of such topics as socio-legal concepts, justice, legal policies, and the institutions of law. Recommended: either POL S 101, POL S 202, POL S 204, or SOC 110.

LSJ 381 Contemporary Issues in Rights (5, max. 10) I&S Studies the theoretical, empirical, and comparative aspects of such topics as human rights, civil rights, and legal change.

LSJ 400 Senior Seminar (5, max. 10) For students in their final year as Law, Societies, and Justice majors. Incorporates material learned in student's primary field of specialization. Includes independent research, oral presentations, and the completion of a substantial paper.

LSJ 401 Field Experience in Law, Societies, and Justice (5) S. *HERBERT* Participant observation in a public or private agency relevant to the study of law, justice, human rights, or court systems.

LSJ 420 The Politics of Rights (5) I&S M. *McCann* Examines rights in practical and social interaction, rights as social conventions, relations of rights practices to official state policies, disputing practices, interest formation, and identity construction at individual and group levels. Explores how rights practices figure into the constellation of contested power relations within modern societies.

LSJ 421 Women's Rights and Politics in Islamic Society (5) I&S, DIV A. *OSANLOO* Human rights theory with women's legal rights and practice within context of the Islamic state. Introduction to debates regarding universality of human rights through examination of women's rights in Muslim context. Considers journalistic notions of homogeneity among Muslims, political nature of the Islamic state, and its mobilization of human rights. Offered: jointly with ANTH 498.

LSJ 425 Domesticating International Human Rights: Perspectives on U.S. Asylum and Refugee Law (5) I&S, DIV A. *OSANLOO* Examines the creation, production, and proliferation of law and legal categories relating to the status of refugees and asylum-seekers in the United States. Integrates anthropological perspectives of law's ability to create meaning in the examination of deeper implications of asylum and refugee law in American society. Offered: jointly with ANTH 497.

LSJ 426 Reconciliation: The Politics of Forgiveness in a Global Age (5) I&S, DIV A. *OSANLOO* Draws on history of post-World War II conflict. Analyzes international mechanisms for reconciliation alongside philosophical and moral consideration. Combines occidental moral philosophies of secular human rights rooted with local knowledge and value systems. Surveys faith-based epistemologies underlying reconciliation processes. Prerequisite: either LSJ 320/POL S 368, LSJ 321/ANTH 323, LSJ 322/JSIS A 324, or PHIL 338.

LSJ 428 Women's Rights in an Integrated Europe (5) I&S Examines the transformation in women's rights policy within the European community from the late 1950s through the present. Focuses on the legal rules and bodies that govern not only these policy domains, but also their evolution and impacts. Offered: jointly with POL S 415.

LSJ 430 Topics in Disability Studies (1-5, max. 15) I&S Theoretical, critical, analytical, or comparative examination of an issue or issues in Disability Studies. Topics vary. Prerequisite: either DIS ST/CHID/LSJ 230, DIS ST 332, DIS ST 433, or DIS ST 434. Offered: jointly with CHID 430/DIS ST 430.

LSJ 433 Disability Law, Policy, and the Community I&S (5) I&S, DIV Addresses the history of legal rights of disabled people, U. S. disability policy, and the role of community activism and other forces in policy development and systems change. Introduces the existing social service system that affects disabled people. Recommended: LSJ 230/CHID 230/DIS ST 230. Offered: jointly with CHID 433/DIS ST 433.

LSJ 434 Civil and Human Rights Law for Disabled People (5) I&S, DIV *Brown* Expands knowledge of civil and human rights for disabled people. Examines the American perspective (ADA) as well as various international models including the United Nations' International Human Rights treaties as they relate to disabled people. Recommended: LSJ 230/CHID 230/DIS ST 230. Offered: jointly with CHID 434/DIS ST 434.

LSJ 444 Ethics in Law and Justice (5) I&S Applies ethical theories, research, and practice to the law and justice system, with the goals of: (1) analyzing the moral dimensions of criminal law; (2) studying ethical issues in law enforcement, adjudications, and corrections; and (3) examining a variety of controversial ethical issues associated with the justice system.

LSJ 467 Law, Justice, and the Environment (5) I&S S. *HERBERT* Examines the role law plays in shaping environmental policy. Challenges student to understand how environmental concerns are translated into legal discourse, and covers several typical issues that emerge in environmental law. Centers on active discussions. Offered: jointly with GEOG 467.

LSJ 469 Law and Rights in Authoritarian Regimes (5) I&S S. *WHITING* Explores role of law and courts and nature of rights in authoritarian regimes. Questions addressed include why authoritarian regimes promote "rule-of-law", who is empowered by law, and the political consequences of "rule-of-law" promotion. Recommended: LSJ 366/JSIS B 366 or POL S 367/LSJ 367. Offered: jointly with JSIS B 469/POL S 469.

LSJ 474 Geography and the Law (5) I&S S. *HERBERT* Examines the relationship between geography, law, and socio-legal analysis; reviews significant instances where law and geography intersect, such as the regulation of public space, the regulation of borders and mobility, and disputes over property and land use. Offered: jointly with GEOG 474.

LSJ 476 Miscarriages of Justice (5) I&S Examines legal and social factors that shape criminal case outcomes, analyzing how one type of miscarriage of justice - wrongful conviction - occurs. How can cases of wrongful conviction be explained? Why are some people, against whom there is only weak evidence, convicted and sometimes even executed? Offered: jointly with SOC 476.

LSJ 480 Policing Modern Society (5) I&S J. *WENDER* Explores institution and practices of police in context of the rise of modern society, and considers the expanding presence of the police in everyday modern life. Topics include: history of policing, changing roles of police, police reform, and ethical dilemmas intrinsic to the police function.

LSJ 488 Honors in Law, Societies, and Justice (5-) First of a two-course hyphenated sequence. To be completed with LSJ 489.

LSJ 489 Honors in Law, Societies, and Justice (-[1-5], max. 5) I&S Thesis research honors option. Second of a two-course hyphenated sequence. To be completed with LSJ 488.

LSJ 490 Special Topics in Comparative Legal Institutions (1-5, max. 15) I&S Focused, comparative examination of legal institutions.

LSJ 491 Special Topics in Rights (1-5, max. 15) I&S Focused, comparative examination of topics in rights.

LSJ 495 Study Abroad-Law, Societies, and Justice (3-5, max. 15) I&S Comparative studies abroad of legal institutions, rights, and justice as related to national settings. Specific course content determined by faculty member.

LSJ 499 Readings in Law, Societies, and Justice (1-5, max. 10) Individual readings in law, societies, and justice.

LSJ 501 Law, Politics, and Society (5) Beckett, Herbert, McCann Provides a broad overview of, and introduction to, the interdisciplinary field of Law and Society Studies, including the historical development of law and society studies and an overview of its main concerns and questions.

LSJ 510 Topics in Law and Society Studies (3-5, max. 20) Current topics in law and society studies.

Linguistics

A210 Padelford

Linguistics is the scientific study of language, which is one of the most characteristic human attributes. In contrast to other language-related disciplines, linguistics is concerned with describing the rule-governed structures of languages, determining the extent to which these structures are universal or language-particular, positing constraints on possible linguistic structures, and explaining why there is only a fairly narrow range of possible human languages.

UNDERGRADUATE PROGRAM

Adviser

A215 Padelford, Box 354340

(206) 685-4846

lingadv@uw.edu

The Department of Linguistics offers the following programs of study:

- The Bachelor of Arts degree with options in general linguistics and Romance linguistics
- A minor in linguistics
- A minor in American sign language

Bachelor of Arts

General Linguistics

Suggested First- and Second-Year College Courses: LING 400 or other introductory course in linguistics. One year of a foreign language that belongs to a different family from the student's native language.

Department Admission Requirements

1. Completion of at least the third quarter, or equivalent, of a foreign language, with a minimum 2.0 grade
2. Completion of at least one writing (W) course and two quantitative and symbolic reasoning (QSR) courses, with a minimum 2.0 grade in each course and a cumulative 2.50 GPA in the three courses
3. The department accepts students who meet the minimum requirements stated above, but recognizes that a 2.50 GPA or higher is indicative of the motivation and

academic skills needed for a reasonable probability of success in the program.

Major Requirements

80 credits, as follows:

1. LING 400 or other introductory course in linguistics
2. LING 450, LING 451, LING 461, LING 462
3. At least one of LING 432, LING 442, or LING 481
4. At least one year of each of two languages, one of which must belong to a language family different than the student's native language, with a minimum grade of 2.0 in the third quarter of each language
5. 20 additional credits of departmentally approved courses in linguistics.

Romance Linguistics

Suggested First- and Second-Year Courses: Two college years of study in a Romance language; LING 400 or other introductory course in linguistics

Department Admission Requirements

1. Completion of at least one year of college work in a single Romance language
2. Completion of at least one writing (W) course and two quantitative and symbolic reasoning (QSR) courses, with a minimum 2.0 grade in each course and a cumulative 2.50 GPA in the three courses
3. The department accepts students who meet the minimum requirements stated above, but recognizes that a GPA of 2.50 or higher is indicative of the motivation and academic skills needed for a reasonable probability of success in the program.

Major Requirements

Minimum 63 credits, as follows:

1. LING 400 or another introductory course in linguistics
2. LING 450, LING 451, LING 461, and LING 462
3. 15 credits at the 300 level or higher of one Romance language
4. LING 419
5. 20 additional credits of departmentally approved courses in linguistics, with at least one course for which a research paper on a Romance language is written

Minors

Linguistics -- Minor Requirements: 32 credits to include LING 400 or another introductory course in linguistics; three courses from LING 432, LING 442, LING 450, LING 451, LING 461, LING 462, or LING 481; 12 additional credits from a list of departmentally approved courses in linguistics, 6 of which must be in upper-division courses

American Sign Language -- Minor Requirements: 33-35 credits as follows:

1. *Second-year American Sign Language (15 credits):* ASL 201; ASL 202; ASL 203
2. *Culture and History (3 credits):* ASL 305
3. *Theory and Structure (8-10 credits):* LING 400 or LING 461; either ASL 343 or LING 403
4. Approved 300- 400-level electives (minimum 7 credits). See adviser for approved list.
5. Minimum 2.00 cumulative GPA for all courses applied to the minor
6. Minimum 18 credits from outside student's major requirements

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The study of linguistics emphasizes formal reasoning and critical thinking skills. Linguists' skill sets include the ability to analyze sound, word, and sentence structures of indi-

vidual languages; the ability to understand and account for how languages change in certain patterns; the ability to understand how social factors can affect language, how people learn their first or second languages; and the ability to find out and appreciate how apparently vastly different languages can be governed by the same set of rules. Linguistics is a valuable component of liberal education and vocationally can have applications wherever language itself becomes a matter of practical concern. Graduates have a good foundation for pursuing further training and careers in teaching languages, in areas of rehabilitative medicine such as audiology or speech therapy, in special education, in work with native peoples or with immigrant groups, in lexicographic work, in interpretation and translation, in work in computer science and artificial intelligence, or in academic disciplines such as psychology, philosophy, literature and language studies, where the contribution of linguistics is recognized. An undergraduate degree in linguistics from the UW also serves as preparation for graduate work in linguistics or language-related fields such as speech and hearing science or language teaching.

- *Instructional and Research Facilities:* The Language Learning Center located in Denny Hall provides audio and video services facilitating language learning. It also has a computer laboratory providing instructional software for linguistics and varieties of languages. Departmental facilities include a phonetics laboratory for students conducting phonetic experiments and doing digital acoustic analyses, a linguistics library that supplements the linguistics collection of the UW libraries and provides a quiet study place, and a computer laboratory for research in computational linguistics.
- *Honors Options Available:* With College Honors (Completion of both Honors Core Curriculum and Honors requirements in the major). With Honors (Completion of Departmental Honors requirements). See adviser for requirements.
- *Research, Internships, and Service Learning:* None offered
- *Department Scholarships:* None offered
- *Student Organizations/Associations:* The Linguistics Undergraduate Association (LingUA)

GRADUATE PROGRAM

Graduate Program Coordinator

A210B Padelford, Box 354340

(206) 543-2046

phoneme@uw.edu

The Department of Linguistics offers a program of study for graduate students leading to the degrees of Master of Arts and Doctor of Philosophy. The program is administered by the departmental faculty. The major interest of the core faculty lies in syntax, semantics, phonetics, phonology, sociolinguistics, computational linguistics, and in theoretical aspects of second-language acquisition.

Some course work is also available in various cooperating departments. Among those fields represented outside the department are psycholinguistics, philosophy of language, speech synthesis, and the structure and history of a number of individual languages and language families.

Master of Arts

An MA is not required as a prerequisite to PhD study.

Degree Requirements

Thesis Option

1. Minimum 35 credits - LING 507, LING 508, LING 532, LING 551, LING 552, either LING 550 or LING 553, either LING 542 or LING 579

2. Language Requirement: Satisfied by one of the following:
3. One year of study at the university or community college level. Students who are language instructors in other UW departments can use their language teaching experience to satisfy one language requirement.
4. A major research project that involves significant primary data collection that includes substantial structural analysis and results in a major paper such as a generals paper
5. Translation exam to demonstrate the ability to read linguistic literature in a foreign language; only one of the two language requirements for the PhD can be satisfied through the translation exam
6. A thesis, written under the supervision of a Linguistics faculty member, and accepted by a second faculty reader. Normally the work is completed in 10 credits of LING 700.

Non-thesis Option: Students who pass the General Exam will automatically receive an M.A. degree in General Linguistics; the Generals papers and Exam constitute the capstone project necessary for a master's degree (or the student may complete the thesis model below).

Master of Science in Computational Linguistics

Admission Requirements

1. The ability to program, including knowledge of data structures and algorithms (equivalent to CSE 373); broad familiarity with C++ and Java; expertise in C++ or Java; and Perl and/or Python.
2. A college-level introductory course in linguistics or equivalent
3. Introduction to statistics and probability (equivalent to STAT 391)
4. Some knowledge of languages other than English is strongly encouraged.
5. A one- or two-page statement of purpose.
6. Two or three letters of recommendation, preferably from people familiar with the applicant's academic work
7. A sample of the applicant's academic work (required for applicants who have completed their previous degree within the past two years. Other applicants who wish to send samples of academic work are encouraged to do so). Types of samples include coding projects (together with write-ups), theses and term papers.
8. One complete set of official transcripts
9. International applicants must meet UW English language proficiency requirements. For more information, please refer to Memo 8: Graduate School English Language Proficiency Requirements.

Degree Requirements

43 credits, as follows:

1. *Required Courses:* LING 450, LING 566
2. One additional 400- or 500-level course in phonetics, phonology, morphology, syntax, semantics, or pragmatics
3. *Computational Linguistics Courses:* LING 570, LING 571, LING 572, LING 573
4. One elective in computational linguistics and one elective in computational linguistics or a related area
5. At least 10 credits of LING 600 or LING 700

Doctor of Philosophy

In addition to the general Linguistics PhD program, an option is offered Computational Linguistics. Variations in requirements are shown below.

Admission Requirements

Three letters of recommendation and Graduate Record Examination scores are required for all applicants. Applicants should send the department a copy of their master's thesis or a paper of high quality, or both.

Degree Requirements

Minimum 90 credits

General Linguistics

- Required Courses (35 credits):** LING 507, LING 508, LING 532, LING 551, LING 552, LING 550 or LING 553, LING 542 or LING 579
- Additional courses for a minimum of 90 credits (27 of which are LING 800) to be determined by specialization and consultation with the Supervisory Committee
- Language Knowledge Requirement:** Non-Computational Linguistics graduate students must satisfy two natural language requirements for the PhD through the following:
 - One year of study at the university or community college level. Students who are language instructors in other UW departments can use their language teaching experience to satisfy one language requirement.
 - A major research project that involves significant primary data collection that includes substantial structural analysis and results in a major paper such as a generals paper
 - Translation examination to demonstrate the ability to read linguistic literature in a foreign language; only one of the two language requirements for the PhD can be satisfied through the translation examination.
- Colloquium Conference Talks:** Two papers delivered at a colloquium or conference
- Constitution of the PhD committee by the end of the second year of study
- Generals Papers:** Two generals papers in different areas, at least one in grammatical theory. (Normally 10 credits of LING 600.)
- General Examination:** An oral examination, in which the candidate is questioned on the two papers. The oral examination may not be scheduled until the committee has read the two papers and approved them as passing.
- Dissertation Prospectus:** Within six months of the oral examination, the student presents a formal dissertation proposal to the subset of the PhD Supervisory Committee members who constitute the reading committee, along with a proposed calendar for completion of the dissertation.
- Final Examination:** A final examination on the dissertation attended by the candidate's Supervisory Committee and open to others interested
- Dissertation:** Suitable for publication
- All-but-dissertation (ABD) Requirement:** All degree requirements except for the dissertation and the two colloquia must be completed before the general examination.

Computational Linguistics Option

Admission Requirements

Students who complete the Computational Linguistics Master of Science degree (CLMS) and who wish to be admitted to PhD study in linguistics must satisfy the following:

- Completion of CLMS degree requirements
- Completion of master's thesis option
- Completion of three courses required for the Linguistics PhD (Computational Linguistics track), subject to the following restrictions: (a) Courses must be taught by

at least two non Computational Linguistics faculty; (b) Courses may not include LING 570 through LING 573

- The required general linguistics courses for the Computational Linguistics track PhD is as shown below.

Degree Requirements

Requirements are the same as for the General Linguistics option, except for the following:

- Required Courses:** Two from LING 507, LING 508, LING 566; two from LING 550, LING 551, LING 552, LING 553; one from LING 542, LING 579; one from LING 532, LING 533; three from LING 567, LING 570, LING 571, LING 572, LING 573
- Language Knowledge Requirement:** Computational Linguistics students must fulfill only one language requirement, but may not use a translation examination to do so.
- Generals Papers:** Same as for the General Linguistics program except a master's thesis completed as part of the CLMS program may count as one of the two generals papers.
- Transition from the CLMS to PhD program is done in two steps:
 - Step 1:** Entering the General Linguistics graduate program registered as a post-master's program student: Students may apply for admission to the Linguistics graduate program after receiving their CLMS degree; admission decision is made by the Computational Linguistics faculty; after admission, students pay regular UW tuition for courses.
 - Step 2:** Entering the Linguistics PhD program: Students may apply for admission to the PhD program after completing all requirements listed above; admission decision is made by the full linguistics faculty. If all requirements are completed upon receipt of the CLMS degree, Steps 1 and 2 may be completed simultaneously.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

American Sign Language

ASL 101 Elementary American Sign Language I (5) L. FORSHAY, K. WINTER Introduction to American Sign Language using conversational methods. Covers vocabulary, grammatical usage, and culturally appropriate behavior within the deaf community. First in a sequence of three. Offered: A.

ASL 102 Elementary American Sign Language II (5) L. FORSHAY, K. WINTER Focuses on building mastery of American Sign Language grammar skills, increasing vocabulary, and gaining a deeper knowledge and appreciation of deaf culture. Second in a sequence of three. Prerequisite: ASL 101. Offered: W.

ASL 103 Elementary American Sign Language III (5) L. FORSHAY, K. WINTER Focuses on grammatical features such as spatialization, directionality, and non-manual components. Intensive work in vocabulary development and continued study of deaf culture. Third in a series of three. Prerequisite: ASL 102. Offered: Sp.

ASL 134 Intensive First Year ASL (15) Bateh, Forshay, Winter Intensive introduction to American Sign Language using conversational methods and covering vocabulary, grammatical usage, and culturally appropriate behavior. Also focused on grammatical features such as spatialization, directionality, and non-manual components. Offered: S.

ASL 201 Intermediate American Sign Language I (5) VLPA L. FORSHAY Covers vocabulary, grammatical usage, and

culturally appropriate behavior within the deaf community. Emphasizes receptive/expressive skill development and fluency with attention to correct formation of signs, movement, rhythm, phrasing, and clarity. First in a series of three. Prerequisite: either ASL 103 or ASL 134. Offered: A.

ASL 202 Intermediate American Sign Language II (5) VLPA L. FORSHAY Covers vocabulary, grammatical usage, and culturally appropriate behavior within the deaf community. Emphasizes receptive/expressive skill development and fluency with attention to correct formation of signs, movement, rhythm, phrasing, and clarity. Second in a series of three. Prerequisite: ASL 201. Offered: W.

ASL 203 Intermediate American Sign Language III (5) VLPA L. FORSHAY, K. WINTER Covers vocabulary, grammatical usage, and culturally appropriate behavior within the deaf community. Emphasizes receptive/expressive skill development and fluency with attention to correct formation of signs, movement, rhythm, phrasing, and clarity. Third in a series of three. Prerequisite: ASL 202. Offered: Sp.

ASL 234 Intensive Intermediate American Sign Language (15) VLPA L. FORSHAY Intensive second year American Sign Language using conversational methods and covering vocabulary, grammatical usage, and culturally appropriate behavior. Also focuses on grammatical features such as spatialization, directionality, and non-manual components. Prerequisite: ASL 103. Offered: S.

ASL 305 Introduction to American Deaf Culture (3) I&S, DIV L. FORSHAY Covers topics in Deaf culture, history, education, sociology, language, legal issues, art and literature, sensory variety and politics, audism, assistive technological devices, Deafhood, Deaf Blind, Deaf identity and intersections of diversity within the Deaf community, and other special topics analyzed from the Deaf culture worldview.

ASL 306 Deaf History (3) I&S Covers all major events impacting Deaf people, in Europe and America. Topics include: development of sign language, deaf education, politics of deafness, audism, eugenics, hearing technology, leadership in deaf community, deaf revolution movements, international deaf history, and key biographies. Experience with American Sign Language not required.

ASL 495 Literature and Poetry (3) VLPA Emphasizes the historical background, story content, analysis of grammatical features, and discourse analysis to include a variety of sign registers and styles. Challenges and redefines the concept of literature with the visual-gestural nature of sign language using films and videos including: the Veditz's 1913 motion films collections; American Sign Language poetry works by Valli and Lentz; folktales; and humor. Prerequisite: ASL 202.

ASL 499 Independent Study or Research (1-3, max. 3) L. FORSHAY, K. WINTER Advanced study or research of a topic related to American Sign Language guided by a faculty member. Prerequisite: ASL 203; ASL 305.

Linguistics

LING 100 Fundamentals of Grammar (5) VLPA L. MCGARITY, C. SUREK-CLARK, K. ZAGONA Introduction to basic grammatical concepts and terminology. Specifically intended for students planning to take a foreign language or linguistics. Does not count toward the linguistics major or minor.

LING 101 Fundamentals of Pronunciation for Language Learners (5) VLPA Kaisse Fundamentals of pronunciation for language learners. Introduces students to systematic characteristics of language sounds through examination of specific languages and their differences from English. Includes a laboratory component developing perceptual and productive skills of non-English sounds.

LING 200 Introduction to Linguistic Thought (5) VLPA/I&S, QSR Language as the fundamental characteristic of the human species; diversity and complexity of human languages; phonological and grammatical analysis; dimensions of language use; and language acquisition and his-

torical language change. Not open for credit to students who have completed LING 201 or LING 400.

LING 201 Introduction to Linguistic Theory and Analysis (5) VLPA/I&S, QSR Background and scope of modern linguistics; behaviorist versus rationalist theories of language; universal and cognitive aspects of language structure; interplay of genetic and social factors in language formation; linguistic analysis. Not open for credit to students who have completed LING 200.

LING 203 Introduction to Anthropological Linguistics (5) VLPA/I&S Linguistic methods and theories used within anthropology. Basic structural features of language; human language and animal communication compared; evidence for the innate nature of language. Language and culture: linguistic relativism, ethnography of communication, sociolinguistics. Language and nationalism, language politics in the United States and elsewhere. Offered: jointly with ANTH 203.

LING 220 Origins of the Germanic Languages (5) VLPA Introduction to basic grammatical concepts, terminology, and linguistics with emphasis on German-English relationship. Overview of phonology, morphology, syntax, and history of Germanic languages and people, both ancient and modern. Languages covered include Old, Middle, and New High German; English, Frisian, Dutch, Old Saxon, and Gothic. Taught in English. Offered: jointly with GERMAN 220.

LING 233 Introduction to Language and Society (5) VLPA, DIV Evans, Wassink Introduces the study of sociolects, the varieties of language that arise from differences in cultural and societal groups, often reflective of power inequalities. Raises awareness of the role that society and the individual play in shaping sociolects via the systematic observation and critical discussion of linguistic phenomena. Offered: jointly with ANTH 233/COM 233; A.

LING 234 Language and Diversity (5) I&S, DIV Surek-Clark Advances students' knowledge of language and diversity in a global society, focusing on language and identity, multilingualism, language contact, language spread/variation, and language loss. Offered: W.

LING 242 Introduction to Meaning (5) VLPA Ogihara Non-technical introduction to meaning in language and how it functions in communication and thinking. Discussion of how and why meanings of words change through time. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400.

LING 270 Introduction to Perl Programming for Linguists (5) Bender Fundamental programming techniques, including data types, control flow, regular expressions, file handling, GUI design, and CGI interaction. Content relates to a variety of linguistic concepts including syntax, morphology, phonology, lexicon building and foreign language corpora. No previous programming necessary; however, a background in general linguistic theory is assumed. Offered: W.

LING 333 Linguistics and Society (3) VLPA/I&S Interaction of language, culture, and society, and the relationship of linguistic theory to societal problems. Ethical and political considerations involved in the application of linguistic theory.

LING 372 Language and Translation (5) VLPA Tarlinskaja Role of linguistic concepts in the process of translation from one language to another. Attention to both language universals and language particulars.

LING 390 Foreign Studies in Linguistics (1-15, max. 20) I&S For students who take linguistics courses while participating in a University of Washington study abroad program and for which there is no direct University of Washington equivalent.

LING 400 Survey of Linguistic Method and Theory (5) VLPA/I&S, QSR L. MCGARRITY Examines major linguistic theories in phonology, syntax and semantics; linguistic analysis and argumentation. Not available for credit to students who have completed LING 200.

LING 401 The Linguistic, Philosophical, and Political Thought of Noam Chomsky (3) VLPA/I&S Relation of current work in Chomskyan linguistics to philosophical, psychological, political, and educational thought.

LING 402 Survey of the History of Linguistics (3) VLPA/I&S Zagana Main trends in linguistic theory and philosophy of linguistics from ancient times through advent of transformational-generative grammar. Includes nineteenth-century comparative and historical grammar, Prague school grammar, American structuralist grammar, major concerns of linguistics today. Prerequisite: LING 451.

LING 403 Structure of American Sign Language (5) VLPA Hargus Introduction to the phonological, morphological, and syntactic structure of American Sign Language. Topics include acquisition, sociolinguistics, neurolinguistics, lexicography, history, and culture. Knowledge of American Sign Language is not required. Prerequisite: LING 200, 201, 203, or 400.

LING 404 Indo-European (3) VLPA Voyles Overview of the Indo-European languages, of comparative method, and of the phonology, morphology, and syntax of reconstructed Indo-European. Grammatical analyses and texts from various attested ancient and modern Indo-European languages, selected according to the interests of the students.

LING 405 Indo-European (3) VLPA Voyles Overview of the Indo-European languages, of comparative method, and of the phonology, morphology, and syntax of reconstructed Indo-European. Grammatical analyses and texts from various attested ancient and modern Indo-European languages, selected according to the interests of the students.

LING 406 Indo-European (3) VLPA Voyles Overview of the Indo-European languages, of comparative method, and of the phonology, morphology, and syntax of reconstructed Indo-European. Grammatical analyses and texts from various attested ancient and modern Indo-European languages, selected according to the interests of the students.

LING 407 Languages of the World (5) VLPA A survey of the world's languages, focusing on their syntactic, phonological, and morphological properties. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400.

LING 411 Native Languages and Language Families of Washington State (3) VLPA Hargus Survey of linguistic structures of Washington native languages. Language families consist of Salish, Wakashan, Chemakuan, Athabaskan, Chinookan, Sahaptian, Cayuse. Structure and origin of Chinook jargon. Prerequisite: LING 450; either LING 461 or LING 481.

LING 415 History of the German Language (5) VLPA Traces the history of the German language from early Germanic to the present. Recommended: LING 200; GERMAN 203. Offered: jointly with GERMAN 452; W.

LING 419 Romance Linguistics Senior Essay (3) VLPA Capstone course for undergraduate Romance Linguistics majors.

LING 430 Pidgin and Creole Languages (5) VLPA/I&S Wassink Explores aspects of the linguistic structure, history, and social context of pidgin and creole languages. Creolization as one possible outcome of language contact. Examines theories of creole genesis, similarities and differences between creole and non-creole languages. Prerequisite: either ANTH 203, LING 200, LING 201, LING 203, or LING 400. Offered: jointly with ANTH 439.

LING 432 Sociolinguistics I (5) VLPA/I&S, DIV Evans, Wassink Interrelationships between social and linguistic factors influencing variation in speech production and perception, morphology, syntax, lexicon. Considers contribution of ethnic, regional and socioeconomic group memberships to dialect differentiation and progression of language change. Nonstandard language, diglossia, pidgins, creoles, gender differences, bi- and multilingualism, ethnography of speaking, pragmatics, and language attitudes. Prerequisite: either LING 200 or LING 400; recommended: prior or

concurrent registration in LING 450. Offered: jointly with ANTH 432.

LING 433 Sociolinguistics II (5) VLPA/I&S Wassink Examines field methods linguists use in socially oriented studies of language variation and change. Includes language attitudes, study of urban dialects, syntactic variation, sampling and interview design. Discussion of issues related to recording, ethics, and analysis of large bodies of data. Prerequisite: LING 432. Offered: jointly with ANTH 433.

LING 441 Linguistics and Poetic Language (3) VLPA Introduction to the Relationship between linguistic structures, linguistic universals, and the poetic uses of language; linguistic description in the analysis of literature. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400.

LING 442 Semantics I (5) VLPA/NW Ogihara Introduction to the study of meaning as part of linguistic theory. Relation of semantics to syntax. Emphasis on formal semantics and pragmatics. Discussion of various semantic phenomena in natural language that are theoretically relevant. Prerequisite: LING 461.

LING 445 Descriptive Aspects of English as a Foreign Language (3) VLPA Linguistic analysis as a basis for the teaching of English as a foreign language; language as rule-governed behavior. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400.

LING 446 English Phonology (3) VLPA Hargus Descriptively oriented approach to of English phonology and phonetics; dialect differences. Prerequisite: LING 450.

LING 447 Psychology of Language (4) VLPA/I&S Osterhout Introduction to the study of language, including language structure, speech perception, language acquisition, psychological processes underlying comprehension and production of language, the relation between brain and language, and the question of the species-specificity of human language. Prerequisite: either minimum 2.0 grade in PSYCH 209, minimum 2.0 grade in LING 200, or LING 201. Offered: jointly with PSYCH 447.

LING 449 Second-Language Learning (5) VLPA Herschensohn Issues related to the linguistic aspects of second-language learning. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400.

LING 450 Introduction to Linguistic Phonetics (5) VLPA/NW S. HARGUS, A. WASSINK, R. WRIGHT Introduction to the articulatory and acoustic correlates of phonological features. Issues covered include the mapping of dynamic events to static representations, phonetic evidence for phonological description, universal constraints on phonological structure, and implications of psychological speech-sound categorization for phonological theory. Prerequisite: either LING 200 or LING 400.

LING 451 Phonology I (5) VLPA/I&S Hargus, Kaisse Patterning of sounds and gestures in human languages; analysis in generative phonological framework. Prerequisite: LING 450.

LING 452 Phonology II (5) VLPA/I&S Hargus, Kaisse Speech sounds, mechanism of their production, and structuring of sounds in languages; generative view of phonology; autosegmental and metrical phonology. Prerequisite: LING 451.

LING 453 Experimental Phonetics (5) VLPA/I&S/NW Wright Examines phonetic and phonological aspects of spoken language using experimental methods. Focuses on acoustic phonetics and speech perception. Significant time devoted to experimental design and hands-on data analysis techniques. Prerequisite: LING 451.

LING 454 Methods in Comparative Linguistics (5) VLPA Aldridge, Handel Method and theory of historical and comparative linguistics. Problems of phonological, morphological, syntactic, and semantic change and reconstruction. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400.

LING 455 Areal Linguistics (3, max. 6) VLPA/I&S Issues involved in classification of languages. Systems of classification based on structure, word order, areal features. Ways in which languages may be classified for different purposes. Processes such as borrowing, vocabulary specialization, lexical change, and language death and revival. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400. Offered: jointly with ANTH 455.

LING 457 Language Development (5) VLPA/I&S First-language acquisition and use by children. Emphasis on theoretical issues and research techniques. Prerequisite: minimum 2.0 grade in either PSYCH 206, PSYCH 306, LING 200, or LING 400. Offered: jointly with PSYCH 457.

LING 458 Language and Gender (5) VLPA/I&S, DIV L. BILANIUK Survey of the theoretical trends, methods, and research findings on the relationship between language and gender. Focus on power relations in gendered language use. Extensive study of research based on conversational analysis. Prerequisite: LING 200; either LING 201, LING 203, or ANTH 203. Offered: jointly with ANTH 450/GWSS 450.

LING 461 Syntax I (5) VLPA/I&S Aldridge, Citko, Zagona Study of the structural properties of language; introduction to generative transformational syntax. Prerequisite: either LING 200 or LING 400.

LING 462 Syntax II (5) VLPA/I&S Aldridge, Citko, Zagona Study of the structural properties of language; introduction to generative transformational syntax. Prerequisite: LING 461.

LING 463 Syntax III (4) VLPA/I&S Study of the structural properties of language; introduction to generative transformational syntax. Prerequisite: LING 462.

LING 464 Language Politics and Cultural Identity (3) VLPA/I&S L. BILANIUK Theories and case studies of the power of language and how it is manipulated. Multilingualism, diglossia. Role of language and linguistics in nationalism. Standardization, educational policy, language and ethnicity. World languages, language death and revival. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400. Offered: jointly with ANTH 464.

LING 470 Discourse: Analyzing Talk and Texts (5) VLPA/I&S A critical and practical introduction to contemporary theories/methods in discourse analysis: how verbal communication (together with visual communication) is used in conversational talk and mediated texts to construct identities and relationships; and how power and ideology are reproduced through these everyday social interactions. Offered: jointly with COM 470.

LING 471 Computational Methods for Linguists (5) QSR Overview of methods for working with linguistic data in electronic form: electronic corpora, linguistic software tools, textual data formats, operating system fundamentals, and basic programming. Prerequisite: either LING 450 or LING 461.

LING 472 Introduction to Computational Linguistics (5) VLPA/NW E. BENDER Introduction to computational approaches to modeling language, for linguistic research and practical applications, including analyses at different levels of linguistic structure and symbolic as well as statistical approaches. Prerequisite: either LING 200 or LING 400; either LING 461 or CSE 311. Offered: jointly with CSE 472.

LING 473 Basics for Computational Linguistics (3) Examines computer applications involving automatic processing of natural language speech or text by machines. Intended as preparation for CLMS core courses. Includes concepts form probability and statistics; formal grammars and languages; finite-state automata and transducers; review of algorithms and data structures; and software for using parallel server cluster. Prerequisite: CSE 326; STAT 391; programming in Perl, C, C++, Java, or Python. Offered: S.

LING 476 Philosophy of Language (5) VLPA/I&S Current theories of meaning, reference, predication, and related concepts. Offered: jointly with PHIL 453.

LING 479 Semantics II (3) VLPA/I&S/NW T. OGIHARA Formal characterization of linguistic meaning. Emphasis on nature and purpose of formal semantics and on its relation to formal syntax. Prerequisite: LING 442. Offered: jointly with PHIL 479.

LING 480 Topics in Linguistics (3, max. 12) VLPA Introduction to an area of linguistic study not covered by the regular departmental course offerings.

LING 481 Introduction to Morphology (5) VLPA S. HARGUS Structure of words and the processes by which they are formed. Morphological processes in a wide variety of languages. Prerequisite: LING 451.

LING 484 Lexical Semantics and the Lexicon (3) VLPA Role of the lexicon in syntax and semantics. Topics include the syntax-lexicon mapping; theories of argument structure; complex predicate formation and lexical subordination; the lexicon and language acquisition; the role of the lexicon in linguistic theory; and the lexicon and sentence processing. Prerequisite: LING 461.

LING 490 Undergraduate Fieldwork (1-3, max. 6) Individual consultation with faculty member and supervised practical experience in a broad range of industry, community, clinical settings dealing with linguistic issues. Credit/no-credit only. Offered: AWSpS.

LING 501 Field Methods (3) Guided analysis of a language unfamiliar to all students of the class; construction of a grammar based on material elicited from native informant. Prerequisite: LING 452, LING 462, or LING 508.

LING 502 Field Methods (3) Guided analysis of a language unfamiliar to all students of the class; construction of a grammar based on material elicited from native informant. Prerequisite: LING 452, LING 462, or LING 508.

LING 503 Field Methods (3) Guided analysis of a language unfamiliar to all students of the class; construction of a grammar based on material elicited from native informant. Prerequisite: LING 453, LING 462, or permission of instructor.

LING 507 Syntactic Theory I (5) E. ALDRIDGE, B. CITKO, K. ZAGONA Introduction to the principles and parameters model of syntactic theory. The lexicon and its relation to syntactic representations. Syntactic modules and principles. Problem solving.

LING 508 Syntactic Theory II (5) Zagona, Aldridge, Citko Further explorations in principles and parameters syntax. Topics include logical form, island phenomena, locality restrictions, and licensing. Prerequisite: LING 507 or permission of instructor. Offered: W.

LING 509 Syntactic Theory III (5) Zagona, Aldridge, Citko Focus on primary readings in syntactic theory, from classic papers on constraints and the architecture of grammar to recently published articles. Prerequisite: LING 508 or permission of instructor. Offered: Sp.

LING 514 Seminar in Comparative Linguistics (3) Kaisse Nineteenth- and twentieth-century theories of phonological change. Prerequisite: LING 404 or permission of instructor.

LING 515 Topics in the History of Germanic Languages (5) Barrack, Voyles Topics in diachronic studies of Germanic languages such as Gothic, Old High German, Old Saxon.

LING 519 Mathematical Models of Grammar (3) Ogihara Study of some mathematical models of language recognition, emphasizing context-free and context-sensitive grammars. Prerequisite: graduate standing in mathematics, linguistics, or psychology, or permission of instructor.

LING 522 Topics in the History of Linguistics (3) Zagona Intensive investigation of the main trends in the history of linguistics, concentrating on the development of nineteenth-century historical linguistics, the various schools of structural linguistics, and transformational-generative grammar. Prerequisite: LING 451.

LING 524 Seminar in Theoretical Linguistics (4, max. 8) Individual and joint research on selected topics in theoretical linguistics. Topics change each quarter. Typical topics are semantics, generative grammar, phonological theories. Prerequisite: LING 453, LING 463.

LING 525 Seminar in Theoretical Phonology (4, max. 12) Individual and joint research on selected topics in theoretical phonology. Topics vary. Typical offerings include phonology and the lexicon, syntax and phonology, phonological representations. Prerequisite: LING 452.

LING 530 Dialectology (3) The principles of dialect deviation as related to linguistic structure and usage. Prerequisite: LING 452, LING 462, LING 508, or permission of instructor. Offered: jointly with ANTH 530.

LING 531 Problems in Romance Linguistics (2-5, max. 15) Group seminar, or individual conferences are scheduled under this number to meet special needs. Prerequisite: permission of graduate program coordinator.

LING 532 Sociolinguistics I (5) Evans, Wassink Examines social variation in the phonology, morphology, syntax, and lexicon of languages and dialects. Includes nonstandard language, diglossia, pidgins and creoles, gender differences, bi- and multilingualism, ethnography of speaking, and language attitudes. Prerequisite: either LING 200 or LING 400; recommended: prior or concurrent registration in LING 450. Offered: jointly with ANTH 532; S.

LING 533 Topics and Methods in Sociolinguistic Theory (5) Wassink Examines field methods linguists use in socially oriented studies of language variation and change. Includes language attitudes, study of urban dialects, syntactic variation, sampling and interview design. Discussion of issues related to recording, ethics, and analysis of large bodies of data. Prerequisite: LING 432.

LING 534 Sociolinguistic Applications of Social Network Theory (5) Wassink Examines structure and content of social networks from a linguistic perspective. Reviews applications of graph theory and sociometry in sociolinguistics. Examines how language is embedded in personal networks and how the study of linkages between individuals can elucidate the regularity and direction of language change. Prerequisite: LING 400 and LING 432.

LING 535 Advanced Sociolinguistics (5, max. 10) Wassink Explores perspective on language change and its mechanisms, understood in relation to the social context of language use in the speech community. Examines language-internal and -external motivations for change; phonological mergers and splits, chain-shifts, and diffusion of change through the lexicon. Prerequisite: LING 432 and LING 533.

LING 540 Phonological Development (3) Selected topics in the developmental sequence of phonological systems in normal-speaking children. Relationships between possible phonological inventories and rule systems in different languages. Prerequisite: LING 451, LING 452, or permission of instructor.

LING 542 Semantic Theory I (5) Ogihara Introduction to formal semantics and pragmatics. Basic skills for proposing compositional semantic rules for natural language data. Discussion of various semantic phenomena in natural language that are theoretically relevant. Prerequisite: graduate standing in Linguistics or permission of instructor.

LING 548 Second/Foreign Language Teaching Capstone Project (3-5) Involves a research (original or library), materials development, or a teaching practicum. Offered: AWSpS.

LING 549 Second Language Learning (5) Herschensohn Issues related to the linguistic aspects of second language learning. Prerequisite: either LING 200, LING 201, LING 203, or LING 400. Offered: AS.

LING 550 Introduction to Linguistic Phonetics (5) Wright, Wassink Introduction to the articulatory and acoustic correlates of phonological features. Covers mapping of dynamic events to static presentations, phonetic evidence

for phonological description, universal constraints on phonological structure, and implications of psychological speech-sound categorization for phonological theory. Prerequisite: either LING 200 or LING 400. Offered: AWS.

LING 551 Phonology I: Introduction to Phonological Analysis (5) *Hargus* Patterning of sounds and gestures in human languages; analysis in generative phonological framework. Prerequisite: LING 550. Offered: WSPs.

LING 552 Phonology II: Advanced Phonology (5) *Hargus, Kaisse* Optimality theory; phonetics-phonology interface. Prerequisite: LING 551.

LING 553 Experimental Phonetics (5) *Wright* Examines phonetic and phonological aspects of spoken language using experimental methods. Focuses on acoustic phonetics and speech perception. Significant time devoted to experimental design and hands-on data analysis techniques. Prerequisite: LING 551. Offered: A.

LING 554 Advanced Linguistic Phonetics (3, max. 9) *Wright, Wassink* Individual and joint projects on selected topics in theoretical and experimental phonetics. Topics may include articulatory timing, the phonetics phonology interface, and constraints and constraint interaction. Prerequisite: LING 450 or LING 452. Offered: Sp.

LING 561 Advanced Syntax (2-3, max. 9) Advanced study in modern syntactic theory. Topics change each quarter. Typical topics are history of transformational grammar, anaphora, logical form. Prerequisite: LING 461, LING 462.

LING 562 Advanced Syntax (2-3, max. 9) Advanced study in modern syntactic theory. Topics change each quarter. Typical topics are history of transformational grammar, anaphora, logical form. Prerequisite: LING 461, LING 462.

LING 563 Advanced Syntax (2-3, max. 9) Advanced study in modern syntactic theory. Topics change each quarter. Typical topics are history of transformational grammar, anaphora, logical form. Prerequisite: LING 461, LING 462.

LING 565 Contrastive Linguistics (3) The attempt to look across linguistic systems for comparable and contrastive classes and subclasses. Problems of subcategorization and universal grammar. Three conceptually distinct models: structural, transfer grammar, generative. Prerequisite: LING 452, LING 463.

LING 566 Introduction to Syntax for Computational Linguistics (3) *Bender* Introduction to syntactic analysis and concepts with emphasis on the formally precise encoding in linguistic hypotheses and the design of grammars that can be scaled to practical applications. Coursework progressively builds up a consistent grammar for a fragment of English, while also considering data and phenomena from other languages. Offered: A.

LING 567 Knowledge Engineering for Deep Natural Language Processing (3) *Bender* Techniques and theoretical issues relating to the development of knowledge engineering resources required for deep processing (symbolic or hybrid), focusing on grammar engineering and semantic representations.

LING 570 Shallow Processing Techniques for Natural Language Processing (4) *Xia* Techniques and algorithms for associating relatively surface-level structures and information with natural language corpora, including POS tagging, morphological analysis, preprocessing/segmentation, named-entity recognition, chunk parsing, and word-sense disambiguation. Examines linguistic resources that can be leveraged for these tasks (e.g., WordNet). Prerequisite: a minimum grade of 2.7 in each of CSE 326 or equivalent, STAT 391 or equivalent, and LING 473 or passing score on the placement exam. Offered: A.

LING 571 Deep Processing Techniques for Natural Language Processing (4) *G. LEVOW* Algorithms for associating deep or elaborated linguistic structures with naturally occurring linguistic data (parsing/semantics/discourse), and for producing natural language strings from input semantic representations (generation). Prerequisite: a minimum

grade of 2.7 in each of CSE 326 or equivalent, STAT 391 or equivalent, and LING 473 or passing score on the placement exam. Offered: W.

LING 572 Advanced Statistical Methods in Natural Language Processing (4) *Xia* Covers several important machine learning algorithms for natural language processing including decision tree, kNN, Naive Bayes, transformation-based learning, support vector machine, maximum entropy and conditional random field. Students implement many of the algorithms and apply these algorithms to some NLP tasks. Prerequisite: LING 570. Offered: W.

LING 573 Natural Language Processing Systems and Applications (4) *G. LEVOW* Examines building coherent systems to handle practical applications. Particular topics vary. Possible topics include information retrieval/extraction, natural language query systems, dialogue systems, augmentative and alternative communications, computer-assisted language learning, language documentation, spell/grammar checking, and software localization. Prerequisite: LING 570, LING 571, LING 572. Offered: Sp.

LING 575 Topics in Computational Linguistics (3, max. 30) *BENDER, XIA* In-depth study of a particular area of computational linguistics, with hands-on experience. Prerequisite: LING 570 and 571, or permission of instructor. Offered: WSP.

LING 579 Semantic Theory II (5) *OGIHARA* *Advanced introduction to the formal semantics of natural language. Emphasizes the interface between syntax and semantics. Prerequisite: LING 542.*

LING 580 Problems in Linguistics (2-4, max. 99.9) *Advanced study in current theories of syntax, semantics, phonology, or morphology. Can be repeated for credit.*

LING 581 Morphology (5) Explores the structure of words and the processes by which they are formed. Morphological processes in a wide variety of languages. Prerequisite: either LING 451, LING 551, or equivalent.

LING 582 Capturing Brain Dynamics: A Combined Neuroscience and Engineering Approach (4) *A. LEE* Introduces methods for capturing brain dynamics using an emerging neuroimaging technique known as magnetoencephalography (MEG). Uses techniques to examine perception and cognitive processes and their implications for future brain-computer-interface (BCI) design. Prepare students for interdisciplinary research in neuroscience and engineering. Offered: jointly with SPHSC 594; W.

LING 590 Graduate Fieldwork (1-10, max. 10) Individual consultation with faculty member and supervised practical experience in a broad range of industry, community, clinical settings dealing with linguistic issues. Offered: AWSpS.

LING 599 Linguistics Colloquium (1, max. 6) Seminar attended by faculty and graduate students to discuss research in progress and topics of general interest. Presentation of two seminars required for doctoral students. Prerequisite: permission of instructor.

LING 600 Independent Study or Research (*)

LING 700 Master's Thesis (*)

LING 800 Doctoral Dissertation (*)

Mathematics

C138 Padelford

Mathematics is both a science and an art. Like any great art, mathematics has an intrinsic beauty and coherence that has attracted practitioners for centuries. Yet, unlike other arts, mathematics is a surprisingly effective tool for describing the natural world. Indeed, mathematics has come to serve as the foundation of modern science, through its language and results. Some mathematical results were initially developed in order to solve internally

generated mathematical problems and only later found application in other disciplines; other mathematical results were inspired by the needs of these other disciplines. The two facets of mathematics -- tool of science and subject of inquiry for its own sake -- have come to be interwoven into a complex fabric.

UNDERGRADUATE PROGRAM

Adviser

C36 Padelford, Box 354350

(206) 543-6830

advising@math.washington.edu

The Department of Mathematics offers the following programs of study:

- The Bachelor of Arts degree with a major in mathematics -- standard program
- The Bachelor of Arts degree with a major in mathematics -- philosophy option
- The Bachelor of Arts degree with a major in mathematics, with an option designed specifically for students who plan to pursue secondary teaching careers
- The Bachelor of Science degree with a major in mathematics -- standard program
- The Bachelor of Science degree with a major in mathematics -- comprehensive option
- The Bachelor of Science degree with a major in applied and computational mathematical sciences (ACMS). The Department of Mathematics cooperates with the departments of Applied Mathematics, Computer Science and Engineering, and Statistics in offering this major. (See ACMS for requirements.)
- A minor in mathematics

Bachelor of Arts

Department Admission Requirements

Admission Requirements for Standard Option and Philosophy Option:

A minimum 2.0 grade in the following courses: MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, and MATH 136); a minimum 2.20 cumulative GPA in these courses

Admission Requirements for Teacher Preparation Option:

A minimum 2.0 grade in MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, and MATH 136); a minimum 2.50 cumulative GPA in these courses.

Major Requirements

Standard Option (51 credits):

1. MATH 124, MATH 125, MATH 126, MATH 307, MATH 308 (or MATH 134, MATH 135, and MATH 136); MATH 300; MATH 324; and 8 courses numbered 301 or higher from an approved list of electives. See adviser for approved list.
2. A minimum 2.0 grade in all courses presented to satisfy the mathematics major requirements. A minimum 2.00 cumulative GPA or higher in all mathematics courses at the University, including course repeats.
3. At least 18 credits of graded mathematics courses numbered 300 or higher must be taken in residence at the University.

Philosophy Option (58 credits):

1. MATH 124, MATH 125, MATH 126, MATH 308 (or MATH 134, MATH 135, and MATH 136); MATH 300; MATH 327; MATH 328; five additional mathematics courses at the 300 or 400 level, including at least one two-quarter se-

- quence at the 400 level other than MATH 407, MATH 408, MATH 409, or MATH 421, MATH 422
- PHIL 120 or an upper-level course in logic; PHIL 100, PHIL 160, or PHIL 240; one philosophy course at the 300 level; one philosophy course at the 400 level
 - A minimum 2.0 grade in all courses presented to satisfy the mathematics major requirements. A minimum 2.00 cumulative GPA or higher in all mathematics courses at the University, including course repeats.
 - At least 18 credits of graded mathematics courses numbered 300 or higher taken in residence at the University.

Teacher Preparation Option (52-59 credits):

- MATH 124, MATH 125, MATH 126, MATH 307, MATH 308 (or MATH 134, MATH 135, and MATH 136); MATH 300; MATH 394, MATH 411, MATH 412, MATH 444, MATH 445; either STAT 311, MATH 390/STAT 390; or Q SCI 381; 15 credits of approved electives at the 300 level in MATH, AMATH, or STAT, or PHYS 407, PHYS 408, and PHYS 409. At least 6 credits of electives must be from the Mathematics Department.
- A minimum 2.0 grade in all courses presented to satisfy the mathematics major requirements. A minimum 2.50 cumulative GPA or higher in all mathematics courses at the University, including course repeats.
- At least 18 credits of graded mathematics courses numbered 300 or higher taken in residence at the University

Bachelor of Science

Department Admission Requirements

Standard Option: A minimum 2.0 grade in the following courses: MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, and MATH 136); a minimum 2.20 cumulative GPA in these courses.

Comprehensive Option: A minimum 2.0 grade in the following courses: MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, and MATH 136); a minimum 2.50 cumulative GPA in these courses.

Major Requirements

Standard Option (66 credits):

- Elementary Mathematics Core (21 credits):** MATH 124, MATH 125, MATH 126; MATH 300; MATH 324. (MATH 134, MATH 135, MATH 136 may be substituted for MATH 124, MATH 125, MATH 126, MATH 307, and MATH 308.)
- Intermediate Mathematics Core (9 credits):** MATH 308; MATH 327, MATH 328. (MATH 334, MATH 335, MATH 336 may be substituted for MATH 300, MATH 309, MATH 324, MATH 327, and MATH 328.)
- Advanced Mathematics Core (21 credits):** At least seven courses from the following, from at least three different areas, and including at least two two-quarter sequences:
 - Algebra:* MATH 402, MATH 403, MATH 404.
 - Analysis:* MATH 424, MATH 425, MATH 426.
 - Geometry:* MATH 441, MATH 442, MATH 443.
 - Other Analysis:* MATH 307, MATH 309; MATH 427, MATH 428.
 - Probability:* MATH 394, MATH 395, MATH 396; MATH 491, MATH 492.
 - Other Mathematics:* MATH 381; MATH 407, MATH 408, MATH 409; MATH 461, MATH 462; MATH 464, MATH 465, MATH 466.
- Electives (15 credits):** Five additional mathematics courses, including a two-quarter sequence at the 300- or 400-level (teacher-preparation courses not allowed). With approval, two of the five courses may be chosen from appropriate courses offered by the departments of Applied Mathematics, Statistics, and Computer Sci-

ence, or from certain other departments. Courses from the additional mathematics core sequences not used to fulfill core requirements can be used to fulfill the elective requirement.

- A minimum 2.0 grade in all courses presented to satisfy the mathematics major requirements. A minimum 2.00 cumulative GPA or higher in all mathematics courses at the University, including course repeats.
- At least 18 credits of graded mathematics courses numbered 300 or higher taken in residence at the University.

Comprehensive Option (69 credits):

Emphasizes the fundamental subjects of algebra, analysis, and geometry and is designed to provide a deep understanding of these basic areas of modern mathematics. Lays a good foundation for more advanced study. For this option, the grade, elementary core, and elective requirements remain unchanged, with the same substitutions permitted from the accelerated/Honors sequences. (Items 1, 2, 3, and 6 shown for the standard option, above.)

- Elementary Mathematics Core (21 credits):** MATH 124, MATH 125, MATH 126; MATH 300; MATH 324. (MATH 134, MATH 135, MATH 136 may be substituted for MATH 124, MATH 125, MATH 126, MATH 307, and MATH 308.)
- Intermediate Mathematics Core (9 credits):** MATH 308; MATH 327, MATH 328. (MATH 334, MATH 335, MATH 336 may be substituted for MATH 300, MATH 309, MATH 324, MATH 327, and MATH 328.)
- Advanced Mathematics Core (24 credits):** At least eight courses from the following, including at least two in each of the first three areas. If only six courses are chosen from the first three areas, then the two courses chosen from the fourth area must form a two-quarter sequence:
 - Algebra:* MATH 402, MATH 403, MATH 404.
 - Analysis:* MATH 424, MATH 425, MATH 426.
 - Geometry:* MATH 441, MATH 442, MATH 443.
 - Other Analysis:* MATH 307, MATH 309; MATH 427, MATH 428.
- Electives (15 credits):** Five additional mathematics courses, including a two-quarter sequence at the 300- or 400-level (teacher-preparation courses not allowed). With approval, two of the five courses may be chosen from appropriate courses offered by the departments of Applied Mathematics, Statistics, and Computer Science, or from certain other departments. Courses from the additional mathematics core sequences not used to fulfill core requirements can be used to fulfill the elective requirement.
- A minimum 2.0 grade in all courses presented to satisfy the mathematics major requirements. A minimum 2.50 cumulative GPA or higher in all mathematics courses at the University, including course repeats.
- At least 18 credits of graded mathematics courses numbered 300 or higher taken in residence at the University.

Continuation Policy

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

Minor

Minor requirements (minimum 30 credits):

- Core (24-25 credits):** MATH 124, MATH 125, MATH 126, MATH 307, MATH 308, and MATH 309; or MATH 134, MATH 135, and MATH 136 (25 credits, including 10 advanced-placement credits)

- Electives (6 credits):** Mathematics courses numbered 301 or higher
- At least 9 credits of courses numbered 301 or higher taken in residence at the University. Minimum 2.0 grade required for each course offered as part of the minor.

Student Outcomes and Opportunities

- Learning Objectives and Expected Outcomes:** The study of mathematics emphasizes exposure to the core foundational areas of analysis, modern algebra, and geometry. A mathematician's skill set includes the technical tools specific to each area as well as the development of critical thinking skills necessary for logical reasoning. Graduates have pursued careers in teaching, finance, science, engineering, and professional fields such as law and medicine.
- Instructional and Research Facilities:** Mathematical Research Library and Math Sciences Computing Center
- Honors Options Available:** With College Honors (Completion of Honors core curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- Research, Internships, and Service Learning:** When available, internship opportunities are passed on to students.
- Department Scholarships:** None offered.
- Student Organizations/Associations:** MAA Student Chapter, Actuarial Club, Math Club.

GRADUATE PROGRAM

Graduate Program Coordinator

C36 Padelford, Box 354350

(206) 543-6830

grads@math.washington.edu

The degrees of Master of Arts, Master of Science, and Doctor of Philosophy are offered. Opportunities are available within the department for study of abstract and applied mathematics for each of these degree programs. The Master of Arts degree is appropriate for students who need a broad background in advanced mathematics and who expect to continue working with mathematics of approximately the same level in their careers. The Master of Science degree is appropriate for students who expect to be working with more specialized mathematics of increasing order of complexity in their careers. The Doctor of Philosophy degree is the highest professional degree in mathematics. It is appropriate for students who plan on a career of research and/or teaching of mathematics at the highest levels.

Of the master's degrees, the MS non-thesis program has the most demanding course requirements and most closely matches the early stages of the PhD program. Most students who enroll in the department begin their studies with the PhD or MS non-thesis program in mind. The MS programs with options in numerical analysis or optimization provide more focused training in these directions, which can be useful for students seeking employment in certain industries; however, students intending to do research in these areas would normally follow the requirements of the PhD program. Note that the department does not offer a master's degree in mathematics education.

Master of Arts

Admission Requirements

Bachelor of Arts degree with major in mathematics or equivalent background (minimum of 45 quarter credits or

30 semester credits of mathematics beyond college algebra)

Degree Requirements

Master of Arts, Non-Thesis: Minimum twelve approved one-quarter courses at the 400 or 500 level, including two courses each in algebra, analysis, and one other field. The course total must include six courses chosen from the designated core graduate courses or, with prior approval of the Graduate Program Coordinator, from other 500-level sequences. The six courses at the 500 level should be distributed over no more than three sequences.

Written examination in an area agreed upon by the student and the chair of the examining committee. Oral examination may be substituted with prior approval of the Graduate Program Coordinator.

Master of Science

Admission Requirements

Bachelor of Science degree with major in mathematics, Bachelor of Arts degree with strong major in mathematics or equivalent background. In particular, at least one senior-level course in abstract algebra or real analysis is expected.

Degree Requirements

Master of Science, Thesis

A total of twelve numerically graded one-quarter courses from MATH 402, MATH 403, MATH 404; MATH 424, MATH 425, MATH 426; MATH 427, MATH 428, MATH 429; MATH 441, MATH 442, MATH 443; any 500-level mathematics course; AMATH 507; AMATH 584, AMATH 585, AMATH 586; plus 9 thesis credits (MATH 700). Other courses may be included in the total with prior approval of the Graduate Program Coordinator. Courses to include at least two quarters from each of two designated core graduate courses and one other 500-level sequence. Transfer credits are not accepted at the 400 level; other transfer credits and substitutions are at the discretion of the Graduate Program Coordinator.

The thesis, which is defended in an oral examination, should demonstrate the ability to do independent research.

Master of Science, Non-Thesis

A total of fifteen numerically graded one-quarter courses from MATH 402, MATH 403, MATH 404; MATH 424, MATH 425, MATH 426; MATH 427, MATH 428, MATH 429; MATH 441, MATH 442, MATH 443; any 500-level mathematics course; AMATH 507; AMATH 584, AMATH 585, AMATH 586. Other courses may be included in the total with prior approval of the Graduate Program Coordinator. Courses to include at least two quarters from each of three designated core graduate courses, and in addition one three-quarter sequence of 500-level mathematics courses in an area of specialization approved by the Graduate Program Coordinator and the chair of the student's examining committee.

Oral examination in the area of specialization on a topic agreed upon by the student and the chair of the examining committee, or the general examination for the PhD degree.

Master of Science, Numerical Analysis and Optimization Options, Non-thesis

A total of fifteen one-quarter courses, at least six of which are at the 500 level, chosen from MATH 424, MATH 425, MATH 426; MATH 427, MATH 428, MATH 429; MATH 438, MATH 439; MATH 441, MATH 442, MATH 443; MATH 461, MATH 462; MATH 491, MATH 492; any 500-level mathematics course; AMATH 507; AMATH 584, AMATH 585, AMATH 586. Other courses may be included in the total with prior approval of the Graduate Program Coordinator. Courses to include four from AMATH 584, AMATH 585, AMATH 586 and MATH 594, MATH 595, and MATH 596.

Oral examination in a special topic agreed upon by the student and the chair of the student's examining committee.

Doctor of Philosophy

Admission Requirements

Mathematical training equivalent to a bachelor's degree with strong major in mathematics, including rigorous coursework in real analysis and abstract algebra.

Degree Requirements

90 credits minimum, as follows:

1. **Courses:** Six three-quarter sequences numbered 500 or above or equivalent, including three sequences from the department's list of core graduate courses. The list of core courses includes MATH 504, MATH 505, MATH 506; MATH 524, MATH 525, MATH 526; MATH 534, MATH 535, MATH 536; MATH 544, MATH 545, MATH 546; MATH 554, MATH 555, MATH 556. At least two sequences from this list must be satisfactorily completed during year one, and the third must be satisfactorily completed by the end of year two. A student may substitute a passing performance in a preliminary examination for satisfactory completion of the corresponding designated core course.
2. **Preliminary Examinations:** Pass three preliminary examinations by September of the beginning of the third year.
3. **Foreign Language/Computer Requirement:** Pass either two foreign language examinations or one foreign language examination and a computer programming examination. A PhD student is expected to pass one language or computer examination by the end of summer quarter after the second year, and the second by the end of summer quarter after the third year.
4. **General Examination:** An oral examination on a special area of intended research, given by a committee after the student has passed the preliminary examinations and the language examinations. This examination can be given only after two years of graduate study. Normally, it should be taken by the middle of the student's fourth year. Thesis: An original contribution to knowledge. 27 credits of MATH 800 required.
5. **Final Examination:** An oral exam given by a committee headed by the thesis supervisor.

Financial Support

Most graduate students in mathematics are supported by fellowships, research assistantships, and teaching assistantships. The workload of teaching assistants allows ample time for graduate courses and thesis work.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

MATH 098 Intermediate Algebra (0) Intermediate algebra equivalent to third semester of high school algebra. Includes linear equations and models, linear systems in two variables, quadratic equations, completing the square, graphing parabolas, inequalities, working with roots and radicals, distance formula, functions and graphs, exponential and logarithmic functions. Instruction provided by community colleges on UW campus. Extra fee required. Offered: AWSp.

MATH 100 Algebra (5) Similar to the first three terms of high school algebra. Assumes no previous experience in algebra. Open only to students [1] in the Educational Opportunity Program or [2] admitted with an entrance deficiency in mathematics. Offered: AWSp.

MATH 102 Algebra (5) Similar to the first three terms of high school algebra. Assumes no previous experience in algebra. Open only to students [1] in the Educational Opportunity Program or [2] admitted with an entrance deficiency in mathematics. Prerequisite: MATH 100. Offered: AWSp.

MATH 103 Introduction to Elementary Functions (5) Continues the study of algebra begun in MATH 100 and MATH 102 with emphasis on functions (polynomial, rational, logarithmic, exponential, and trigonometric). Open only to students who have completed MATH 102. Prerequisite: MATH 102. Offered: AWSp.

MATH 111 Algebra with Applications (5) NW, QSR Use of graphs and algebraic functions as found in business and economics. Algebraic and graphical manipulations to solve problems. Exponential and logarithm functions; various applications to growth of money. Prerequisite: minimum grade of 2.0 in either MATH 098, MATH 102, or MATH 103, a score of 147-150 on the MPT-GS placement test, or a score of 144-163 on the MPT-AS placement test. Offered: AWS.

MATH 112 Application of Calculus to Business and Economics (5) NW, QSR Rates of change, tangent, derivative, accumulation, area, integrals in specific contexts, particularly economics. Techniques of differentiation and integration. Application to problem solving. Optimization. Credit does not apply toward a mathematics major. Prerequisite: minimum grade of 2.0 in MATH 111. Offered: WSp.

MATH 120 Precalculus (5) NW Basic properties of functions, graphs; with emphasis on linear, quadratic, trigonometric, exponential functions and their inverses. Emphasis on multi-step problem solving. Prerequisite: either a minimum grade of 2.5 in MATH 098, minimum grade of 3.0 in MATH 103, a score of 151-169 on the MPT-GS placement test, or score of 145-153 on the MPT-AS placement test. Offered: AWSpS.

MATH 124 Calculus with Analytic Geometry I (5) NW, QSR First quarter in calculus of functions of a single variable. Emphasizes differential calculus. Emphasizes applications and problem solving using the tools of calculus. Prerequisite: either a minimum grade of 2.5 in MATH 120, a score of 154-163 on the MPT-AS placement test, or score of 2 on AP test. Offered: AWSpS.

MATH 125 Calculus with Analytic Geometry II (5) NW Second quarter in the calculus of functions of a single variable. Emphasizes integral calculus. Emphasizes applications and problem solving using the tools of calculus. Prerequisite: either minimum grade of 2.0 in MATH 124, score of 3 on AB advanced placement test, or score of 3 on BC advanced placement test. Offered: AWSpS.

MATH 126 Calculus with Analytic Geometry III (5) NW Third quarter in calculus sequence. Introduction to Taylor polynomials and Taylor series, vector geometry in three dimensions, introduction to multivariable differential calculus, double integrals in Cartesian and polar coordinates. Prerequisite: either a minimum grade of 2.0 in MATH 125, a score of 5 on AB advanced placement test, or a score of 4 on BC advanced placement test. Offered: AWSpS.

MATH 134 Accelerated [Honors] Calculus (5) NW, QSR Covers the material of MATH 124, MATH 125, MATH 126; MATH 307, MATH 308. First year of a two-year accelerated sequence. May receive advanced placement (AP) credit for MATH 124 after taking MATH 134. For students with above average preparation, interest, and ability in mathematics. Offered: A.

MATH 135 Accelerated [Honors] Calculus (5) NW Covers the material of MATH 124, MATH 125, MATH 126; MATH 307, MATH 308. First year of a two-year accelerated sequence. May receive advanced placement (AP) credit for MATH 125 after taking MATH 135. For students with above average preparation, interest, and ability in mathematics. Offered: W.

MATH 136 Accelerated [Honors] Calculus (5) NW Covers the material of MATH 124, MATH 125, MATH 126; MATH

307, MATH 308. First year of a two-year accelerated sequence. May not receive credit for both MATH 126 and MATH 136. For students with above average preparation, interest, and ability in mathematics. Offered: Sp.

MATH 197 Problem Solving in Mathematics (2, max. 4) NW Lectures and problem sessions in mathematics with applications. Enrollment restricted to EOP students only. Credit/no-credit only. Offered: AWSp.

MATH 198 Special Topics in Mathematics (1-5, max. 15) Independent reading in math. Does not count as credit toward a math major. Credit/no-credit only. Offered: AWSpS.

MATH 300 Introduction to Mathematical Reasoning (3) NW Mathematical arguments and the writing of proofs in an elementary setting. Elementary set theory, elementary examples of functions and operations on functions, the principle of induction, counting, elementary number theory, elementary combinatorics, recurrence relations. Prerequisite: minimum grade of 2.0 in either MATH 125 or MATH 135. Offered: AWSpS.

MATH 301 Elementary Number Theory (3) NW Brief introduction to some of the fundamental ideas of elementary number theory. Prerequisite: minimum grade of 2.0 in either MATH 126 or MATH 136.

MATH 307 Introduction to Differential Equations (3) NW Introductory course in ordinary differential equations. Includes first- and second-order equations and Laplace transform. Prerequisite: minimum grade of 2.0 in MATH 125. Offered: AWSpS.

MATH 308 Matrix Algebra with Applications (3) NW Systems of linear equations, vector spaces, matrices, subspaces, orthogonality, least squares, eigenvalues, eigenvectors, applications. For students in engineering, mathematics, and the sciences. Prerequisite: minimum grade of 2.0 in MATH 126. Offered: AWSpS.

MATH 309 Linear Analysis (3) NW First order systems of linear differential equations, Fourier series and partial differential equations, and the phase plane. Prerequisite: either a minimum grade of 2.0 in both MATH 307 and MATH 308 or minimum grade of 2.0 in MATH 136. Offered: AWSpS.

MATH 324 Advanced Multivariable Calculus I (3) NW Topics include double and triple integrals, the chain rule, vector fields, line and surface integrals. Culminates in the theorems of Green and Stokes, along with the Divergence Theorem. Prerequisite: minimum grade of 2.0 in either MATH 126 or MATH 136. Offered: AWSpS.

MATH 327 Introductory Real Analysis I (3) NW Limits and continuity of functions, sequences, series tests, absolute convergence, uniform convergence. Power series, improper integrals, uniform continuity, fundamental theorems on continuous functions, theory of the Riemann integral. Prerequisite: either a minimum grade of 2.0 in both MATH 126 and MATH 300, or minimum grade of 2.0 in MATH 136. Offered: AWSpS.

MATH 328 Introductory Real Analysis II (3) NW Limits and continuity of functions, sequences, series tests, absolute convergence, uniform convergence. Power series, improper integrals, uniform continuity, fundamental theorems on continuous functions, theory of the Riemann integral. Prerequisite: minimum grade of 2.0 in MATH 327. Offered: WSpS.

MATH 334 Accelerated [Honors] Advanced Calculus (5) NW Introduction to proofs and rigor; uniform convergence, Fourier series and partial differential equations, vector calculus, complex variables. Students who complete this sequence are not required to take MATH 300, MATH 309, MATH 324, MATH 327, MATH 328, and MATH 427. Second year of an accelerated two-year sequence; prepares students for senior-level mathematics courses. Prerequisite: either minimum grade of 2.0 in MATH 136, or minimum grade of 2.0 in both MATH 126 and MATH 307 and MATH 308. Offered: A.

MATH 335 Accelerated [Honors] Advanced Calculus (5) NW Introduction to proofs and rigor; uniform convergence, Fourier series and partial differential equations, vector calculus, complex variables. Students who complete this sequence are not required to take MATH 300, MATH 309, MATH 324, MATH 327, MATH 328, and MATH 427. Second year of an accelerated two-year sequence; prepares students for senior-level mathematics courses. Prerequisite: minimum grade of 2.0 in MATH 334. Offered: W.

MATH 336 Accelerated [Honors] Advanced Calculus (5) NW Introduction to proofs and rigor; uniform convergence, Fourier series and partial differential equations, vector calculus, complex variables. Students who complete this sequence are not required to take MATH 300, MATH 309, MATH 324, MATH 327, MATH 328, and MATH 427. Second year of an accelerated two-year sequence; prepares students for senior-level mathematics courses. Prerequisite: minimum grade of 2.0 in MATH 335. Offered: Sp.

MATH 340 Abstract Linear Algebra (3) NW

MATH 380 Intermediate Topics in Undergraduate Mathematics (3, max. 12) NW Covers intermediate topics in undergraduate mathematics.

MATH 381 Discrete Mathematical Modeling (3) NW Introduction to methods of discrete mathematics, including topics from graph theory, network flows, and combinatorics. Emphasis on these tools to formulate models and solve problems arising in variety of applications, such as computer science, biology, and management science. Prerequisite: minimum grade of 2.0 in either MATH 136, MATH 308, or MATH 318. Offered: AWS.

MATH 390 Probability and Statistics in Engineering and Science (4) NW Concepts of probability and statistics. Conditional probability, independence, random variables, distribution functions. Descriptive statistics, transformations, sampling errors, confidence intervals, least squares and maximum likelihood. Exploratory data analysis and interactive computing. Students may receive credit for only one of STAT 390, STAT 481/ECON 481, and ECON 580. Prerequisite: either MATH 126 or MATH 136. Offered: jointly with STAT 390; AWSpS.

MATH 394 Probability I (3) NW Sample spaces; basic axioms of probability; combinatorial probability; conditional probability and independence; binomial, Poisson, and normal distributions. Prerequisite: minimum grade of 2.0 in either MATH 126 or MATH 136; recommended: either MATH 324 or MATH 327. Offered: jointly with STAT 394; AWS.

MATH 395 Probability II (3) NW Random variables; expectation and variance; laws of large numbers; normal approximation and other limit theorems; multidimensional distributions and transformations. Prerequisite: minimum grade of 2.0 in STAT/MATH 394. Offered: jointly with STAT 395; WSpS.

MATH 396 Probability III (3) NW Characteristic functions and generating functions; recurrent events and renewal theory; random walk. Prerequisite: minimum grade of 2.0 in either MATH 395 or STAT 395. Offered: jointly with STAT 396; Sp.

MATH 398 Special Topics in Mathematics (1-5, max. 15) Independent reading in math. Does not count as credit toward a math major. Credit/no-credit only. Offered: AWSpS.

MATH 402 Introduction to Modern Algebra (3) NW Elementary theory of groups: Cosets and Lagrange's theorem. Homomorphisms, normal subgroups, quotient groups, and the fundamental isomorphism theorems. Cyclic and symmetric groups. Orders and Cauchy's theorem. Direct products. Automorphisms. Prerequisite: minimum grade of either 2.0 MATH 136, MATH 327, MATH 336, or MATH 340. Offered: AS.

MATH 403 Introduction to Modern Algebra (3) NW Elementary theory of rings and fields: polynomial rings. Ideals, homomorphisms, quotients, and fundamental isomorphism theorems. Fields and maximal ideals. Euclidean rings. Field extensions. Algebraic extensions. Vector spaces and de-

grees of extensions. Adjoining roots of polynomials. Finite fields. Straight edge and compass constructions. Prerequisite: minimum grade of 2.0 in MATH 402. Offered: W.

MATH 404 Introduction to Modern Algebra (3) NW Topics in algebra chosen from Galois theory, theory of modules, geometric group actions, and the theory of rings and fields. Specific content determined by instructor. Prerequisite: minimum grade of 2.0 in MATH 403. Offered: Sp.

MATH 407 Linear Optimization (3) NW Maximization and minimization of linear functions subject to constraints consisting of linear equations and inequalities; linear programming and mathematical modeling. Simplex method, elementary games and duality. Prerequisite: minimum grade of 2.0 in either MATH 136, MATH 308, or MATH 352. Offered: AWS.

MATH 408 Nonlinear Optimization (3) NW Maximization and minimization of nonlinear functions, constrained and unconstrained; nonlinear programming problems and methods. Lagrange multipliers; Kuhn-Tucker conditions, convexity. Quadratic programming. Prerequisite: minimum grade of 2.0 in either MATH 308 or MATH 318; minimum grade of 2.0 in either MATH 327 or MATH 334. Offered: W.

MATH 409 Discrete Optimization (3) NW Maximization and minimization problems in graphs and networks (shortest paths, minimum spanning trees, maximum flows, minimum cost flows); transportation and trans-shipment problems, NP-completeness. Prerequisite: minimum grade of 2.0 in MATH 407. Offered: Sp.

MATH 411 Introduction to Modern Algebra for Teachers (3) NW Basic concepts of abstract algebra with an emphasis on problem solving, constructing proofs, and communication of mathematical ideas. Designed for teaching majors; not open for credit to students who have taken MATH 402, MATH 403. Cannot be used as elective credit for either BS program in mathematics. Prerequisite: minimum grade of 2.0 in either MATH 136 or MATH 308. Offered: AS.

MATH 412 Introduction to Modern Algebra for Teachers (3) NW Basic concepts of abstract algebra with an emphasis on problem solving, constructing proofs, and communication of mathematical ideas. Designed for teaching majors; not open for credit to students who have taken MATH 402, MATH 403. Cannot be used as elective credit for either BS program in mathematics. Prerequisite: minimum grade of 2.0 in MATH 411. Offered: WS.

MATH 420 History of Mathematics (3) NW Survey of the development of mathematics from its earliest beginnings through the first half of the twentieth century. Prerequisite: minimum grade of 2.0 in MATH 126. Offered: S.

MATH 424 Fundamental Concepts of Analysis (3) NW The real number system; field, order, and LUB axioms. Metric spaces: Euclidean space. Bolzano-Weierstrass property. Sequences and limits of sequences. Cauchy sequences and completeness. The Heine-Borel Theorem. Uniform continuity. Connected sets and the intermediate value theorem. Prerequisite: minimum grade of 2.0 in either MATH 328 or MATH 335. Offered: A.

MATH 425 Fundamental Concepts of Analysis (3) NW One-variable differential calculus: chain rule, inverse function theorem, Rolle's theorem, intermediate value theorem, Taylor's theorem, and intermediate value theorem for derivatives. Multivariable differential calculus: mean value theorem, inverse and implicit function theorems, and Lagrange multipliers. Prerequisite: minimum grade of 2.0 in both MATH 308 and MATH 424; minimum grade of 2.0 in either MATH 324 or MATH 335. Offered: W.

MATH 426 Fundamental Concepts of Analysis (3) NW Lebesgue measure on the reals. Construction of the Lebesgue integral and its basic properties. Monotone Convergence Theorem, Fatou's Lemma, and Dominated Convergence Theorem. Integration of series. Continuity and differentiability theorems for functions defined by integrals. Introduction to general measures and integration. Prerequisite: minimum grade of 2.0 in MATH 425. Offered: Sp.

MATH 427 Complex Analysis (3) NW Complex numbers; analytic functions; sequences and series; complex integration; Cauchy integral formula; Taylor and Laurent series; uniform convergence; residue theory; conformal mapping. Topics chosen from: Fourier series and integrals, Laplace transforms, infinite products, complex dynamics; additional topics chose by instructor. Prerequisite: minimum grade of 2.0 in either MATH 327 or MATH 335; recommended: MATH 328. Offered: AS.

MATH 428 Complex Analysis (3) NW Continuation of MATH 427. Prerequisite: minimum grade of 2.0 in MATH 427. Offered: W.

MATH 441 Topology (3) NW Metric and topological spaces, convergence, continuity, finite products, connectedness, and compactness. Prerequisite: minimum grade of 2.0 in either MATH 328 or MATH 335. Offered: AS.

MATH 442 Differential Geometry (3) NW Curves in 3-space, continuity and differentiability in 3-space, surfaces, tangent planes, first fundamental form, area, orientation, the Gauss Map. Prerequisite: minimum grade of 2.0 in either MATH 335 or both MATH 326 and MATH 328; minimum grade of 2.0 in either MATH 308 or MATH 318. Offered: W.

MATH 443 Topics in Topology and Geometry (3) NW Content selected from such topics as homotopy theory, topological surfaces, advanced differential geometry, projective geometry, hyperbolic geometry, spherical geometry, and combinatorial geometry. Prerequisite: minimum grade of 2.0 in MATH 442. Offered: Sp.

MATH 444 Geometry for Teachers (3) NW Concepts of geometry from multiple approaches; discovery, formal and informal reasoning, transformations, coordinates, exploration using computers and models. Topics selected from Euclidean plane and space geometry, spherical geometry, non-Euclidean geometries, fractal geometry. Designed for teaching majors. Cannot be used as elective credit for either BS program in mathematics. Prerequisite: minimum grade of 2.0 in MATH 126; minimum grade of 2.0 in either MATH 136 or MATH 308; minimum grade of 2.0 in MATH 300. Offered: WS.

MATH 445 Geometry for Teachers (3) NW Concepts of geometry from multiple approaches; discovery, formal and informal reasoning, transformations, coordinates, exploration using computers and models. Topics selected from Euclidean plane and space geometry, spherical geometry, non-Euclidean geometries, fractal geometry. Designed for teaching majors. Cannot be used as elective credit for either BS program in mathematics. Prerequisite: minimum grade of 2.0 in MATH 444. Offered: SpS.

MATH 461 Combinatorial Theory (3) NW Selected topics from among: block designs and finite geometries, coding theory, generating functions and other enumeration methods, graph theory, matroid theory, combinatorial algorithms, applications of combinatorics. Prerequisite: minimum grade of 2.0 in MATH 308. Offered: A.

MATH 462 Combinatorial Theory (3) NW Selected topics from among: block designs and finite geometries, coding theory, generating functions and other enumeration methods, graph theory, matroid theory, combinatorial algorithms, applications of combinatorics. Prerequisite: minimum grade of 2.0 in MATH 461. Offered: W.

MATH 464 Numerical Analysis I (3) NW Basic principles of numerical analysis, classical interpolation and approximation formulas, finite differences and difference equations. Numerical methods in algebra, systems of linear equations, matrix inversion, successive approximations, iterative and relaxation methods. Numerical differentiation and integration. Solution of differential equations and systems of such equations. Prerequisite: minimum grade of 2.0 in either MATH 136, MATH 308, or MATH 335 Offered: A.

MATH 465 Numerical Analysis II (3) NW Basic principles of numerical analysis, classical interpolation and approximation formulas, finite differences and difference equations. Numerical methods in algebra, systems of linear equations,

matrix inversion, successive approximations, iterative and relaxation methods. Numerical differentiation and integration. Solution of differential equations and systems of such equations. Prerequisite: minimum grade of 2.0 in either MATH 136, MATH 308, or MATH 335. Offered: W.

MATH 466 Numerical Analysis III (3) NW Basic principles of numerical analysis, classical interpolation and approximation formulas, finite differences and difference equations. Numerical methods in algebra, systems of linear equations, matrix inversion, successive approximations, iterative and relaxation methods. Numerical differentiation and integration. Solution of differential equations and systems of such equations. Prerequisite: minimum grade of 2.0 in either MATH 136, both MATH 307 and MATH 308, or MATH 335.

MATH 480 Advanced Topics in Undergraduate Mathematics (3, max. 12) Covers advanced topics in undergraduate mathematics.

MATH 491 Introduction to Stochastic Processes (3) NW Random walks, Markov chains, branching processes, Poisson process, point processes, birth and death processes, queuing theory, stationary processes. Prerequisite: minimum grade of 2.0 in either MATH 395 or STAT 395. Offered: jointly with STAT 491; A.

MATH 492 Stochastic Calculus for Option Pricing (3) NW Introductory stochastic calculus mathematical foundation for pricing options and derivatives. Basic stochastic analysis tools, including stochastic integrals, stochastic differential equations, Ito's formula, theorems of Girsanov and Feynman-Kac, Black-Scholes option pricing, American and exotic options, bond options. Prerequisite: either MATH 394 or STAT 394; either MATH 395 or STAT 395. Offered: jointly with STAT 492; W.

MATH 496 Honors Senior Thesis (1-5) NW Problem seminar for Honors students. Cannot be repeated for credit. Offered: AWSp.

MATH 498 Special Topics in Mathematics (1-5, max. 15) Reading and lecture course intended for special needs of advanced students. Offered: AWSpS.

MATH 499 Undergraduate Research (8) NW Summer research opportunity for undergraduates. Credit/no-credit only. Offered: S.

MATH 504 Modern Algebra (5) First quarter of a three-quarter sequence covering group theory; field theory and Galois theory; commutative rings and modules, linear algebra, theory of forms; representation theory, associative rings and modules; commutative algebra and elementary algebraic geometry. Prerequisite: MATH 404 or equivalent.

MATH 505 Modern Algebra (5) Continuation of MATH 504. Prerequisite: MATH 504.

MATH 506 Modern Algebra (5) Continuation of MATH 505. Prerequisite: MATH 505.

MATH 507 Algebraic Geometry (3) First quarter of a two-quarter sequence covering the basic theory of affine and projective varieties, rings of functions, the Hilbert Nullstellensatz, localization, and dimension; the theory of algebraic curves, divisors, cohomology, genus, and the Riemann-Roch theorem; and related topics. Prerequisite: MATH 506.

MATH 508 Algebraic Geometry (3) Continuation of MATH 507. Prerequisite: MATH 507.

MATH 509 Theory of Optimal Control (3) Trajectories from ordinary differential equations with control variables. Controllability, optimality, maximum principle. Relaxation and existence of solutions. Techniques of nonsmooth analysis. Prerequisite: real analysis on the level of MATH 426; background in optimization corresponding to MATH 515. Offered: jointly with AMATH 509.

MATH 510 Seminar in Algebra (2-5, max. 12) Prerequisite: permission of Graduate Program Coordinator. Credit/no-credit only.

MATH 514 Networks and Combinatorial Optimization (3) Mathematical foundations of combinatorial and network optimization with an emphasis on structure and algorithms with proofs. Topics include combinatorial and geometric methods for optimization of network flows, matching, traveling salesmen problem, cuts, and stable sets on graphs. Special emphasis on connections to linear and integer programming, duality theory, total unimodularity, and matroids. Prerequisite: either MATH 308 or AMATH 352 any additional 400-level mathematics course. Offered: jointly with AMATH 514.

MATH 515 Fundamentals of Optimization (5) Maximization and minimization of functions of finitely many variables subject to constraints. Basic problem types and examples of applications; linear, convex, smooth, and nonsmooth programming. Optimality conditions. Saddlepoints and dual problems. Penalties, decomposition. Overview of computational approaches. Prerequisite: linear algebra and advanced calculus. Offered: jointly with AMATH 515/IND E 515.

MATH 516 Numerical Optimization (3) Methods of solving optimization problems in finitely many variables, with or without constraints. Steepest descent, quasi-Newton methods. Quadratic programming and complementarity. Exact penalty methods, multiplier methods. Sequential quadratic programming. Cutting planes and nonsmooth optimization. Prerequisite: MATH 515. Offered: jointly with AMATH 516.

MATH 521 Advanced Probability (3) Measure theory and integration, independence, laws of large numbers. Fourier analysis of distributions, central limit problem and infinitely divisible laws, conditional expectations, martingales. Prerequisite: either MATH 426 or MATH 576. Offered: jointly with STAT 521; A.

MATH 522 Advanced Probability (3) Measure theory and integration, independence, laws of large numbers. Fourier analysis of distributions, central limit problem and infinitely divisible laws, conditional expectations, martingales. Prerequisite: either MATH 426 or MATH 576. Offered: jointly with STAT 522; W.

MATH 523 Advanced Probability (3) Measure theory and integration, independence, laws of large numbers. Fourier analysis of distributions, central limit problem and infinitely divisible laws, conditional expectations, martingales. Prerequisite: either MATH 426 or MATH 576. Offered: jointly with STAT 523; Sp.

MATH 524 Real Analysis (5) First quarter of a three-quarter sequence covering the theory of measure and integration, point set topology, Banach spaces, L_p spaces, applications to the theory of functions of one and several real variables. Additional topics to be chosen by instructor. Prerequisite: MATH 426 or equivalent.

MATH 525 Real Analysis (5) Continuation of MATH 524. Prerequisite: MATH 524.

MATH 526 Real Analysis (5) Continuation of MATH 525. Prerequisite: MATH 525.

MATH 527 Functional Analysis (3) First quarter of a three-quarter sequence. Review of Banach, Hilbert, and L_p spaces; locally convex spaces (duality and separation theory, distributions, and function spaces); operators on locally convex spaces (adjoints, closed graph/open mapping and Banach-Steinhaus theorems); Banach algebras (spectral theory, elementary applications); spectral theorem for Hilbert space operators. Additional topics chosen by instructor. A working knowledge of real variables, general topology, and complex variables is assumed.

MATH 528 Functional Analysis (3) Continuation of MATH 527. Prerequisite: MATH 527.

MATH 529 Functional Analysis (3) Continuation of MATH 528. Prerequisite: MATH 528.

MATH 530 Seminar in Analysis (2-5, max. 12) Prerequisite: permission of graduate program coordinator. Credit/no-credit only.

MATH 534 Complex Analysis (5) First quarter of a three-quarter sequence covering complex numbers, analytic functions, contour integration, power series, analytic continuation, sequences of analytic functions, conformal mapping of simply connected regions, and related topics. Prerequisite: MATH 426.

MATH 535 Complex Analysis (5) Continuation of MATH 534. Prerequisite: MATH 534.

MATH 536 Complex Analysis (5) Continuation of MATH 535. Prerequisite: MATH 535.

MATH 544 Topology and Geometry of Manifolds (5) First quarter of a three-quarter sequence covering general topology, the fundamental group, covering spaces, topological and differentiable manifolds, vector fields, flows, the Frobenius theorem, Lie groups, homogeneous spaces, tensor fields, differential forms, Stokes's theorem, deRham cohomology. Prerequisite: MATH 404 and MATH 426 or equivalent.

MATH 545 Topology and Geometry of Manifolds (5) Continuation of MATH 544. Prerequisite: MATH 544.

MATH 546 Topology and Geometry of Manifolds (5) Continuation of MATH 545. Prerequisite: MATH 545.

MATH 547 Geometric Structures (3, max. 9) First quarter of a three-quarter sequence covering differential-geometric structures on manifolds, Riemannian metrics, geodesics, covariant differentiation, curvature, Jacobi fields, Gauss-Bonnet theorem. Additional topics to be chosen by the instructor, such as connections in vector bundles and principal bundles, symplectic geometry, Riemannian comparison theorems, symmetric spaces, symplectic geometry, complex manifolds, Hodge theory. Prerequisite: MATH 546.

MATH 548 Geometric Structures (3, max. 9) Continuation of MATH 547. Prerequisite: MATH 547.

MATH 549 Geometric Structures (3, max. 9) Continuation of MATH 548. Prerequisite: MATH 548.

MATH 550 Seminar in Geometry (2-5, max. 12) Prerequisite: permission of Graduate Program Coordinator. Credit/no-credit only.

MATH 554 Linear Analysis (5) First quarter of a three-quarter sequence covering advanced linear algebra and matrix analysis, ordinary differential equations (existence and uniqueness theory, linear systems, numerical approximations), Fourier analysis, introductions to functional analysis and partial differential equations, distribution theory. Prerequisite: MATH 426 and familiarity with complex analysis at the level of MATH 427 (the latter may be obtained concurrently).

MATH 555 Linear Analysis (5) Continuation of MATH 554. Prerequisite: MATH 554.

MATH 556 Linear Analysis (5) Continuation of MATH 555. Prerequisite: MATH 555.

MATH 557 Introduction to Partial Differential Equations (3) First quarter of a three-quarter sequence. Reviews the theory of distribution theory, weak derivatives, and Fourier transform; Laplace, heat, wave, Schrodinger equations; and notion of Euler-Lagrange equation and variational derivative. Prerequisite: either MATH 526 or MATH 556.

MATH 558 Introduction to Partial Differential Equations (3) Continuation of MATH 557. Covers Sobolev spaces; boundary value problems; additional topics may include: Cauchy-Kowalewski theorem, first order equations, initial value problems, and variational methods. Prerequisite: MATH 557.

MATH 559 Introduction to Partial Differential Equations (3) Continuation of MATH 558. Covers selected topics such as: introduction to microlocal analysis, Lax parame-trix construction, Schauder estimates, Calderson-Zygmund

theory, energy methods, and boundary regularity on rough domains. Prerequisite: MATH 558.

MATH 564 Algebraic Topology (3) First quarter of a three-quarter sequence covering classical and modern approaches; complexes and their homology theory; applications; fixed points, products and Poincare duality; axiomatic approach. Prerequisite: MATH 506 and MATH 544, or equivalent.

MATH 565 Algebraic Topology (3) Continuation of MATH 564. Prerequisite: MATH 564.

MATH 566 Algebraic Topology (3) Continuation of MATH 565. Prerequisite: MATH 565.

MATH 570 Seminar in Topology (2-5, max. 12) Prerequisite: permission of graduate program coordinator. Credit/no-credit only.

MATH 574 Fundamental Concepts of Analysis (3) Sets, real numbers, topology of metric spaces, normed linear spaces, multivariable calculus from an advanced viewpoint. Introduction to Lebesgue measure and integration. Intended for students in biostatistics and related fields; does not fulfill requirements for degrees in mathematics.

MATH 575 Fundamental Concepts of Analysis (3) Sets, real numbers, topology of metric spaces, normed linear spaces, multivariable calculus from an advanced viewpoint. Introduction to Lebesgue measure and integration. Intended for students in biostatistics and related fields; does not fulfill requirements for degrees in mathematics.

MATH 576 Fundamental Concepts of Analysis (3) Sets, real numbers, topology of metric spaces, normed linear spaces, multivariable calculus from an advanced viewpoint. Introduction to Lebesgue measure and integration. Intended for students in biostatistics and related fields; does not fulfill requirements for degrees in mathematics.

MATH 577 Lie Groups and Lie Algebras (3, max. 9) Topics chosen from: root systems and reflection groups; the structure, classification, and representation theory of complex semisimple Lie algebras, compact Lie groups, or semisimple Lie groups; algebraic groups; enveloping algebras; infinite-dimensional representation theory of Lie groups and Lie algebras; harmonic analysis on Lie groups. Prerequisite: MATH 506; MATH 526 or MATH 546.

MATH 578 Lie Groups and Lie Algebras (3, max. 9) Topics chosen from: root systems and reflection groups; the structure, classification, and representation theory of complex semisimple Lie algebras, compact Lie groups, or semisimple Lie groups; algebraic groups; enveloping algebras; infinite-dimensional representation theory of Lie groups and Lie algebras; harmonic analysis on Lie groups. Prerequisite: MATH 506; MATH 526 or MATH 546.

MATH 579 Lie Groups and Lie Algebras (3, max. 9) Topics chosen from: root systems and reflection groups; the structure, classification, and representation theory of complex semisimple Lie algebras, compact Lie groups, or semisimple Lie groups; algebraic groups; enveloping algebras; infinite-dimensional representation theory of Lie groups and Lie algebras; harmonic analysis on Lie groups. Prerequisite: MATH 506; MATH 526 or MATH 546.

MATH 580 Current Topics in Mathematics (2, max. 12) Discussion of current research topics in mathematics, with emphasis on current departmental research projects and interests. Offered: AWSp.

MATH 581 Special Topics in Mathematics (1-5, max. 36) Advanced topics in various areas of mathematics. Offered: A.

MATH 582 Special Topics in Mathematics (1-5, max. 36) Advanced topics in various areas of mathematics. Offered: W.

MATH 583 Special Topics in Mathematics (1-5, max. 36) Advanced topics in various areas of mathematics. Offered: Sp.

MATH 584 Applied Linear Algebra and Introductory Numerical Analysis (5) Numerical methods for solving linear systems of equations, linear least squares problems, matrix eigen value problems, nonlinear systems of equations, interpolation, quadrature, and initial value ordinary differential equations. Prerequisite: either a course in linear algebra or permission of instructor. Offered: jointly with AMATH 584; A.

MATH 585 Numerical Analysis of Boundary Value Problems (5) Numerical methods for steady-state differential equations. Two-point boundary value problems and elliptic equations. Iterative methods for sparse symmetric and non-symmetric linear systems: conjugate-gradients, preconditioners. Prerequisite: either AMATH 581, AMATH 584/MATH 584, or permission of instructor. Offered: jointly with AMATH 585; W.

MATH 586 Numerical Analysis of Time Dependent Problems (5) Numerical methods for time-dependent differential equations, including explicit and implicit methods for hyperbolic and parabolic equations. Stability, accuracy, and convergence theory. Spectral and pseudospectral methods. Prerequisite: either AMATH 581, AMATH 584/MATH 584, AMATH 585/MATH 585, or permission of instructor. Offered: jointly with AMATH 586/ATM S 581; Sp.

MATH 590 Seminar in Probability (2-5, max. 12) Prerequisite: permission of instructor. Credit/no-credit only.

MATH 597 Seminar on Teaching Math (1, max. 3) Issues in the teaching and learning of college mathematics, such as discovering and working with student background and expectations, increasing student engagement with course material, and evaluating student achievement. For graduate students who are, or soon will be, teaching mathematics courses on their own. Credit/no-credit only.

MATH 600 Independent Study or Research (*-)

MATH 700 Master's Thesis (*-)

MATH 800 Doctoral Dissertation (*-)

Microbiology

K-335A Health Sciences

Microbiology is a natural science that deals with microorganisms such as bacteria, fungi, protozoa, algae, and viruses. It is concerned with the nature and properties of these organisms, their effects on humans and the environment, and how they can be exploited to provide useful products.

UNDERGRADUATE PROGRAM

Adviser

K-335A Health Sciences, Box 357242

(206) 543-2572

advmicro@uw.edu

The Department of Microbiology offers the following programs of study:

- The Bachelor of Science degree with a major in microbiology
- A minor in microbiology

Bachelor of Science

Suggested First- and Second-Year Courses: PHYS 114, PHYS 115, PHYS 116, or PHYS 121, PHYS 122, PHYS 123; one of the following: MATH 112, MATH 124, MATH 144, Q SCI 381, or STAT 311.

MICROM 410, the first microbiology course for majors, is taken after completion of BIOL 200 and organic chemistry (CHEM 223 or CHEM 237). To graduate in four years,

a student must complete introductory biology and organic chemistry before autumn quarter of the junior year.

MICROM 101, MICROM 301, and MICROM 302, offered to non-majors, serve as introductory courses, but cannot be used to fulfill graduation requirements for a major in microbiology. MICROM 301 is a prerequisite for students applying to nursing, physical therapy, or dental school.

Department Admission Requirements

1. A minimum of 75 credits applicable to graduation, with a minimum overall cumulative GPA of 2.00.
2. Completion of the following prerequisite courses with a minimum cumulative GPA of 2.25: BIOL 180, BIOL 200, BIOL 220; CHEM 142, CHEM 152, CHEM 162; CHEM 223 or CHEM 237.

Major Requirements

Minimum 90 credits (including microbiology courses) in the biological, physical, and mathematical sciences, as follows:

1. BIOL 180, BIOL 200, BIOL 220, or equivalent (15 credits/one year)
2. *Inorganic Chemistry*: CHEM 142, CHEM 152, CHEM 162 (16 credits) (or CHEM 145, CHEM 155); Organic chemistry: CHEM 223, CHEM 237, or CHEM 335
3. *Core Courses (8 credits)*: MICROM 402; MICROM 410; MICROM 496
4. *Distribution*: 15 credits from the following, to include at least one course in each distribution group and a minimum of two courses with a laboratory component.
 - a. *Medical Microbiology*: IMMUN 441, MICROM 442, MICROM 443, or MICROM 444.
 - b. *Virology*: MICROM 445 or MICROM 450
 - c. *Diversity and Ecology*: MICROM 412 or MICROM 435
 - d. *Genetics and Molecular Biology*: MICROM 411, MICROM 431, and GENOME 361 or GENOME 371
5. 13 credits of approved electives. See adviser for approved list. Approved electives may include any of the above courses not taken as a distribution requirement.
6. PHYS 114, PHYS 115 (8 credits) (or PHYS 121, PHYS 122) (PHYS 116 or PHYS 123 recommended)
7. Either MATH 112, MATH 124, MATH 144, Q SCI 381, or STAT 311 (5 credits)
8. BIOC 405, BIOC 406 (6 credits) (or BIOC 440, BIOC 441, BIOC 442)
9. For all required and elective microbiology courses used toward graduation, a minimum 2.25 cumulative GPA and a minimum grade of 1.8 in each course.
10. Transfer students must complete at least 20 of the required and elective microbiology credits at the UW.

Continuation Policy

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

Minor

Minor Requirements: 30 credits as follows:

1. 15 credits in biology and chemistry (BIOL 200 or BIOL 161-BIOL 162 or equivalent; CHEM 237 or CHEM 220, CHEM 221, or equivalent)
2. 15 credits in 400-level, graded microbiology courses, including at least one lab course (MICROM 402 or MICROM 431 or MICROM 443; MICROM 302 also acceptable), and both MICROM 410 and MICROM 496.

3. Minimum cumulative 2.00 GPA for all courses counted toward the minor.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: The department's objective is to provide a major with the best instruction possible in broad areas of microbiology so students qualify for a wide variety of positions with a terminal BS degree or qualify to pursue advanced degrees in graduate or professional schools.

Microbiology offers students an excellent education in the biology of microorganisms, namely bacteria, fungi, protozoa, and viruses. Through learning about the biology of these microorganisms and viruses, students more fully understand the pivotal position they occupy in establishing and maintaining our biosphere, their effects on human, animal, and plant life, and how the biological properties of certain microbes are exploited for certain purposes. Microorganisms are important in drinking water, wastewater and sewage treatment, production and spoilage of foods, production of antibiotics, bioremediation of toxic compounds, and genetic engineering of organisms having unique characteristics. Students gain insight into strategies used by microorganisms and viruses to cause disease and the mechanisms used by their host to defend themselves.

Graduates have found research positions in biotechnology and pharmaceutical companies, as well as in state and government positions hiring microbiologists. Students interested in a health profession or graduate program benefit from this program.

- *Instructional and Research Facilities*: Microbiology courses are taught using state-of-the-art facilities in the teaching wing of the Health Sciences building. Research labs are located in the Health Sciences, Fred Hutchinson Cancer Research Center, NW Regional Primate Research Center, and UW Rosen building.
- *Honors Options Available*: With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning*: MICROM 499, undergraduate laboratory research, is offered for credit. See adviser for details.
- *Department Scholarships*: The department offers four awards each year. More information is available at the department's Website.
- *Student Organizations/Associations*: The Microphiles Club is open to all students. The club sponsors field trips to local biotech companies, speakers on topics such as research and career opportunities, graduate school, and peer teaching.

GRADUATE PROGRAM

For graduate program information, see the Microbiology entry in the School of Medicine elsewhere in this catalog.

COURSE DESCRIPTIONS

For course descriptions, see the Microbiology entry in the School of Medicine elsewhere in this catalog.

Music

102 Music

The mission of the School of Music is creation, discovery, preservation, and transmission of a wide and diverse range

of music from across time and place. Students, faculty, and staff of the School of Music work together to expand the frontiers of artistic knowledge through the creative processes of performance, composition, and scholarly research.

The School's faculty includes leading performers, composers, and scholars. Renowned guest artists and scholars regularly perform and teach. Through its instructional offerings, the School of Music provides opportunities for all UW students to explore the role of music in cultures of the world -- past, present, and future. The School teaches students to think creatively and critically. The faculty provides professional training to musical performers, composers, and academic scholars. The School's ultimate goal is to inspire students to reach the highest standards and ideals of excellence in both artistic and scholarly endeavors.

The School is a vital part of the artistic and scholarly life of the UW and plays a prominent role in Seattle and greater Pacific Northwest music and art communities. The School also offers each year over 100 public concerts of music spanning more than a millennium, with offerings that extend across many cultures.

UNDERGRADUATE PROGRAM

Adviser

116 Music, Box 353450

(206) 543-1239

musicadv@uw.edu

The School of Music offers the following programs of study:

- The Bachelor of Arts degree with a major in music (plus music history option; voice option; instrumental track; early music option; music theory option)
- The Bachelor of Music degree with a major in composition, piano, string instruments, voice, organ, orchestral instruments, guitar, jazz studies, percussion (with options in orchestral percussion and in contemporary percussion and mallet keyboard), and music education; and an option in music history.
- The Bachelor of Arts degree with a major in ethnomusicology.
- A minor in music

Information Applicable to All Music Majors

Department Admission Requirements

All students must participate in an entrance audition and qualify at the MUSAP 320 level or better in their principal performance areas to be admitted as music majors and to receive private instruction. Check department website for entrance audition dates. Major status in performance areas is accorded when, after admission to the College of Arts and Sciences is acknowledged and the required School of Music audition is successfully completed, the student commences applied-music study in a performance medium (e.g., voice) with an approved faculty member of the School of Music. In music history, music education and composition, additional entrance requirements apply.

All music programs require instruction on an instrument. Auditions into freshman-level applied-music instruction (private lessons) are based on the assumption that a student's background includes four to eight years of private study on an instrument. Completion of a further two years of college-level private instruction does not automatically guarantee entry at the junior level of private instruction; placement is determined by an audition.

Most degree programs in the School of Music require one to two years of basic piano, to be completed during the course of study at the University.

Pre-Core Preparation

In preparation for beginning the music core coursework, all students must be evaluated by placement test to determine their levels in music theory and music history. Students who have minimal background in these areas may be required to take MUSIC 113/MUSIC 119 and MUSIC 120 before beginning the music core.

Transfer students who have had at least two quarters of music theory or music history are evaluated by a faculty member the quarter they are admitted to their program.

Music Core Requirements

The music core (36 credits), required in each of the undergraduate program tracks, is as follows: MUSIC 201/MUSIC 204, MUSIC 202/MUSIC 205, MUSIC 203/MUSIC 206; MUSIC 301/MUSIC 304, MUSIC 302/MUSIC 305, MUSIC 303/MUSIC 306; MUHST 210, MUHST 211, MUHST 212; at least 3 credits from among MUSIC 250, MUSIC 316, MUSIC 317, or any 400-level ethnomusicology course.

Grade Requirements

Undergraduate music majors are required to earn a minimum 2.0 grade in each course (core and elective) counted toward music major requirements. An overall 2.50 minimum GPA in music coursework is required for graduation.

Bachelor of Arts

General Requirements

Minimum 180 credits, of which 90 must be taken in departments other than the School of Music. Piano proficiency at MUSAP 135 level. All College of Arts and Sciences graduation requirements must be met. Minimum cumulative 2.50 GPA for all music courses and a minimum 2.0 grade for each music course counted toward the major.

Major Requirements

- 1. Music (63 credits):** Music core, plus 6 credits approved upper-level MUSIC or MUHST electives, 6 credits approved 300- or 400-level MUSAP, MUSEN, MUSIC, or MUHST courses, 10 credits MUSAP vocal or instrumental private applied instruction, 5 credits MUSEN (ensembles)
- 2. Instrumental Track (69 credits):** Music core, plus 6 credits approved upper-level MUSIC or MUHST electives, 18 credits MUSAP instrumental private applied instruction, and 9 credits in ensembles
- 3. Voice Option (75 credits):** Music core, plus 6 credits approved upper-level MUSIC or MUHST electives, 18 credits MUSICP vocal private applied instruction, 6 credits vocal diction, and 9 credits in ensembles. Proficiency through the third quarter college level in two languages from French, German, and Italian
- 4. Early Music Option (66 credits):** Music core, plus 15 credits approved 300- and 400-level electives, selected from MUHST 400, MUHST 401, MUHST 406; MUSIC 418, MUSIC 421; MUSEN 369, MUSEN 383, and other approved 300- or 400-level courses. 10 credits MUSICP vocal or instrumental private applied instruction, 5 credits of MUSEN (ensembles). Students are strongly encouraged to take 10 credits in pre-1700 literature, art history, and history courses as part to their VLPA requirement.
- 5. Music History Option (69 credits):** Music core, plus 12 credits approved 400-level MUHST electives; 6 credits approved 300- or 400-level music theory or MUHST courses; 10 credits MUSAP vocal or instrumental private applied instruction; 5 credits MUSEN (ensembles). Students must earn a minimum 2.00 cumulative GPA for all required MUHST courses.
- 6. Music Theory Option (63 credits):** Music core; MUSIC 470, MUSIC 471, and minimum 6 credits selected from MUSIC 472, MUSIC 485, MUSIC 487, and/or MUSIC

489; 10 credits MUSAP vocal or instrumental private applied instruction; 5 credits MUSEN (ensembles).

Bachelor of Arts (with a major in ethnomusicology)

The BA degree with a major in ethnomusicology emphasizes the study of music as culture as well as art. Students may be admitted to the degree program on the basis of a written application. Course requirements include selected courses in the School of Music's core curriculum, ethnomusicology courses encompassing diverse repertoires and topics, several interdisciplinary courses including at least one in socio-cultural anthropology, world music performance study, and a capstone senior project. In addition to the ethnomusicology major requirements, students must also complete the general education requirements for the College of Arts and Sciences.

Admission Requirements

Admission is competitive. Students must have a minimum 3.0 grade in either MUSIC 316 or MUSIC 317, a minimum 2.0 grade in each MUSIC course taken, and a minimum 2.50 cumulative GPA to apply. Admission is based on student's transcripts, musical ability, and statement of purpose, which should explain the student's interest in ethnomusicology and potential areas of specialization.

Major Requirements

57-73 credits

- 1. Core Courses (39-45 credits):** Minimum 2.00 cumulative GPA in MUSIC 201, MUSIC 202, MUSIC 203, MUSIC 204, MUSIC 205, MUSIC 206, MUSIC 316, MUSIC 317, MUSIC 499 (5 credits), and minimum six quarters of MUSAP 389 (12-18 credits)
- 2. Ethnomusicology Electives (9-15 credits):** Minimum three 400-level ethnomusicology courses from approved list
- 3. Sociocultural Anthropology Elective (3 credits):** Minimum one sociocultural anthropology course from approved list
- 4. Interdisciplinary Electives (6-10 credits):** Minimum two interdisciplinary electives from approved list
- 5. Minimum 2.00 cumulative GPA** in courses applied to the major

Bachelor of Music

Admission Requirements

All students must participate in an entrance audition as described above. Students admitted into the BA program have the option to jury into the B.M. program at the end of the freshman and sophomore years. The composition and music education programs have additional application requirements as described below.

General Requirements

A minimum of 180 credits, of which at least 60 must be taken in departments other than the School of Music. All College of Arts and Sciences degree requirements must be met (including Language Skills and Reasoning and Writing in Context), except that students need take only 60 credits in Areas of Knowledge, to include at least 20 credits each in two of the following three areas: Visual, Literary, & Performing Arts; Individuals & Societies; and the Natural World. Piano proficiency at MUSAP 235 level, a minimum 2.0 grade in each music course counted toward the major, and a minimum 2.50 GPA in music courses is required for graduation.

Major Requirements (and Additional Admission Requirements, as noted)

Composition (114-120 credits)

Additional Admission Requirements: MUSIC 302 and MUSIC 305; MUHST 212; and MUSIC 216, MUSIC 217, MUSIC 218. Prospective students must also submit a portfolio of recent compositions. See adviser for more information on the application process.

Major Requirements: Music core (36 credits) plus MUSIC 216, MUSIC 217, MUSIC 218; PHYS 207; 18 credits of division-approved upper-level MUSIC or MUHST electives; MUSIC 380, MUSIC 381, MUSIC 382; MUSIC 400 or MUSIC 401; MUSIC 471 or MUSIC 472; MUSIC 490; 18 credits of private instruction in composition (MUSIC 391/MUSIC 491); 12-18 credits of MUSICP applied instruction; 6 credits of MUSEN ensembles; and one 400-level course in ethnomusicology. See undergraduate adviser for more specific information.

Guitar (120 credits)

Music core (36 credits) plus 9 credits of division-approved upper-level MUSIC or MUHST electives; MUSIC 487 or MUSIC 438; 36 credits of MUSICP applied instruction; 7 credits of electives; 2 credits of recitals; MUSIC 326, MUSIC 327, MUSIC 328; MUSIC 434, MUSIC 435, MUSIC 436; MUSIC 380, MUSIC 381, MUSIC 382; and 12 credits of MUSEN ensembles. See the Music undergraduate adviser for more specific information.

Jazz Studies (120 credits)

Music core (36 credits) plus 9 credits of division-approved upper-level MUSIC or MUHST electives; MUSIC 319 or MUSIC 331; MUHST 425; MUSIC 336 and MUSIC 436; MUSIC 467, MUSIC 468, MUSIC 469; MUSIC 379, MUSIC 479; 6 credits of MUSIC 464; 10 credits of music electives; 30 credits of MUSICP applied instruction; 12 credits of MUSEN ensembles. See undergraduate adviser for more specific information.

Music Education (115-119 credits)

Additional Admission Requirements: Students must complete a separate music education audition and interview. See adviser for more information on the application process.

Major Requirements: Music core (36 credits) plus MUSIC 350, MUSIC 351, MUSIC 352 (or MUSIC 380, MUSIC 381, MUSIC 382); MUSED 301; MUSED 304; MUSED 305; MUSED 340; MUSED 403; MUSED 405 (or MUSEN 303); MUSED 440; MUSED 442 (or MUSED 443); MUSED 452; MUSED 465; 18 credits of MUSICP applied instruction; 6-7 credits of MUSEN ensembles; 12-14 credits of techniques courses; 3 credits of approved jazz coursework; EDC&I 494; and 3 credits of education electives. See undergraduate adviser for more specific information.

Orchestral Instruments (116 credits)

Music core (36 credits) plus 12 credits of division-approved upper-level MUSIC or MUHST electives; 36 credits of MUSICP applied instruction; 18 credits of electives; 2 credits of recitals; and 12 credits of MUSEN ensembles. See undergraduate adviser for more specific information.

Organ (120 credits)

Music core (36 credits) plus 12 credits of division-approved upper-level MUSIC or MUHST electives; MUSIC 487; 36 credits of MUSICP applied instruction; MUSIC 454; MUSIC 473 and MUSIC 474; MUSIC 458 and MUSIC 459; MUSIC 350, MUSIC 351, MUSIC 352; 1 credit of electives; 2 credits of recitals; and 12 credits of MUSEN ensembles. See undergraduate adviser for more specific information.

Piano (120 credits)

Music core (36 credits) plus 12 credits of division-approved upper-level MUSIC or MUHST electives; MUSIC 487; 36 credits of MUSICP applied instruction; MUSIC 434, MUSIC 435, MUSIC 436; MUSIC 326, MUSIC 327, MUSIC 328; 7 credits of electives; 2 credits of recitals; and 12 credits of

MUSEN ensembles. See undergraduate adviser for more specific information.

Percussion (119 credits)

Music core, excluding MUSIC 204, MUSIC 205, MUSIC 206, MUSIC 304, MUSIC 305, and MUSIC 306 (30 credits); MUSIC 337; MUSIC 340; MUSIC 341; MUSIC 379; MUSIC 479; 12 credits of MUSAP 443; 12 credits of MUSEN 304; minimum 18 credits from MUSIC 437, MUSIC 440, MUSIC 441, or MUSIC 442; minimum 6 credits from MUSEN 300, MUSEN 301, or MUSEN 302; minimum 3 credits from MUSEN 384, MUSEN 410, or MUSEN 411; 12 credits of approved upper-division MUSIC or MUHST electives; minimum 15 credits from one of the following options:

Orchestral Percussion: 3 additional credits of MUSIC 337; 6 additional credits of MUSIC 340; 6 additional credits of MUSEN 300, MUSEN 301, or MUSEN 302.

Contemporary Percussion and Mallet Keyboard: 3 credits of MUSIC 342; 6 additional credits of MUSIC 341; 6 additional credits of MUSEN 384, MUSEN 410, or MUSEN 411.

Strings (105 credits)

Music core (36 credits) plus 15 credits of division-approved upper-level MUSIC or MUHST electives; 36 credits of MUSIC applied instruction; MUSIC 380; 3 credits of electives; 2 credits of recitals; and 12 credits of MUSEN ensembles. See undergraduate adviser for more specific information.

Voice (119 credits)

Music core (36 credits) plus 12 credits of division-approved upper-level MUSIC or MUHST electives; MUSIC 307, MUSIC 308, MUSIC 309; MUSIC 326, MUSIC 327, MUSIC 328; MUSIC 434; MUSIC 460, MUSIC 461, and MUSIC 462; MUSIC 379 and MUSIC 479; 36 credits of MUSAP applied instruction; 10 credits of MUSEN ensembles; and 3 credits of music electives. Proficiency through the third quarter college level in two languages from French, German, and Italian. See the Music undergraduate adviser for more specific information.

Academic Options

Music History

Admission Requirements: In addition to the admission requirements for all music majors, shown above, formal application to the music history division, to include verified completion of music core, 3.00 GPA in music core courses, 3.00 overall GPA, and a writing sample. Completion of minimum entrance requirements does not guarantee admission. The program of study and preparation of the senior thesis is developed in consultation with a music history faculty adviser. Students who intend to pursue graduate studies are strongly advised to establish proficiency in German or French and to acquire some acquaintance with one or two additional foreign languages.

Major Requirements: 135 credits as follows: Music core (36 credits) plus 6 credits of 300-level MUHST electives; 36 credits of 400-level MUSIC or MUHST (minimum 12 courses); a 3-credit 400-level course in ethnomusicology; 3 credits of MUSIC 498; 18 credits of MUSAP applied instruction (3 years); 9 credits of MUSEN ensembles; and 24 credits of music electives.

Minor

Minor Requirements: Minimum 25 credits of music courses (MUSIC, MUHST, MUSEN, MUSAP, or MUSED prefixes). Maximum 10 credits at the 100 level, minimum 15 credits at the 200 level or above including:

- At least 4 credits from courses dealing with the elements of music (chosen from MUSIC 116, MUSIC 117, MUSIC 118, MUSIC 113/MUSIC 119, or MUSIC 120).
- 5 credits from courses for non-majors that focus on a particular music area (MUSIC 121, MUSIC 122, MUSIC 160, MUSIC 162, MUSIC 316, MUSIC 317, MUSIC 318, MUSIC 319, MUSIC 331).

- Maximum 10 transfer credits (including maximum 5 transfer credits in performance lessons and ensembles) may count toward the minor.

Student Outcomes and Opportunities

- Instructional and Research Facilities:* None.
- Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- Research, Internships, and Service Learning:* None.
- Department Scholarships:* None.
- Student Organizations/Associations:*
 - Music Student Association (MSA):* A group of undergraduate and graduate students from various divisions of the School of Music, working to foster a stronger sense of professional community, serve the larger cultural community, and build practical tools for encouraging and promoting student musicians' endeavors. For more information, contact sonare@uw.edu.
 - Ethnomusicology Student Association:* A student association which deals with the concerns of the ethnomusicology division, as well as meeting socially. For further information, contact the division at 206-543-0949 or 64 Music Building.
 - Music Educators National Conference (MENC):* A local chapter of this national scholarly organization of music educators is directly involved in annual state and regional meetings and events. Contact Professor Patricia Campbell (pcamp@uw.edu) for further details.

Continuation of Major Status

Performance studies should begin after audition and acceptance, and continue each subsequent quarter of registration until the minimum program requirements for applied-music lessons have been met. Applied-music study should continue as long as the student is registered and in residence until the final approved recital is given. In order to retain major standing, the student must make and demonstrate consistent and acceptable progress at the annual required jury. Concurrent enrollment or participation in at least one School of Music ensemble is required during each quarter in which a student receives MUSAP (applied-music) instruction, at the 300 level and above, except for MUSAP 389/589. Also, basic piano proficiency is required for all majors. Non-keyboard majors must enroll in the MUSAP 133/235 series until appropriate proficiency is attained. Any departure from the above requirements must have the recommendation of the appropriate program chair and the written consent of the Director of the School of Music.

GRADUATE PROGRAM

Graduate Adviser
116 Music, Box 353450
206-543-2726
musicadv@uw.edu

Graduate programs in the School of Music take into consideration the dual nature of music's subject matter. First, it is one of the creative arts, requiring constant renewal through the efforts of composers, performers, and teachers. Second, it is a branch of the humanities, subject to scholarly study and interpretation of its theoretical concepts and historical development. Each degree focuses on one of these areas.

Master of Music or Doctor of Musical Arts

- Choral conducting
- Composition
- Instrumental conducting
- Jazz studies and improvised music
- Opera production
- Performance piano, organ, harpsichord, voice, strings, brass, woodwinds, percussion, harp

Master of Arts or Doctor of Philosophy

- Ethnomusicology
- Music education
- Music history
- Music theory

Master of Arts

Admission Requirements

- A baccalaureate degree from an accredited U.S. institution or its equivalent from a foreign institution. Performance programs expect that applicants have a bachelor's degree in music or the equivalent experience and training in the field.
- Minimum GPA of 3.00 or B average in the most recent two years of study.
- Scores from the Graduate Record Exam (GRE), unless the applicant holds an earned doctorate from an accredited institution
- International Applicants:* International applicants whose native language is not English are required to submit scores from the Test of English as a Foreign Language (TOEFL). Scores must be less than two years old. Minimum scores is 90.

Degree Requirements

45 credits minimum, as follows:

- 45 credits as specified for the student's particular degree program; of these, 18 credits must be numerically graded and 18 credits must be at the 500-level
- Proficiency in a foreign language as required by the degree program
- Thesis, as required by the degree program
- All work for the degree completed within six years, to include applicable work transferred from other institutions (max. 6 credits transferable) and time spent on leave.

Master of Music

Admission Requirements

- A baccalaureate degree from an accredited U.S. institution or its equivalent from a foreign institution. Performance programs expect that applicants have a bachelor's degree in music or the equivalent experience and training in the field.
- Minimum GPA of 3.00 or B average in the most recent two years of study.
- (Only if applying to Composition):* Scores from the Graduate Record Exam (GRE), unless the applicant holds an earned doctorate from an accredited institution.
- International Applicants:* International applicants whose native language is not English are required to submit scores from the Test of English as a Foreign Language (TOEFL). Scores must be less than two years old. Minimum scores is 90.
- Entrance Auditions:* Before acceptance into a performance-based School of Music graduate program, applicants need to pass an entrance audition in their major performance area.

Degree Requirements

All students in the performance degree programs (MM, DMA) are expected to enroll in music applied lessons (MUSIC courses at the 500-level) until all recital requirements are met. The School of Music requires that all students registered for music applied lessons must also be enrolled in an ensemble (MUSEN 5XX).

Minimum 45 credits, to include:

1. Minimum 45 credits as specified for the student's particular degree program; of these credits, 18 credits must be numerically graded and 18 credits must be at the 500-level
2. Oral master's examination
3. All work for the degree completed within six years, to include applicable work transferred from other institutions (max. 6 credits transferable) and time spent on leave.

Doctor of Music Arts

Admission Requirements

1. Generally a master's degree or equivalent in the same field of music or music performance from an accredited U.S. institution or its equivalent from a foreign institution.
2. Minimum GPA of 3.00 or B average in the most recent two years of study.
3. (*Only if applying to Composition*): Scores from the Graduate Record Exam (GRE), unless the applicant holds an earned doctorate from an accredited institution.
4. *International Applicants*: International applicants must consult the online Preliminary Evaluation Process before proceeding with the application process. International applicants whose native language is not English are required to submit scores from the Test of English as a Foreign Language (TOEFL). Scores must be less than two years old. Minimum score is 100.
5. *Entrance Auditions*: Before acceptance into a performance-based School of Music graduate program, applicants need to pass an entrance audition in their major performance area.

Degree Requirements

All students in the performance degree programs (MM, DMA) are expected to enroll in music applied lessons (MUSIC courses at the 500-level) until all recital requirements are met. The School of Music requires that all students registered for music applied lessons must also be enrolled in an ensemble (MUSEN 5XX).

Minimum 90 credits, to include:

1. Minimum 90 credits of resident study with at least 60 registered credits from the UW
2. Reading knowledge of one or more foreign languages as required by the particular degree program
3. Performance requirements as specified
4. General examination for admission to candidacy consisting of written and oral examinations.
5. Dissertation which is a significant contribution to knowledge in a specific field and which clearly indicates training and research
6. Final examination devoted to the dissertation in the field with which it is concerned
7. All work for the degree completed within ten years. Applicable work from the master's degree and work transferred from the other institutions must fall within the ten-year period, including time spent on leave and away from the program. Up to thirty credits from an approved master's degree may be counted toward the 90 credits required for the degree. (Master's degree credits are

applied toward the general elective requirements of the degree plan.)

Doctor of Philosophy

Admission Requirements

1. Generally a master's degree or equivalent in the same field of music or music performance from an accredited U.S. institution or its equivalent from a foreign institution.
2. Minimum GPA of 3.00 or B average in the most recent two years of study.
3. Scores from the Graduate Record Exam (GRE), (except for Ethnomusicology), unless the applicant holds an earned doctorate from an accredited institution
4. *International Applicants*: International applicants whose native language is not English are required to submit scores from the Test of English as a Foreign Language (TOEFL). Scores must be less than two years old. Minimum score is 100.

Degree Requirements

Minimum 90 credits, to include:

1. Minimum 90 credits of resident study with at least 60 registered credits from the UW
2. Reading knowledge of one or more foreign languages as required by the particular degree program
3. Performance requirements as specified for the particular degree
4. General examination for admission to candidacy consisting of written and oral examinations. Dissertation which is a significant contribution to knowledge in a specific field and which clearly indicates training and research
5. Final examination devoted to the dissertation in the field with which it is concerned
6. All work for the degree completed within ten years. Applicable work from the master's degree and work transferred from other institutions must fall within the ten-year period, including time spent on leave and away from the program. Up to thirty credits from an approved master's degree may be counted toward the 90 credits required for the degree. (Master's degree credits are applied toward the general elective requirements of the degree plan.)

Financial Aid

A limited number of teaching and staff assistantships (including accompanying) are available. Competitive auditions for performance scholarships for new and returning students are held each year. See the school's Website (above) for more information about applications and audition dates.

Research Facilities

The Music Building contains the music library, an electronic composition laboratory, a listening center, and the ethnomusicology archives, as well as the studio, practice, and classroom facilities of a modern music department.

Ensembles available for student participation include University Symphony Orchestra, University Chorale, Opera Chorus, Contemporary Group, Wind Ensemble, University Symphonic Band, Studio Jazz Ensemble, Baroque Ensemble and Chamber Singers, as well as non-Western ensembles with visiting artists from around the globe.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

Music

MUSIC 113 Pre-Core Ear Training (0-1, max. 1) VLPA Bernard, Durand, Hodge Pre-core course in musicianship. Offered: ASP.

MUSIC 116 Elementary Music Theory (2) VLPA For nonmusic majors. For people with no hands-on music experience. Rudiments of music; notation of time, small pitch structures (e.g., some scales, chords, rhythmic patterns), some analysis. Recommended: some music training including ability to read music.

MUSIC 117 Elementary Music Theory (2) VLPA For nonmusic majors. For students who can read music, having some performance experience. Prerequisite: MUSIC 116.

MUSIC 118 Elementary Music Theory (2) VLPA For nonmusic majors. For students who read music, have some performance experience, are familiar with scales, chords, intervals. Includes analysis of composition in various styles. Prerequisite: MUSIC 117.

MUSIC 119 Introduction to Music Theory and Musicianship (3) VLPA Bernard, Durand, Hodge Basic elements of music theory: introduction to acoustics, major and minor scales, triads and seventh chords, keys, four-part writing, functional harmony, modes, simple forms, and jazz notation. Offered: A.

MUSIC 120 Survey of Music (5) VLPA Studies in listening, with emphasis on the changing components of Western art music. Illustrated lectures, laboratory section meetings, and presentations by guest artists.

MUSIC 121 The Orchestra (2) VLPA Development of the orchestra and its literature.

MUSIC 122 The Opera (2) VLPA An introduction to opera through selected masterworks, from Monteverdi to the present. Primarily for nonmajors.

MUSIC 160 American Folk Music (5) VLPA Introduces different types of folk music practiced in the United States. Examines how pieces, genres, performers, and consumers fit into particular socio-historical contexts as well as issues including identity politics and the roles of the media.

MUSIC 161 American Musical Theater (5) VLPA Historical and stylistic study of the development of the American musical theater. European roots in opera and operetta. Contributions from jazz and popular music. Selected musicals studied.

MUSIC 162 American Popular Song (5) VLPA Historical, social, and stylistic study of popular idioms from the late nineteenth century to the present. Most attention to contemporary idioms (rock, country-western, soul, hip-hop). Various facets of the industry examined to learn how they influence taste and musical style.

MUSIC 185 The Concert Season (2) VLPA Performances from the School of Music concert season, supplemented by lecture topics related to concert repertoire. Analysis of applicable musical topics appropriate for enhanced appreciation of historical and cultural contexts of works performed. Attendance at ten concerts required.

MUSIC 191 Composition (3, max. 9) VLPA One-hour private instruction and one-hour laboratory session each week. Intended to develop skill in creative musical expression. For composition majors only.

MUSIC 200 Music, Child, and Family (3) VLPA Campbell Study of music in childhood as part of socialization and enculturation of the child within family and community. Emphasis given to songs and music listening experiences provided by parents to nurture the child's musical, social,

and intellectual development from infancy through middle childhood. For nonmajors.

MUSIC 201 First-Year Theory I (3) VLPA *Bernard, Durand, Hodge* Introduction to tonal harmony and counterpoint; triadic progressions in root position; first and second species counterpoint; analysis of simple works. Prerequisite: minimum grade of 2.0 in MUSIC 119; recommended: concurrent registration in MUSIC 204. Offered: W.

MUSIC 202 First-Year Theory II (3) VLPA *Bernard, Durand, Hodge* Continued instruction in tonal harmony and counterpoint; triadic progressions with inversions; third and fourth species counterpoint; further analysis of basic forms. Prerequisite: minimum grade of 2.0 in MUSIC 201; recommended: concurrent registration in MUSIC 205. Offered: Sp.

MUSIC 203 First-Year Theory III (3) VLPA *Bernard, Durand, Hodge* Further introduction in tonal harmony and counterpoint; seventh chords; modulations to closely related keys; secondary dominants; introduction to chromaticism; emphasis on analysis and writing of four-part chorales in early eighteenth-century style. Prerequisite: minimum grade of 2.0 in MUSIC 202; recommended: concurrent registration in MUSIC 206. Offered: A.

MUSIC 204 First-Year Ear Training I (0-1, max. 1) VLPA *Bernard, Durand, Hodge* Core ear-training sequence for majors. Prerequisite: minimum grade of 2.0 in MUSIC 113; corequisite: MUSIC 201. Offered: W.

MUSIC 205 First-Year Ear Training II (0-1, max. 1) VLPA *Bernard, Durand, Hodge* Core ear-training sequence for majors. Prerequisite: minimum grade of 2.0 in MUSIC 204; corequisite: MUSIC 202. Offered: Sp.

MUSIC 206 First-Year Ear Training III (0-1, max. 1) VLPA *Bernard, Durand, Hodge* Core ear-training sequence for majors. Prerequisite: minimum grade of 2.0 in MUSIC 205; corequisite: MUSIC 203. Offered: AWSp.

MUSIC 216 Introductory Composition (2) VLPA For students not majoring in composition. Prerequisite: MUSIC 202.

MUSIC 217 Introductory Composition (2) VLPA For students not majoring in composition. Prerequisite: MUSIC 216.

MUSIC 218 Introductory Composition (2) VLPA For students not majoring in composition. Prerequisite: MUSIC 217.

MUSIC 240 Reed-Making Techniques (1, max. 6) VLPA Applies basic reed-making principles and techniques. Individualized instruction allows students of all levels to take the course simultaneously.

MUSIC 250 World Music (3) VLPA/I&S, DIV Introduction to world musical traditions, including both sound and sociocultural dimensions of music. Topics include instruments, rhythm, melody, form, composition, improvisation, music in the family and community, politics, economy, religion, and case studies of major world musical traditions. Prerequisite: MUSIC 201; MUSIC 204.

MUSIC 260 Orchestral Music (5) VLPA Orchestral music from its beginnings in the seventeenth century through recent developments; evolution of the symphony.

MUSIC 261 Mozart (5) VLPA Introduction to Mozart's music and to musical life in Habsburg Austria during the Enlightenment. Mozart's musical personality studied through masterpieces in all genres, with principal emphasis on listening. Ability to read music not required.

MUSIC 262 Introduction to Twentieth-Century Music (3) VLPA *Starr* Listener's survey of important composers and trends from Debussy through electronic music.

MUSIC 263 Opera (5) VLPA *Rumph* Contributions of music, text, and staging; study of representative works concentrating on problems of combining these elements into a composite work of art.

MUSIC 264 Sacred Music in the European Tradition (5) VLPA Surveys European and American sacred music from the twelfth to twentieth centuries, examining the important role of music in religious worship. Considers the means composers used to make musical works sound the way they do to convey the messages of the texts through music. Offered: jointly with JSIS C 264.

MUSIC 270 World Popular Music (5) VLPA/I&S A global survey of popular music, including Latin America, Africa, Eastern Europe, the Middle East, Asia, and the Pacific. Emphasis on students' ability to recognize styles and to analyze the social and historical processes that have shaped them.

MUSIC 291 Composition (3, max. 9) VLPA One-hour private instruction and one-hour laboratory session per week. Prerequisite: MUSIC 191.

MUSIC 300 Fundamentals of Music Technology (3) VLPA Introduction to the principles of music technology. Exploration of different categories of music software, in terms of their functionality as well as the fundamental basis of these theories. Prerequisite: MUSIC 203; MUSIC 206.

MUSIC 301 Second-Year Theory (3) VLPA *Bernard, Durand, Hodge* Further study of modulation and chromatic harmony; analysis of eighteenth- and nineteenth-century short forms; technical exercises; model composition. Prerequisite: minimum grade of 2.0 in both MUSIC 203 and MUSIC 206; recommended: concurrent registration in MUSIC 304. Offered: W.

MUSIC 302 Second-Year Theory (3) VLPA *Bernard, Durand, Hodge* More advanced study in mid- to late nineteenth-century chromaticism and compositional style; analysis of representative works; technical exercises; model composition. Prerequisite: minimum grade of 2.0 in both MUSIC 301 and MUSIC 304; corequisite: MUSIC 305. Offered: Sp.

MUSIC 303 Second-Year Theory (3) VLPA *Bernard, Durand, Hodge* Core theory sequence for majors. Introduction to the theory and analysis of twentieth-century music. Prerequisite: minimum grade of 2.0 in both MUSIC 302 and MUSIC 305; corequisite: MUSIC 306. Offered: A.

MUSIC 304 Second-Year Ear-Training I (0-1, max. 1) VLPA *Bernard, Durand, Hodge* Core ear-training sequence for majors. Prerequisite: minimum grade of 2.0 in both MUSIC 203 and MUSIC 206; recommended: concurrent registration in MUSIC 304. Offered: W.

MUSIC 305 Second-Year Ear-Training II (0-1, max. 1) VLPA *Bernard, Durand, Hodge* Core ear-training sequence for majors. Prerequisite: minimum grade of 2.0 in both MUSIC 301 and MUSIC 304; corequisite: MUSIC 302. Offered: Sp.

MUSIC 306 Second-Year Ear-Training III (0-1, max. 1) VLPA *Bernard, Durand, Hodge* Core ear-training sequence for majors. Prerequisite: minimum grade of 2.0 in both MUSIC 302 and MUSIC 305; corequisite: MUSIC 303. Offered: A.

MUSIC 307 Diction for Singers (2) VLPA Application of basic rules of diction, enunciation, and articulation in Italian. Materials include texts from the basic vocal repertoire. Primarily for voice majors at freshman and sophomore levels; nonmajors on a space-available basis.

MUSIC 308 Diction for Singers (2) VLPA Application of basic rules of diction, enunciation, and articulation in French. Materials include texts from the basic vocal repertoire. Primarily for voice majors at freshman and sophomore levels; nonmajors on a space-available basis.

MUSIC 309 Diction for Singers (2) VLPA Application of basic rules of diction, enunciation, and articulation in German. Materials include texts from the basic vocal repertoire. Primarily for voice majors at freshman and sophomore levels; nonmajors on a space-available basis.

MUSIC 316 Music Cultures of the World (5) VLPA/I&S Near East, Central Asia, Far East, South and Southeast Asia, Indonesia, and the Philippines. Content varies.

MUSIC 317 Music Cultures of the World (5) VLPA/I&S Music of Africa, Americas, and Oceania. Content varies.

MUSIC 318 Music Cultures of the World (5) VLPA/I&S Folk and popular music in Western and Eastern Europe and the Americas. Content varies.

MUSIC 319 Afro-American Music (5) VLPA/I&S Centers on Black music in the United States, but also clarifies the relationship of this music to the musics of other Afro-American cultures as well as to their African roots.

MUSIC 325 Music in Cinema (5) VLPA/I&S *Hodge* Surveys representative film soundtracks from the past one hundred years. Examines the role of music and sound design within cinematic narrative form; explores theories of film music; and lays the groundwork for engaging film as a multimedia.

MUSIC 326 Repertoire (2) VLPA For music majors.

MUSIC 327 Repertoire (2) VLPA For music majors.

MUSIC 328 Repertoire (2) VLPA For music majors.

MUSIC 331 History of Jazz (5) VLPA Extensive overview of important musicians, composers, arrangers, and stylistic periods of jazz history from emergence of the first jazz bands at the turn of the twentieth century through post-modern bebop era of the 1990s.

MUSIC 332 Music in European Society: Antiquity to 1700 (5) VLPA/I&S Music and its relationship to aspects of European culture and society - philosophy, politics, social conditions, and the visual arts from antiquity to 1700.

MUSIC 333 Music in Western Culture (5) VLPA/I&S Music in Europe and North America, drawn from classical, popular, jazz, opera, and musical theatre traditions. Emphasis on the relationship between musical works and their social, philosophical, political, and other contexts.

MUSIC 334 Band Arranging (2) VLPA Prerequisite: MUSIC 303.

MUSIC 336 Jazz Arranging (2) VLPA Writing in jazz style for various instrumental combinations. Students should be able to arrange for modern jazz orchestra. Prerequisite: MUSIC 303.

MUSIC 344 Psychology of Music: Cognition (5) VLPA/I&S Critical examination of questions, designs, and conclusions of previous research in a variety of areas related to music cognition including music perception, music performance, musical development, musical affect, musical preference, social psychology, and neuroscience.

MUSIC 350 Choral Conducting (1) VLPA Overview of choral conducting patterns. Score, voice warm-up, and intonation. Tempo fluctuation, left hand, diction, discipline. Designed for music and music education majors. Prerequisite: MUSIC 302; corequisite: MUSEN 307, MUSEN 350 or MUSEN 351.

MUSIC 351 Choral Conducting (1) VLPA Overview of choral conducting patterns. Score, voice warm-up, and intonation. Tempo fluctuation, left hand, diction, discipline. Designed for music and music education majors. Prerequisite: MUSIC 350; corequisite: MUSEN 307, MUSEN 350 or MUSEN 351.

MUSIC 352 Choral Conducting (1) VLPA Overview of choral conducting patterns. Score, voice warm-up, and intonation. Tempo fluctuation, left hand, diction, discipline. Designed for music and music education majors. Prerequisite: MUSIC 351; corequisite: MUSEN 307, MUSEN 350 or MUSEN 351.

MUSIC 366 Cylinders to Platters - A Survey of Recorded Music Since 188 (3) VLPA Music as reflected through the influences of the recording industry and the development of related technologies. Examines social and artistic impacts that the recording age has brought to American and European musical cultures. Recommended: MUSIC 120; MUSIC 162.

MUSIC 367 Essential Skills in Jazz Improvisation I (2) VLPA Addresses acquisition of crucial skills in jazz improvisation. Emphasizing strengthening inner time, control of form, and fundamental harmony while addressing motivic develop-

ment through rhythmic exercises. Students engage in transcription and analysis of exemplarity solos by jazz legends.

MUSIC 368 Essential Skills in Jazz Improvisation II (2) VLPA Addresses skills in jazz improvisation at a more complex level. Emphasizing control of complex cross rhythms and ear training. Harmonic knowledge acquired through improvisational techniques and analysis of selections from the American Songbook. Prerequisite: MUSIC 367

MUSIC 369 Essential Skills in Jazz Improvisation III (2) VLPA Addresses skills in jazz improvisation at a more complex level. Emphasizing advanced harmonic approaches that address extensions, altered extensions and resolutions, intervallic inventions, polytonality, chromatics, and triadic chromatics. Addresses improvisation in odd meter. Prerequisite: MUSIC 368.

MUSIC 379 Junior Recital (1) VLPA For participants in the Bachelor of Music degree program only.

MUSIC 380 Instrumental Conducting (1) VLPA *Salzman* Acquaints the beginning conductor with beat patterns and their expressive modifications, basic rehearsal techniques, and score study. Prerequisite: either MUSIC 212 or MUSIC 302.

MUSIC 381 Instrumental Conducting (1) VLPA *Salzman* Acquaints the beginning conductor with beat patterns and their expressive modifications, basic rehearsal techniques, and score study. Prerequisite: MUSIC 380.

MUSIC 382 Instrumental Conducting (1) VLPA *Salzman* Acquaints the beginning conductor with beat patterns and their expressive modifications, basic rehearsal techniques, and score study. Prerequisite: MUSIC 381.

MUSIC 384 Ideas in Music (5) VLPA/I&S *Taricani* Examines selected sources and compositions of music from the Western tradition (from the tenth through the twentieth centuries), in relation to the intellectual background of the periods and countries that produced them. Musical studies accompanied by assigned readings in philosophical, religious, literary, and artistic texts in addition to the primary readings in musical history.

MUSIC 388 Jazz Pedagogy (2) VLPA Stylistic and esthetic developments in the performance of jazz. Key musical ingredients in the evolution of jazz as an art form and the skills commensurate with teaching these. Designed for music majors.

MUSIC 390 Special Topics in Music (3, max. 9) VLPA *Starr* Topics vary.

MUSIC 391 Composition (3, max. 9) VLPA One-hour private instruction and one-hour laboratory session each week. Prerequisite: MUSIC 291.

MUSIC 394 Instrumentation (3) VLPA *Durand, Hodge* Survey of the basic characteristics and techniques of instruments of the orchestra and practical experience in scoring for various instrumental combinations. Also covers topics such as transcription of solo works for ensemble and basic arranging in jazz and other styles. Prerequisite: MUSIC 303; MUSIC 306.

MUSIC 400 Computer Applications to Music (3, max. 9) VLPA Music workstation applications using microcomputers, music synthesizers, and analog-to-digital converters: music editing and score production, transcription, waveform and spectral analysis, and introduction to programming.

MUSIC 401 Digital Sound Synthesis (5) VLPA Introduction to software sound synthesis techniques. Project-based course focused on creating experimental sound compositions framed by context of the Western Art Music Tradition. Includes acoustics and psychoacoustics; virtual synthesizers; wavetable synthesis; additive synthesis; ring, amplitude, and frequency modulation synthesis; granular synthesis; and noise and subtractive synthesis. Offered: jointly with DXARTS 461; A.

MUSIC 402 Digital Sound Processing (5) VLPA Introduction to digital sound processing techniques. Project-based

course focused on creating experimental sound compositions framed by context of the Western Art Music Tradition. Includes digital effects; delay lines; introduction to digital filtering; FIR and IIR filters; reverberation; virtual-room acoustics and sound location; time-domain transformation of sound; and granulation and time stretching. Prerequisite: DXARTS 461/MUSIC 401. Offered: jointly with DXARTS 462; W.

MUSIC 403 Advanced Digital Sound Synthesis and Processing (5) VLPA Advanced sound processing and synthesis techniques. Includes sound time warping; analysis-synthesis techniques; linear predictive coding; the phase vocoder; frequency-domain sound transformations; introduction to physical modeling. Prerequisite: DXARTS 462/MUSIC 402. Offered: jointly with DXARTS 463; Sp.

MUSIC 405 Liturgics and Hymnology: Practical Applications I (3) VLPA *Cleveland* Prepares organ majors and other advanced organ students to play hymns in a manner that inspires congregational singing. Includes a study of hymnology from the early church to contemporary hymns of today. Explores several denominational hymns and many styles of improvisation, including baroque, romantic, and contemporary techniques. Prerequisite: MUSIC 302; MUSIC 305; MUHST 212. Offered: A.

MUSIC 406 Liturgics and Hymnology: Practical Applications II (3) VLPA *Cleveland* Surveys small and large choral works including anthems, oratorios, Requiem Masses, and Mass settings of major composers of the sixteenth century to present day. Resources drawn from the performing ensembles library, and from area church libraries, and include a detailed study of choral styles and editions. Prerequisite: either MUSIC 303, MUSIC 306, MUHST 210, or MUSIC 405. Offered: W.

MUSIC 407 Liturgics and Hymnology: Practical Applications III (3) VLPA *Cleveland* Includes a survey of the necessary skills to run a successful music program in a church or synagogue. Provides an overview of traditional and contemporary liturgies, handbells, orchestral instruments and their use in worship and a special emphasis on the directing of children's choirs. Prerequisite: either MUSIC 303, MUSIC 306, MUHST 210, or MUSIC 406. Offered: Sp.

MUSIC 410 ElectroAcoustic Music: History and Analysis (3) VLPA Examines the music of major electro-acoustic composers. Emphasis on the relationship between technological resources and compositional advances. Addresses issues raised by the diversity of approaches to musical composition; relates particular creative contributions to the historical, cultural, and technological contexts in which they originated. Prerequisite: MUSIC 303; MUSIC 306; MUHST 210. Offered: Sp.

MUSIC 411 Non-Traditional Improvisation/Composition Techniques for Jazz Performers I (2) VLPA *Vu* Guides students through the process of experimentation while discovering and developing musical originality and striving for innovations in jazz. Students address conceptual approaches to non-idiomatic group improvisation and original composition that incorporates and fosters improvisation, and explore techniques in generating and developing building blocks of musical material and form. Offered: A.

MUSIC 412 Non-Traditional Improvisation/Composition Techniques for Jazz Performers II (2) VLPA *Vu* Continuation of MUSIC 411, working at a more developed and complex level to experiment and strive for originality and innovation in jazz. Students address conceptual approaches to non-idiomatic group improvisation and original composition that incorporates and fosters improvisation, and explore techniques in generating and developing building blocks of musical material and form. Prerequisite: MUSIC 411. Offered: W.

MUSIC 413 Non-Traditional Improvisation/Composition Techniques for Jazz Performers III (2) VLPA *Vu* Continuation of MUSIC 411, working at a more advanced and complex level to experiment and strive for originality and innovation in jazz. Students address conceptual approaches

to non-idiomatic group improvisation and original composition that incorporates and fosters improvisation, and explore techniques in generating and developing building blocks of musical material and form. Prerequisite: MUSIC 412. Offered: Sp.

MUSIC 414 Finding an American Voice (3) VLPA Investigation of why certain works have been received as characteristically and representatively "American" in nature, extending the inquiry concerning an "American voice" to arts like poetry and painting, along with music. Examples for study include music by composers such as Gershwin, and Dickenson's poetry, along with composers' settings of it. Instructor: Starr.

MUSIC 415 The American Musical (3) VLPA Advanced course in the American stage and film musical, emphasizing detailed study of representative works as totalities: *Show Boat*, *Porgy and Bess*, shows by Rodgers & Hammerstein and Sondheim, film musical starring Astaire and Rogers, and others. Contributions of composers, lyricists, choreographers, directors, and performers to development of the genre. Instructor: Starr.

MUSIC 416 The Blues (3) VLPA Investigation of the many forms, styles, and genres of music linked with the blues, and of the ways in which the blues has contributed to the shaping and essence of musical culture, from the early twentieth century to the present. Instructor: Starr.

MUSIC 417 Classical Music in America (3) VLPA History of classical music composers, performers, audiences, and institutions in America, with a critical look at the situation of these groups and institutions today, in light of how they arrived at their current status, and a consideration of what the future may hold for them. Instructor: Starr.

MUSIC 418 Baroque Ornamentation and Improvisation (3) VLPA *Terry* The study of ornamentation and improvisation for keyboard, woodwinds, voice, and strings of selected German, Italian, French, and English repertoire from 1600 to 1800.

MUSIC 420 Organ Improvisation and Service Playing I (2) VLPA Prepares students to improvise, especially for the church/synagogue service. Includes a brief study of hymnology, hymn elaboration, altered harmonizations, improvisation based on existing hymn tunes, interludes, chorale preludes, ornamented chorales. Prerequisite: MUSIC 303; MUSIC 306. Offered: A.

MUSIC 421 Organ Improvisation and Service Playing II (2) VLPA Continuation of MUSIC 420. Includes brief review of figured bass and functional harmony, free improvisation in simple antecedent/consequent ABA forms and more complex forms (rondo, theme, and variation), improvising partitas, interludes, improvisations based on plainchant. A survey of important improvisation texts. Prerequisite: MUSIC 420. Offered: W.

MUSIC 422 Organ Improvisation and Service Playing III (2) VLPA Continuation of MUSIC 421. Advanced improvisation: baroque improvisation techniques, fuguetas, baroque preludias and fantasias, canons, toccatas, duos, trios, and simple fugues. Prerequisite: MUSIC 421. Offered: Sp.

MUSIC 426 Advanced Jazz Arranging (2) VLPA Advanced arranging techniques for jazz ensembles of various sizes, exploring methods employed by Duke Ellington, Gil Evans, and others. Assignments include one original arrangement each for small-combo and full-jazz ensemble. Prerequisite: MUSIC 336. Offered: W.

MUSIC 427 Music of Africa (3) VLPA/I&S Music cultures of Africa. Traditional styles and more recent developments. Open to all students with an interest in the area. Prerequisite: MUSIC 317.

MUSIC 428 Music of North India (3) VLPA/I&S Classical music of North India, the Hindustani tradition with emphasis on the Dhrupad and Khyal styles. Recommended: ethnomusicology or South Asian studies background.

MUSIC 429 String Orchestral Repertoire (2, max. 18) VLPA Intended for undergraduate BA/BM and BM music majors. Offered: AWSp.

MUSIC 430 Organology (3) VLPA Systematic study of musical instruments, involving the history, acoustical phenomena, and physical topologies of instruments from around the world, with emphasis on non-Western music.

MUSIC 433 Music of Latin America (3) VLPA/I&S The music of the Spanish-, French-, and Portuguese-speaking New World countries.

MUSIC 434 Pedagogy (2) VLPA Principles of effective studio teaching; survey and evaluation of teaching materials.

MUSIC 435 Pedagogy (2) VLPA Principles of effective studio teaching; survey and evaluation of teaching materials.

MUSIC 436 Pedagogy (2) VLPA Principles of effective studio teaching; survey and evaluation of teaching materials.

MUSIC 437 Studio Class (2, max. 24) VLPA Performance and pedagogical concepts. Topics vary. Offered: AWSp.

MUSIC 438 Problems in Contemporary Music Performance (3, max. 9) VLPA An active course examining and solving problems relevant to the successful performance of twentieth-century music. Preparation for complex rhythms, odd groupings, new notation, and extended performing techniques.

MUSIC 439 Music of Indonesia (3) VLPA/I&S Includes the traditions of Sumatra, Sunda, Java, Bali, Sunda Islands, and the Philippines. Open to students in music and to students with an interest in the area.

MUSIC 444 Music of the Near East (3) VLPA/I&S Classical and folk musical traditions of Iran, Turkey, and the Arab world. Prerequisite: MUSIC 316.

MUSIC 445 Selected Topics in Ethnomusicology (3/5, max. 15) VLPA/I&S Deals with areas not covered by other courses in ethnomusicology. Content varies with different instructors.

MUSIC 446 Music in American Cultures (3) VLPA/I&S Compares musical history and experience of selected American cultures that have fed into the American musical mainstream or had significant popularity on its periphery. Case studies may include African Americans, Latino/a Americans, Jewish Americans, Asian Americans, or European Americans. Considerations of social identity as well as musical styles. Offered: jointly with AES 446.

MUSIC 447 Music of Southern India (3) VLPA/I&S Classical music of South India, the Karnatic tradition, with emphasis on the concert repertoire. Recommended: ethnomusicology or South Asian studies background.

MUSIC 448 Music of China (3) VLPA/I&S Confucian philosophies that relate to music, theory, scale systems, cosmology. Development of instrumental styles, vocal and dramatic regional forms from early historical periods to the present. Recommended: ethnomusicology or East Asian studies background.

MUSIC 449 Advanced Piano Repertoire (2, max. 6) VLPA/I&S McCabe, Sheppard For piano majors who wish an in-depth survey of major areas of the piano repertoire. Prerequisite: MUSIC 328. Offered: AWSp.

MUSIC 450 Percussion Education Institute (2) VLPA Collier, Crusoe Intensive four-week institute focusing on techniques in percussion, timpani, and mallet performance. Intended for music educators with little or no percussion experience desiring additional training to enhance their careers as music teachers. Includes private instruction, master classes, and percussion ensemble participation. Prerequisite: MUSAP 217.

MUSIC 451 Summer Jazz Institute (1) VLPA Brockman, Collier, Seales Intensive one-week institute designed for the serious jazz student as well as for music educators. Six hours of daily instruction in jazz theory, ear-training, improvisation, arranging, as well as emphasis on rehearsal and

performance techniques through sectional workshops and small group "jam sessions."

MUSIC 454 Organ Pedagogy (3) VLPA Terry Pedagogical approaches to organ techniques and performance practice; provides opportunity for practical application by means of student teaching. Offered: Sp, even years.

MUSIC 455 Choral Arranging (3) VLPA Primarily for choral conductors who need to modify, arrange, or compose material to suit the capabilities of specific choral groups and performance situations.

MUSIC 458 Organ Repertoire: Middle Ages through Baroque (3) VLPA Terry Analysis and performance practices of organ literature, Middle Ages through baroque period. Development of the organ as musical instrument. Prerequisite: either MUHST 400, MUHST 401, MUHST 402, MUHST 403, MUHST 406, or MUHST 407. Offered: A, even years.

MUSIC 459 Organ Repertoire: Bach to Present (3) VLPA Terry Analysis and performance practices of organ literature, classical period through the twentieth century. Development of the organ as a musical instrument. Prerequisite: either MUHST 408, MUHST 409, MUHST 410, MUHST 411, MUHST 412, MUHST 413, MUHST 414, MUHST 415, MUHST 417, MUHST 418, MUHST 419, MUHST 423, MUHST 424, or MUHST 426. Offered: W, even years.

MUSIC 460 Advanced Vocal Repertoire: Pre-Nineteenth-Century Art Songs (2, max. 6) VLPA Professional preparation of pre-nineteenth-century songs with a view to total artistic-musical realization in performance. Appropriate style, character, balance, phrasing, diction, and projection for vocalists and pianists. Prerequisite: MUSIC 328.

MUSIC 461 Advanced Vocal Repertoire: Nineteenth-Century Art Songs (2, max. 6) VLPA Professional preparation of works from the literature of nineteenth-century German lieder, with a view to total artistic-musical realization in performance. Appropriate style, character, balance, phrasing, diction, and projection for vocalists and pianists. Prerequisite: MUSIC 460.

MUSIC 462 Advanced Vocal Repertoire: Twentieth-Century Art Songs (2, max. 6) VLPA Preparation of works from the twentieth-century repertoire of French, German, Italian, Spanish, and English songs, with a view to total artistic-musical realization in performance. Appropriate style, character, balance, phrasing, diction, and projection for vocalists and pianists. Prerequisite: MUSIC 461.

MUSIC 464 Jazz Laboratory (1, max. 9) VLPA Forum for testing new technical skills, improvisational techniques, and jazz compositions and/or arrangements in a formal laboratory setting.

MUSIC 465 Acting for Singers (2, max. 6) VLPA Workshop designed specifically for the singing actor, focusing on character analysis, movement, and audition deportment skills.

MUSIC 467 Advanced Jazz Improvisation I (1) VLPA Collier, Seales Performance techniques in jazz improvisation for the advanced student. Prerequisite: MUSIC 369.

MUSIC 468 Advanced Jazz Improvisation II (1) VLPA Collier, Seales Performance techniques in jazz improvisation for the advanced student. Prerequisite: MUSIC 467.

MUSIC 469 Advanced Jazz Improvisation III (1) VLPA Collier, Seales Performance techniques in jazz improvisation for the advanced student. Prerequisite: MUSIC 468.

MUSIC 470 Analysis of Tonal Music: Introduction to Schenker (3) VLPA Bernard Introduction to the theories of Heinrich Schenker and their subsequent development; analysis of music from the common-practice period (1700-1900), with possible excursions into the twentieth century. Prerequisite: either both MUSIC 303 and MUHST 212 or both MUSIC 312 and MUHST 215.

MUSIC 471 Introduction to Atonal Theory and Analysis (3) VLPA Bernard Theory of atonal music, including the "classical" twelve-tone repertoire. Analysis of works by Schoenberg, Berg, Webern, and others. Prerequisite: either both

MUSIC 303 and MUHST 212 or both MUSIC 312 and MUHST 215.

MUSIC 472 Analysis of Twentieth Century Music, 1900-1950 (3, max. 6) VLPA Bernard, Durand, Hodge Analytical examination of musical works of the first half of the twentieth century in Europe and the United States, with emphasis on music other than that of the second Viennese school. Prerequisite: either both MUSIC 303 and MUHST 212 or both MUSIC 312 and MUHST 215.

MUSIC 473 Keyboard Harmony and Transposition (3) VLPA Terry Keyboard harmonization from the baroque period to present; transposition of vocal and instrumental pieces to different pitch levels. Prerequisite: either both MUSIC 303 and MUHST 212 or both MUSIC 312 and MUHST 215. Offered: A, odd years.

MUSIC 474 Keyboard Harmony and Transposition (3) VLPA Terry Keyboard harmonization from the baroque period to present; transposition of vocal and instrumental pieces to different pitch levels. Prerequisite: MUSIC 473. Offered: W, odd years.

MUSIC 475 Figured Bass Realization (3) VLPA Terry Various styles of continuo realization for keyboardists, emphasizing Bach cantatas, Haydn symphonies, and Mozart operas. Prerequisite: MUSIC 474. Offered: Sp, odd years.

MUSIC 476 Advanced Vocal Repertoire: Seventeenth and Eighteenth Centuries (2) VLPA Opera repertoire, 1600 to the Bel Canto era (Bellini, Rossini, Donizetti); style, traditions, embellishments in Italian, French, and German arias. Prerequisite: MUSIC 328.

MUSIC 477 Advanced Vocal Repertoire: Nineteenth Century (2) VLPA Opera repertoire, the post Bel Canto era through Verdi, Puccini and verismo, and significant German, French, and Slavic repertoire. Prerequisite: MUSIC 476.

MUSIC 478 Advanced Vocal Repertoire: Twentieth Century (2) VLPA Opera repertoire, twentieth-century opera literature (Barber, Menotti, Bartok, Dvorak); understanding of style, character, and overall artistic and musical needs of the present. Prerequisite: MUSIC 477.

MUSIC 479 Senior Recital (1) VLPA

MUSIC 480 The Anthropology of Music (3) VLPA/I&S Analysis of aspects of anthropological thought influential in ethnomusicology. Critical evaluation of dominant theoretical schools and modes of explanation, e.g., evolutionist, diffusionist, historical particularist, structuralist, functionalist, symbolist, and semiotic, through detailed examination of seminal texts. Offered: jointly with ANTH 430.

MUSIC 481 Choral Repertoire: Sixteenth and Seventeenth Centuries (3) VLPA Boers, Wyers Sacred and secular choral literature from the Renaissance through the early baroque, covering Europe and England. Various genres and styles of major composers, including performance practice, rehearsals, and conducting.

MUSIC 482 Choral Repertoire: Eighteenth Century (3) VLPA Boers, Wyers Sacred and secular choral literature of the baroque, covering mainland Europe and England. Choral works of Bach, his predecessors, and contemporaries. Stylistic analysis and study of performance practice.

MUSIC 483 Choral Repertoire: Nineteenth Century (3) VLPA Boers, Wyers Sacred and secular choral literature of the nineteenth century, covering mainland Europe and England. Analysis of accompanied and a cappella choral works by major composers with implications for conducting and programming of literature.

MUSIC 484 Choral Repertoire: Twentieth Century (3) VLPA Boers, Wyers Choral literature of the twentieth century, covering America, England, and mainland Europe. Various genres and styles, including score study and teaching strategies.

MUSIC 485 Topics in the Analysis of American Music (3, max. 9) VLPA Bernard Includes close analytical study of specific repertoires of American music.

MUSIC 487 Tonal Counterpoint (3) VLPA *Bernard, Hodge* Introduction to tonal counterpoint through exercises in analysis and composition, focusing on eighteenth-century styles. Study of melody principles of counterpoint in two and three voices, dance forms, inventions, fugue. Prerequisite: either MUSIC 311 or MUSIC 202.

MUSIC 489 Special Topics in Music Theory (3/5, max. 15) VLPA *Bernard, Durand, Hodge* Prerequisite: either both MUSIC 303 and MUHST 210 or both MUSIC 312 and MUHST 314.

MUSIC 491 Composition (3, max. 18) VLPA One-hour private instruction and one-hour laboratory session each week. Prerequisite: MUSIC 391.

MUSIC 492 Opera Direction and Production (4) VLPA Practical experience with problems of the theater.

MUSIC 493 Opera Direction and Production (4) VLPA Practical experience with problems of the theater. Prerequisite: MUSIC 492.

MUSIC 495 Music of Japan (3) VLPA/I&S Survey of major Japanese musical traditions. Open to students in music and East Asian area studies. Prerequisite: MUSIC 316.

MUSIC 498 Senior Thesis (3-, max. 9) VLPA Design and completion of an individual research project and writing of a thesis under supervision of a faculty member.

MUSIC 499 Undergraduate Research (*, max. 6)

MUSIC 504 Ethnographic Research in Music (3) Campbell, Morrison Seminar in ethnographic research in music, with attention to the nature of participant-observation and informal interviewing suitable to the discovery of the social and cultural life of individual musicians, and communities and institutions of music.

MUSIC 511 Seminar in Field and Laboratory Methods (3) Methodology of field research in ethnomusicology along with practical experience. Prerequisite: graduate student standing in ethnomusicology or permission of instructor.

MUSIC 512 Seminar in Ethnomusicology (3/5, max. 30) Deals with advanced theoretical and methodological problems in ethnomusicology, and with the relationship of ethnomusicology to allied disciplines. Prerequisite: graduate-student standing in ethnomusicology or permission of instructor.

MUSIC 520 Music in Higher Education (3) Morrison Philosophical and practical issues surrounding music within the context of higher education. Topics include mission and structure of music programs, development of teaching expertise, teacher/student evaluation, academic freedom, and job opportunities. Appropriate for all graduate music students and does not require background in teaching or education.

MUSIC 523 Seminar in Music and Socialization (3, max. 9) The socialization process and music, including the interaction whereby music culture is learned. Prerequisite: MUSIC 345 or permission of instructor.

MUSIC 526 History of Theory (3) Ancient, medieval, early Renaissance.

MUSIC 527 History of Theory (3) Bernard Renaissance, baroque, early classic.

MUSIC 528 History of Theory (3) Bernard Classic, romantic, twentieth century.

MUSIC 530 Seminar in Music Cognition (3, max. 9) Study of research literature in cognition and music cognition, particularly as it relates to nonverbal musical experience. Prerequisite: MUSIC 344, or MUSIC 544, or permission of instructor.

MUSIC 531 Proseminar in Ethnomusicology (3) Theoretical and methodological issues in ethnomusicology based on historical and contemporary major writings. Critical evaluations of works with a broad view toward developing ethnomusicological research. Prerequisite: permission of instructor.

MUSIC 532 Opera Direction and Production (4/6, max. 12) Practical experience with problems of the opera theatre.

MUSIC 533 Preceptorial Readings in Ethnomusicology (5) Significant ethnomusicological literature on the music cultures of Asia. Meets with MUSIC 316. Prerequisite: graduate student standing in ethnomusicology and permission of instructor.

MUSIC 534 Preceptorial Readings in Ethnomusicology (5) Significant ethnomusicological literature on the music cultures of Africa, the Americas, and Oceania. Meets with MUSIC 317. Prerequisite: graduate student standing in ethnomusicology and permission of instructor.

MUSIC 535 Preceptorial Readings in Ethnomusicology (5) Significant ethnomusicological literature on the music cultures of Europe and North America. Meets with MUSIC 318. Prerequisite: graduate student standing in ethnomusicology and permission of instructor.

MUSIC 536 Transcription and Analysis (3) Study of the methodological principles of transcription and analysis, together with practical exercises in developing transcription skills. Prerequisite: graduate student standing in ethnomusicology and permission of instructor.

MUSIC 544 Psychology of Music: Music Cognition (5) Critical examination of questions, designs, and conclusions of previous research in a variety of areas related to music cognition including music performance, musical creativity, musical affect, musical preference, social psychology, and neuroscience. Discusses the role of theory, method, and typical procedures for psychological research.

MUSIC 551 Practicum in Music Instruction (3, max. 9) Practical application and validation of results of investigation in curriculum, music teaching and learning, performance, and theoretical studies. Prerequisite: teaching experience, or permission of instructor.

MUSIC 553 Advanced Choral Techniques (2, max. 18) Boers, Wyers Practical application of technique and pedagogy related to choral music. Surveys major choral repertoire. Concurrent enrollment in MUSIC 583 required.

MUSIC 559 Master's Recital (3, max. 6) Public performance for students in the Master of Music degree program. Prerequisite: permission of instructor and Master of Music program standing.

MUSIC 570 Seminar in Schenkerian Analysis (3, max. 9) Bernard Advanced work in Schenkerian analysis. Prerequisite: MUSIC 470.

MUSIC 571 Seminar in Serialism (3, max. 9) Bernard Advanced theoretical and analytical work in serialism and other nontonal systems. Prerequisite: MUSIC 471, or equivalent.

MUSIC 572 Advanced Topics in Computer Music (3) Karpen Topics vary. Offered: AWSpS.

MUSIC 573 Seminar in Tonal Analysis (3, max. 9) Modern theoretical and analytical methods appropriate to study of western music of the eighteenth and nineteenth centuries, conceived independently of or in response to the work of Heinrich Schenker. Prerequisite: MUSIC 470 or permission of instructor.

MUSIC 574 Analysis of Twentieth-Century Music: 1950 - Present (3) Bernard, Durand, Hodge, Karpen Analytical examination of major works of second half of twentieth century. Prerequisite: MUSIC 471; MUSIC 472, or permission of instructor.

MUSIC 575 Seminar in Theory (3, max. 18) Bernard Development and discussion of current student and faculty research in compositional/analytical theory and metatheory.

MUSIC 576 Critical Theory of Music (3, max. 18) Philosophical foundations of the criticism of music, including relevant contemporary thought in the criticism of literature and the other arts.

MUSIC 577 Composers of the Twentieth Century (3, max. 9) Bernard, Durand, Hodge, Karpen Analytical examination of the work of a major composer of the twentieth century. Prerequisite: MUSIC 574, or permission of instructor.

MUSIC 580 Advanced Conducting (3, max. 9) Salzman

MUSIC 581 Advanced Conducting (3, max. 9) Salzman

MUSIC 582 Advanced Conducting (3, max. 9) Salzman

MUSIC 583 Advanced Choral Conducting (2, max. 18) Boers, Wyers

MUSIC 590 Keyboard and Doctoral Lecture Recital or Concerto Recital (6, max. 18) Lecture recital or concerto recital for students in the Doctor of Musical Arts in piano performance, in harpsichord performance, and in organ performance degree programs.

MUSIC 591 Graduate Composition (*, max. 30) Bernard, Durand, Karpen

MUSIC 599 Advanced Selected Topics (1-3, max. 27) Selected readings on current issues and problems in music. Prerequisite: permission of a supervising music faculty member.

MUSIC 600 Independent Study or Research (*-)

MUSIC 700 Master's Thesis (*-)

MUSIC 800 Doctoral Dissertation (*-)

Applied Music

MUSAP 133 Basic Keyboard (2) VLPA Keyboard harmony and simple keyboard pieces. Class instruction. Audition required. Prerequisite: MUSIC 116.

MUSAP 134 Basic Keyboard (2) VLPA Keyboard harmony and simple keyboard pieces. Class instruction. Audition required. Prerequisite: MUSAP 133.

MUSAP 135 Basic Keyboard (2) VLPA Keyboard harmony and simple keyboard pieces. Class instruction. Audition required. Prerequisite: MUSAP 134.

MUSAP 136 Basic Jazz Keyboard (2, max. 6) VLPA *Seales* Basics of jazz and pop chord voicings, reading lead sheets, basic accompanying in various jazz and pop styles. Audition required.

MUSAP 137 Class Instruction: Voice (1) VLPA Basic fundamentals of good singing: breathing, diction, voice focus. Materials include mainly early Italian art songs, some English and French songs. Audition required.

MUSAP 138 Class Instruction: Voice (1) VLPA Basic fundamentals of good singing: breathing, diction, voice focus. Materials include mainly early Italian art songs, some English and French songs. Audition required. Prerequisite: MUSAP 137.

MUSAP 139 Class Instruction: Voice (1) VLPA Basic fundamentals of good singing: breathing, diction, voice focus. Materials include mainly early Italian art songs, some English and French songs. Audition required. Prerequisite: MUSAP 138.

MUSAP 205 String Techniques (2, max. 12) VLPA Designed to prepare music education students to teach beginning and intermediate strings in the public schools.

MUSAP 210 Wind Techniques (2, max. 12) VLPA Designed to prepare music education students to teach beginning and intermediate woodwinds and brass in the public schools.

MUSAP 217 Percussion Techniques (2, max. 4) VLPA *Collier* The study of basic percussion techniques as they apply to music in the public schools. Acquaints the prospective music education major with percussion performance and teaching techniques.

MUSAP 218 Guitar Techniques (2, max. 4) VLPA *Partington* Includes exercises to develop a good basic technique emphasizing correct position and movement of both hands, basic folk song accompaniments including a variety of strums, finger picking patterns, hammering on and bass

runs, reading guitar music, classical pieces, special effects, and access to other styles. Offered: W.

MUSAP 233 Secondary Piano (2) VLPA Focus is on advanced keyboard skills and piano repertoire. Audition required. Prerequisite: MUSAP 135.

MUSAP 234 Secondary Piano (2) VLPA Focus is on advanced keyboard skills and piano repertoire. Audition required. Prerequisite: MUSAP 233.

MUSAP 235 Secondary Piano (2) VLPA Focus is on advanced keyboard skills and piano repertoire. Audition required. Prerequisite: MUSAP 234.

MUSAP 237 Secondary Class Instruction: Voice (2, max. 6) VLPA Continuation of basic fundamentals of good singing: breathing, diction, voice focus, and repertoire. Designed for students not yet prepared for private instruction. Audition required. Prerequisite: MUSAP 139.

MUSAP 239 Secondary Piano (2, max. 8) VLPA Intermediate level keyboard repertory. Private instruction. Audition required. Prerequisite: MUSAP 235.

MUSAP 389 World Music (2, max. 24) VLPA/I&S World music traditions taught by visiting native artists. Consult ethnomusicology staff for current offerings. Intended for undergraduate majors. Audition required. Credit/no-credit only.

MUSAP 442 Jazz and Non-Western Drumming Techniques (2/3, max. 18) VLPA Collier Focused study of American jazz drumming and/or hand drumming techniques of various world music cultures to broaden the skills of percussion students, preparing them for new demands of contemporary musical styles. Designed primarily for music undergraduates enrolled in the percussion program. Audition required.

MUSAP 443 Percussion Lab (1, max. 12) Collier, Crusoe, Poor Primarily for percussion majors. Includes techniques and topics not normally covered in private lessons. Non-percussion music majors with permission of instructor. Offered: AWSp.

MUSAP 589 World Music Laboratory (2, max. 24) World music traditions taught by visiting artists with emphasis on cultural pedagogy and traditional theory. The particular culture studied changes from year to year. Required of all graduate students in ethnomusicology. Audition required. Credit/no-credit only.

Music Education

MUSED 301 Techniques for Teaching Music to Children (2) VLPA Campbell Exercises and applied experiences in sight-singing and error detection, keyboard skills, record and instruments of the Orff ensemble relevant to the teaching of music to children. Prerequisite: either MUSIC 212 or MUSIC 302; MUSAP 135.

MUSED 304 Introductory Music Methods I (2, max. 4) VLPA Morrison Comprehensive examination of materials for training beginning vocal and instrumental students. Topics include recruiting, motivation, and problems associated with evaluation. Methods of starting beginners and rehearsing ensembles are demonstrated with techniques addressing problems unique to public school ensemble instruction. Must be taken concurrently with MUSED 301; MUSED 340. Offered: A.

MUSED 305 Introductory Music Methods II (2, max. 4) VLPA Morrison Comprehensive examination of materials for training beginning vocal and instrumental students. Topics include recruiting, motivation, problems associated with evaluation. Methods of starting beginners and rehearsing ensembles are demonstrated with techniques addressing problems unique to public school ensemble instruction. Offered: W.

MUSED 306 Introductory Music Methods III (2, max. 4) VLPA Morrison Comprehensive examination of materials for training beginning vocal and instrumental students. Topics include recruiting, motivation, problems associ-

ated with evaluation. Methods of starting beginners and rehearsing ensembles are demonstrated with techniques addressing problems unique to public school ensemble instruction. Offered: Sp.

MUSED 340 Music in Education (3) VLPA An orientation to the broad scope of issues regarding music in the schools (K-12), including curriculum, the development of instructional strategies, and evaluation techniques.

MUSED 401 Tin Pan Alley: Concepts and Teaching Strategies for Music Educators (1) VLPA Overview of Tin Pan Alley phenomenon that dominated the American popular music industry for nearly 70 years. For music educators. Focuses on cooperative learning strategies and performance considerations in the school environment. Recommended: MUSIC 162.

MUSED 402 Rock and Roll Roots for Music Educators (1) VLPA Overview of the musical and cultural roots of American Rock and Roll for music educators. Explores teaching strategies and performance possibilities in the school environment. Recommended: MUSIC 162.

MUSED 403 Part-Time Student Teaching in Music (6) VLPA Campbell, Morrison Supervised teaching internship. Directed observations of distinguished teachers in an elementary or secondary music setting. Weekly seminars. Credit/no-credit only. Offered: AWSp.

MUSED 404 Full-Time Student Teaching in Music (15) VLPA Campbell, Morrison Supervised teaching internship. Directed observations of distinguished teachers in an elementary or secondary music setting. Weekly seminars. Prerequisite: MUSED 403. Credit/no-credit only. Offered: AWSp.

MUSED 405 Marching Band Technique (2) VLPA McDavid, Morrison, Salzman Basics of marching and maneuvering discussed and used to write drill. Covers selection of music, use of marching procession, and show design. Students complete a drill for their own band or for an instrumentation determined by the instructor.

MUSED 410 Instrumental Rehearsal Techniques (3) VLPA Salzman Includes score preparation, rehearsal formats, and error detection.

MUSED 431 Curriculum in Music Education (3) VLPA Campbell, Morrison Principles and practices of curriculum design applied to the development of the music curriculum. Individual or group work on elementary and secondary school music curriculum projects.

MUSED 432 Comprehensive Music in the Secondary School (3) VLPA The teaching of music and its literature in music classes other than traditional ensembles from grade six through adults. Prerequisite: MUSED 340.

MUSED 440 Music for Children (3) VLPA Campbell Identification and selection of appropriate objectives, materials, teaching strategies, and evaluation techniques used in teaching music from birth through grade five, with consideration of various approaches (e.g., Delcroze, Kodaly, Orff) for the musical development of children. Prerequisite: MUSED 302; MUSED 340

MUSED 442 Instrumental Curriculum: Methods and Materials (3) VLPA Morrison Study of the organization and administration of school instrumental music; the selection and use of materials and teaching strategies from beginning to advanced levels of instrumental instruction. Prerequisite: MUSED 340.

MUSED 443 Choral Curriculum: Methods and Materials (3) VLPA Study of the organization and administration of school choral music; the selection and use of materials and teaching strategies from beginning to advanced levels of choral instruction. Prerequisite: MUSED 340.

MUSED 452 Ethnomusicology in the Schools (3) VLPA Campbell Issues, teaching materials, and techniques involved in incorporating music cultures of United States and related world music repertoires in K-12 classroom instruction. Prerequisite: MUSED 340.

MUSED 453 Approaches to Classroom Instruction: K-12 (3) VLPA Campbell Examines such major instructional approaches as MMCP, Orff, Kodaly, and Dalcroze. Included are the philosophy of each and the methods, materials, and instructional skills needed for classroom application. Prerequisite: MUSED 403.

MUSED 465 Classroom Management and Evaluation in Music Education (3) VLPA Morrison Provides future teachers with strategies and techniques for classroom management, motivation, assessment, and evaluation for applications to K-12 school music programs. Prerequisite: MUSED 340.

MUSED 475 Teaching the Music of Selected Cultures (1, max. 6) VLPA Campbell Music and culture of a specific world region with particular attention to songs, stories, and instrumental pieces applicable to the teaching of music and the arts in elementary and secondary schools.

MUSED 480 Music Methods for Classroom Teachers (3) VLPA Campbell Addresses the basic fundamentals of music and methods for teaching K-6 school children. Topics include repertoire appropriate for different age levels, methods and materials for integrating music into the K-6 curriculum.

MUSED 496 Special Topics in Music Education (1-3, max. 10) VLPA Special studies designed to reflect contemporary emphases and concerns in the music education profession.

MUSED 501 Introduction to Research in Music Education (3) Campbell, Morrison Seminar in research design and method with emphasis on identification of problems in music instruction, interpretation of data, and application of findings to classroom settings.

MUSED 502 Quantitative Research in Music Education (3) Campbell, Morrison Seminar in quantitative research utilizing experimental, quasi-experimental, and descriptive design, with emphasis on the pursuit of solutions to pedagogical problems through appropriate research procedures, analysis, and interpretation of findings. Prerequisite: MUSED 501.

MUSED 522 Psychology of Music Learning and Teaching (3) Campbell, Morrison Examines previous research in areas related to music cognition, including music perception, music performance, musical creativity, musical affect, musical preference, and social psychology. Explores how this research relates to curriculum and practice in music education. Role of theory, method, and procedure for psychological research in music education.

MUSED 523 Tests and Measurement (3) Campbell, Morrison Examination of currently published aptitude and achievement tests in music and their uses in music education. Explores the basic methods for constructing classroom tests and their use in evaluation. Selected readings include researching test construction and application of tests and measurement to program evaluation.

MUSED 524 Seminar in Music Education (3) Campbell, Morrison Special problems in the teaching and supervision of music in the elementary grades. Prerequisite: one year of teaching experience.

MUSED 525 Seminar in Music Education (3) Campbell, Morrison Special problems in the teaching and administration of music in the secondary school and community college. Prerequisite: one year of teaching experience.

MUSED 530 Administration and Supervision in Music Education (3) Campbell, Morrison Survey of issues in policy and systems for facilities, student/personnel, technology, school/community relations, and special programs in music education. Focuses on evaluating and improving existing programs. Includes supervision of student teachers.

MUSED 535 Seminar in Musical Development (3) Campbell, Morrison Critical review of theories, methods of inquiry, designs, and conclusions of research in musical development from early childhood through adolescence.

Emphasis on evaluating theories and methods of studying musical development and exploring their relationship to theories of general intellectual development; adult music cognition research; and curriculum and practice in music education.

MUSED 540 History of American Music Education (3) *Campbell, Morrison* A chronological examination of individual, social, and political events, and educational philosophies, that characterized the development of music instruction in American schools from colonial times to the present.

MUSED 542 Comparative Music Education (3) *Campbell, Morrison* A transcultural examination of philosophy and practice of music instruction.

MUSED 550 Proseminar in Music Education (3) *Campbell, Morrison* Examination of the major literature in the philosophy, history, psychology, and sociology of formal school music instruction.

MUSED 552 World Music Education (3) *Campbell* Seminar on issues of multiculturalism and the world music “movement” as they affect school music curriculum and instruction. Curricular content and cultural context examined in relation to teaching K-12 students, teachers, and undergraduate students in music education programs. Offered: AWSpS.

MUSED 560 Contemporary Issues in Music Education (1-3, max. 6) *Campbell, Morrison* Seminar focusing on review of literature on psychological and sociological aspects of music education, including historical and philosophical foundations of music education in the United States. Appropriate for MA students seeking guidance in preparation of topic for examinations. Prerequisite: MUSED 501.

MUSED 561 Seminar in Theories of Music Instruction (3, max. 9) *Campbell, Morrison* Theories of music instruction, with special attention to curriculum, instructional procedures, and assessment of learning. Prerequisite: MUSED 501, or permission of instructor.

MUSED 575 Seminar in Music Education Research (1-3, max. 6) *Campbell, Morrison* Examines research and research-based issues relevant to music instruction and learning. Doctoral students should register each quarter until successful completion of general examination. Offered: A.

Music Ensemble

MUSEN 100 University Singers (1, max. 15) VLPA Credit/no-credit only.

MUSEN 200 Men’s Glee Club (1, max. 15) VLPA Non-auditioned ensemble open to all men in the campus community. Offers a number of performance opportunities throughout the year. Credit/no-credit only. Offered: AWSp.

MUSEN 201 Women’s Chorus (1, max. 15) VLPA Non-auditioned ensemble open to all women in the campus community. Offers a number of performance opportunities throughout the year. Credit/no-credit only. Offered: AWSp.

MUSEN 210 Campus Philharmonia Orchestra (1, max. 15) VLPA Orchestral opportunity for non-majors. Meets once weekly, rehearses under the direction of the Masters and Doctoral orchestral conducting students. Serves as a laboratory for the conducting students. Performances are community outreach events which occur once per quarter. Major string, chamber orchestra, and symphonic repertoire rehearsed and performed.

MUSEN 300 University of Washington Symphony Orchestra (1, max. 15) VLPA Top orchestral ensemble, performing symphonic literature six to seven times per year. Includes rehearsals three times per week and collaborative performances with local institutions such as the Seattle Symphony. Open to all students. Auditions held at the beginning of each academic year; seating rotates

MUSEN 301 Wind Ensemble (1, max. 15) VLPA *Salzman*

MUSEN 302 Symphonic Band (1, max. 10) VLPA *Salzman*

MUSEN 303 Marching Band (1-2, max. 10) VLPA *McDavid*

MUSEN 304 Percussion Ensemble (1, max. 12) VLPA *Collier*

MUSEN 305 Brass Ensemble (1, max. 12) VLPA

MUSEN 306 Woodwind Ensemble (1, max. 12) VLPA *Shin*

MUSEN 307 Recital Choir (1, max. 15) VLPA *Boers* Choir presents two recital programs per quarter, surveying a wide variety of repertoire of all styles and periods. Credit/no-credit only.

MUSEN 308 Guitar Ensemble (1, max. 18) VLPA *Partington* Study and performance works for two, three, and four guitars and one guitar with various solo instruments or voice. Designed for guitar performance majors. Other instrumentalists may register with instructor’s permission. Offered: AWSp.

MUSEN 309 Concert Band (1, max. 10) VLPA *Salzman* Open for membership without audition to students from any major field of study as well as faculty and community members. Also a forum for music majors to refine skills on primary or secondary instruments. Offered: AWSpS.

MUSEN 325 Accompanying (2, max. 30) VLPA

MUSEN 340 Vocal Jazz Ensemble (1, max. 6) VLPA Credit/no-credit only.

MUSEN 345 Jazz Workshop (1, max. 12) VLPA *Collier, Seales*

MUSEN 346 Studio Jazz Ensemble (1, max. 6) VLPA

MUSEN 347 Opera Chorus (1, max. 12) VLPA

MUSEN 350 University Chorale (1, max. 12) VLPA *Wyers* Credit/no-credit only.

MUSEN 351 Chamber Singers (1, max. 15) VLPA *Boers*

MUSEN 361 Piano Ensemble (1, max. 3) VLPA Study and performance of works for four hands at one or two pianos. Designed for upper-level piano majors or students with equivalent ability.

MUSEN 368 Harp Ensemble (1, max. 12) VLPA

MUSEN 369 Baroque Chamber Ensemble (1, max. 18) VLPA *Terry*

MUSEN 375 Opera Workshop (1, max. 6) VLPA Preparation of music theatre repertoire. Intended for the mature voice student.

MUSEN 381 Chamber Music (1, max. 18) VLPA

MUSEN 382 Opera Theatre (2, max. 6) VLPA Public performance of roles in opera.

MUSEN 383 Collegium Musicum (1, max. 6) VLPA

MUSEN 384 Modern Music Ensemble (1, max. 6) VLPA *Durand* Exploration of notation and performance problems in modern music; preparation for public performance.

MUSEN 410 Steelband (1, max. 6) VLPA Performing and arranging techniques for the steelband, and percussion, in a variety of Caribbean and Latin American music styles, including calypso, soca, reggae, and salsa.

MUSEN 411 Gamelan Ensembles (1) Sunardi Explores gamelan ensembles; percussion ensembles primarily associated with musical cultures on the Indonesian islands of Java, Madura, Bali, and Lombok. Introduces basic playing techniques of selected styles of gamelan. Includes instruction in the instruments in a gamelan through study of compositions. Offered: AWSpS.

MUSEN 446 Advanced Studio Jazz Ensemble (1, max. 9) VLPA Preparation and performance of material appropriate to large jazz ensemble concerts, clinics, and radio and television broadcasts. Recommended: three quarters of MUSEN 346.

MUSEN 500 University of Washington Symphony Orchestra (1, max. 9) Top orchestral ensemble, performing symphonic literature six to seven times per year. Includes rehearsals three times per week and collaborative performances with local institutions such as the Seattle Sympho-

ny. Open to all students. Auditions held at the beginning of each academic year; seating rotates.

MUSEN 501 Wind Ensemble (1, max. 9) Salzman

MUSEN 503 Marching Band (1-2, max. 10) McDavid

MUSEN 504 Percussion Ensemble (1, max. 9) Collier

MUSEN 505 Brass Ensemble (1, max. 9)

MUSEN 506 Woodwind Ensemble (1, max. 9) Shin

MUSEN 507 Recital Choir (1, max. 9) Choir presents two recital programs per quarter, surveying a wide variety of repertoire of all styles and periods. Credit/no-credit only.

MUSEN 508 Guitar Ensemble (1, max. 9) Partington Study and performance works for two, three, and four guitars and one guitar with various solo instruments or voice. Designed for guitar performance majors. Other instrumentalists may register with instructor’s permission. Offered: AWSp.

MUSEN 511 Gamelan Ensembles (1) Sunardi Explores gamelan ensembles; percussion ensembles primarily associated with musical cultures on the Indonesian islands of Java, Madura, Bali, and Lombok. Introduces basic playing techniques of selected styles of gamelan. Includes instruction in the instruments in a gamelan through study of compositions. Offered: AWSpS.

MUSEN 525 Accompanying (2, max. 18)

MUSEN 540 Vocal Jazz Ensemble (1, max. 9) Credit/no-credit only.

MUSEN 545 Jazz Workshop (1, max. 9) Collier, Seale, Vu

MUSEN 546 Studio Jazz Ensemble (1, max. 9) Credit/no-credit only.

MUSEN 547 Opera Chorus (1, max. 9)

MUSEN 550 University Chorale (1, max. 9) Wyers Credit/no-credit only.

MUSEN 551 Chamber Singers (1, max. 9) Boers

MUSEN 561 Piano Ensemble (1, max. 9) Study and performance of works for four hands at one or two pianos. Designed for upper-level piano majors or students with equivalent ability.

MUSEN 568 Harp Ensemble (1, max. 9)

MUSEN 569 Baroque Chamber Ensemble (1, max. 9) Terry

MUSEN 575 Opera Workshop (1, max. 9) Preparation of music theatre repertoire. Intended for the mature voice student.

MUSEN 580 Sinfonietta (1, max. 9)

MUSEN 581 Chamber Music (1, max. 9)

MUSEN 582 Opera Theatre (2, max. 18) Public performance of roles in opera.

MUSEN 583 Collegium Musicum (1, max. 9)

MUSEN 584 Modern Music Ensemble (1, max. 9) Durand Exploration of notation and performance problems in modern music; preparation for public performance. Credit/no-credit only.

Music History

MUHST 210 Introduction to the History of Western Music I (3) VLPA *Taricani* Introduction to the critical study of Western music history, including representative composers, works, and genres, as well as significant concepts and issues. Origins of Western music. Prerequisite: minimum grade of 2.0 in MUHST 212. Offered: A.

MUHST 211 Introduction to the History of Western Music II (3) VLPA *Rumph, Starr, Taricani* Introduction to the critical study of Western music history, including representative composers, works, and genres, as well as significant concepts and issues. Baroque and classical periods. Prerequisite: MUSIC 203, MUSIC 206; either a minimum grade of 3.0 in MUSIC 120 or minimum score of 80% on music history placement test. Offered: W.

MUHST 212 Introduction to the History of Western Music III (3) VLPA *Starr* Introduction to the critical study of West-

ern music history including representative composers, works, and genres as well as significant concepts and issues - nineteenth and twentieth centuries. Prerequisite: minimum grade of 2.0 in MUHST 211. Offered: Sp.

MUHST 301 Music and the American Experience (3) VLPA/I&S *Starr* Survey of American music from the colonial period to the present day, with emphasis on in-depth examination of representative works from both cultivated and vernacular traditions. Prerequisite: MUHST 210; MUSIC 303; MUSIC 306. Offered: WSp.

MUHST 310 Perspectives in Music History (3, max. 6) VLPA/I&S Overview of different stylistic periods in music history. Perspectives include music and philosophy, music and gender, and music and text. Students develop an insight into the manner in which similar questions have been approached in diverse cultures and periods. Prerequisite: MUHST 210; MUSIC 303; MUSIC 306. Offered: WSp.

MUHST 311 Beethoven in Western Culture (3) VLPA/I&S Comprehensive study of Beethoven's works and their nineteenth- and twentieth-century reception, with consideration of how Western culture has used Beethoven's music in its constructions of subjectivity, genius, and national and other collective identities. Prerequisite: MUSIC 303; MUSIC 306; MUHST 210. Offered: WSp.

MUHST 400 Medieval Music: To 1400 (3) VLPA *Taricani* Critical readings on issues in medieval music. Works to be studied include repertory from chant, motets, and sacred and secular music of the Middle Ages.

MUHST 401 Early British Music: 1300-1700 (3) VLPA *Taricani* Examines the history of British music from its earliest polyphony through the music of Purcell. Stylistic features of English music studied, including medieval polyphony, Tudor music, Elizabethan music, and seventeenth-century music through Purcell.

MUHST 402 Late Renaissance Secular Music: 1525-1630 (3) VLPA *Taricani* The madrigal in Italy, England, and Germany. The Chanson, Jannequin through Lassus.

MUHST 403 Late Renaissance Sacred and Instrumental Music: 1525-1630 (3) VLPA *Taricani* Latin church music. Willaert through G. Gabrieli; early Reformation church music, Walther through Gibbons; instrumental music, Cabezon, the English virginal school, and Sweelinck.

MUHST 404 Baroque Keyboard Music (3) VLPA Forms and styles: Frescobaldi through J.S. Bach and C.P.E. Bach.

MUHST 405 Orchestral Music: 1620-1760 (3) VLPA Corelli through the Mannheim School. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 406 Baroque Choral Music (3) VLPA *Bozarth* Monteverdi through Handel. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 407 Baroque Opera (3) VLPA Monteverdi through Handel.

MUHST 408 Keyboard Music: 1760-1830 (3) VLPA *Bozarth* Haydn through Schubert. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 409 Chamber Music: 1760-1830 (3) VLPA Haydn through Schubert. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 410 Orchestral Music: 1760-1830 (3) VLPA Haydn through early Berlioz.

MUHST 411 Art Song, 1760-1830 (3) VLPA The art song in European culture during the classical and early Romantic periods. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 412 Choral Music: 1750-1830 (3) VLPA Large works for chorus and orchestra, Haydn through Beethoven.

MUHST 413 Opera: 1750-1830 (3) VLPA *Rumph* Gluck through Bellini.

MUHST 414 Keyboard Music: 1830-1915 (3) VLPA *Bozarth* Schumann through Debussy. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 415 Chamber Music: 1830-1915 (3) VLPA Schumann through Ravel. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 416 Orchestral Music: 1830-1915 (3) VLPA Schumann and Mendelssohn through early Schoenberg and Stravinsky. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, MUSIC 306.

MUHST 417 Art Song: 1830-1915 (3) VLPA *Bozarth* The Lieder of Schumann, Brahms, Wolf, Strauss, Mahler, and Schoenberg. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 418 Choral Music: 1830-1915 (3) VLPA *Bozarth* Selected choral masterpieces. Mendelssohn through Schoenberg.

MUHST 419 Opera: 1830-1915 (3) VLPA *Rumph* German, French, and Italian operatic traditions. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 420 Authenticity and Performance (3) VLPA The practical and philosophical issues raised by historically informed performance of early music on period instruments. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 421 Music Criticism (3) VLPA *Starr* Study of the various forms of music criticism, with an emphasis on the writing of valid examples and evaluation of one's own work along with that of others - classmates, journalists, and academic critics. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 422 Gender and Music (3) VLPA/I&S *Tsou* Investigates how gender issues have shaped the creation and perception of music; introduces women composers and their music. Topics include writing women's biography; creation of the music canon; gender issues in opera; intertwining issues of race, class, and gender, blues women; and popular music. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306. Offered: W.

MUHST 423 Twentieth-Century Music to 1945 (3) VLPA *Starr* Intensive study of selected composers and works exemplifying the new vocabularies, grammars, and styles of the early part of the twentieth century. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 424 Music Since 1945 (3) VLPA *Starr* Diversity of the contemporary musical scene. Vocabularies appropriate for the description and understanding of the new music, developed through study of representative composers and works, and appropriate readings. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 425 Jazz History and Analysis (3) VLPA *Collier* Major eras and styles of jazz with emphasis on technical aspects of jazz music: composition, arranging, improvisation practices. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 426 American Popular Music (3) VLPA *Starr* An in-depth consideration of American popular music styles and repertory from about 1920 to the present day. Analysis of representative pieces; consideration of critical and aesthetic issues relating to popular music; relationship of popular music to "art" music and to American culture and society. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 429 Music, Literature, and the Arts (3) VLPA Literary and visual art works that include musical subject matter and forms; musical genres that incorporate other arts such as opera and ballet. Related philosophical writings. Includes works of a particular time period or investigation of a specific problem in comparative arts. Prerequisite:

minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 497 Special Topics in Music History (1-5, max. 15) VLPA *Bozarth, Rumph, Taricani, Tsou* Topics vary each quarter. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 500 Seminar in Methods of Music Research (3) Rumph, Taricani Explores various critical approaches to research in music at the graduate level, examining specialized bibliographical resources, controversial arguments about musical issues, and other matters of musical criticism required to begin advanced study of music. Prerequisite for all graduate music history courses except MUHST 515.

MUHST 503 Readings in Medieval and Renaissance Music (5) Taricani Musical styles, genres, and forms of the Middle Ages and Renaissance. Focuses upon musicological problems and controversy related to music composed circa 1000 - 1600. Prerequisite: permission of instructor.

MUHST 504 Seminar in Medieval Music (3, max. 6) Taricani Prerequisite: MUHST 500.

MUHST 505 Seminar in Renaissance Music (3, max. 6) Taricani Prerequisite: MUHST 500.

MUHST 506 Seminar in Baroque Music (3, max. 6) Bozarth Prerequisite: MUHST 500.

MUHST 508 Seminar in the Viennese Classical Period: 1760-1830 (3, max. 6) Bozarth Prerequisite: MUHST 500.

MUHST 509 Seminar in Nineteenth-Century Music: 1830-1890 (3, max. 6) Bozarth, Rumph Prerequisite: MUHST 500.

MUHST 510 Seminar in Music Since 1890 (3, max. 6) Starr Prerequisite: MUHST 500.

MUHST 515 Seminar in Medieval and Renaissance Notation (5) Taricani Gregorian chant through sixteenth-century prints.

MUHST 519 Seminar in Modern Editorial Procedures (5) Bozarth Study of modern procedures for preparing critical editions. Related areas of study may include analysis of musical style and historical and performance problems inherent in works being edited.

MUHST 520 Seminar in American Music (3, max. 6) Starr Research in the life, works, and times of composers in the United States from colonial days to the present. Prerequisite: MUHST 500.

MUHST 537 Seminar on Opera (3, max. 6) Prerequisite: MUHST 500.

Music Performance

MUSICP 300 Private Instruction for Non-Majors: Voice (2, max. 44) VLPA *Harper* Intended for undergraduate non-majors. Audition required.

MUSICP 301 Private Instruction for Non-Majors: Piano (2, max. 44) VLPA *McCabe, Seales, Sheppard* Intended for undergraduate non-majors. Audition required.

MUSICP 302 Private Instruction for Non-Majors: Organ (2, max. 44) VLPA *Terry* Intended for undergraduate non-majors. Audition required.

MUSICP 303 Private Instruction for Non-Majors: Harpsichord (2, max. 44) VLPA *Terry* Intended for undergraduate non-majors. Audition required.

MUSICP 304 Private Instruction for Non-Majors: Violin (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 305 Private Instruction for Non-Majors: Violoncello (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 306 Private Instruction for Non-Majors: Double Bass (2, max. 44) VLPA *Lieberman* Intended for undergraduate non-majors. Audition required.

MUSICP 307 Private Instruction for Non-Majors: Flute (2, max. 44) VLPA *Shin* Intended for undergraduate non-majors. Audition required.

MUSICP 308 Private Instruction for Non-Majors: Oboe (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 309 Private Instruction for Non-Majors: Clarinet (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 310 Private Instruction for Non-Majors: Bassoon (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 311 Private Instruction for Non-Majors: Saxophone (2, max. 44) VLPA *Brockman* Intended for undergraduate non-majors. Audition required.

MUSICP 312 Private Instruction for Non-Majors: Horn (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 313 Private Instruction for Non-Majors: Trumpet (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 314 Private Instruction for Non-Majors: Trombone (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 315 Private Instruction for Non-Majors: Tuba (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 316 Private Instruction for Non-Majors: Harp (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 317 Private Instruction for Non-Majors: Percussion (2, max. 44) VLPA *Collier, Crusoe* Intended for undergraduate non-majors. Audition required.

MUSICP 318 Private Instruction for Non-Majors: Guitar (2, max. 44) VLPA *Partington* Intended for undergraduate non-majors. Audition required.

MUSICP 319 Private Instruction for Non-Majors: Viola da Gamba (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 320 Private Instruction: Voice (3, max. 45) VLPA *Harper* Intended for undergraduate majors. Audition required.

MUSICP 321 Private Instruction: Piano (3, max. 45) VLPA *McCabe, Seales, Sheppard* Intended for undergraduate majors. Audition required.

MUSICP 322 Private Instruction: Organ (3, max. 45) VLPA *Terry* Intended for undergraduate majors. Audition required.

MUSICP 323 Private Instruction: Harpsichord (3, max. 45) VLPA *Terry* Intended for undergraduate majors. Audition required.

MUSICP 324 Private Instruction: Violin (3, max. 45) VLPA *Patterson* Intended for undergraduate majors. Audition required.

MUSICP 325 Private Instruction: Violoncello (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 326 Private Instruction: Double Bass (3, max. 45) VLPA *Lieberman* Intended for undergraduate majors. Audition required.

MUSICP 327 Private Instruction: Flute (3, max. 45) VLPA *Shin* Intended for undergraduate majors. Audition required.

MUSICP 328 Private Instruction: Oboe (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 329 Private Instruction: Clarinet (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 330 Private Instruction: Bassoon (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 331 Private Instruction: Saxophone (3, max. 45) VLPA *Brockman* Intended for undergraduate majors. Audition required.

MUSICP 332 Private Instruction: Horn (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 333 Private Instruction: Trumpet (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 334 Private Instruction: Trombone (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 335 Private Instruction: Tuba (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 336 Private Instruction: Harp (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 337 Private Instruction: Percussion (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 338 Private Instruction: Guitar (3, max. 45) VLPA *Partington* Intended for undergraduate majors. Audition required.

MUSICP 339 Private Instruction: Viola da Gamba (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 340 Private Instruction: Timpani (3, max. 45) VLPA *Crusoe* Intended for undergraduate majors. Audition required.

MUSICP 341 Private Instruction: Mallet Percussion (3, max. 45) VLPA *Collier* Intended for undergraduate majors. Audition required.

MUSICP 342 Private Instruction: Jazz Drum Set (3, max. 45) VLPA Primarily for jazz studies and percussion majors. Audition required for non-majors.

MUSICP 343 Private Instruction for Non-Majors: Viola (2, max. 44) VLPA *Watras* Intended for undergraduate non-majors. Audition required.

MUSICP 363 Private Instruction: Viola (3, max. 45) VLPA *Watras* Intended for undergraduate majors. Audition required.

MUSICP 420 Private Instruction: Voice (3, max. 45) VLPA *Harper* Intended for undergraduate majors. Audition required.

MUSICP 421 Private Instruction: Piano (3, max. 45) VLPA *McCabe, Seales, Sheppard* Intended for undergraduate majors. Audition required.

MUSICP 422 Private Instruction: Organ (3, max. 45) VLPA *Terry* Intended for undergraduate majors. Audition required.

MUSICP 423 Private Instruction: Harpsichord (3, max. 45) VLPA *Terry* Intended for undergraduate majors. Audition required.

MUSICP 424 Private Instruction: Violin (3, max. 45) VLPA *Patterson* Intended for undergraduate majors. Audition required.

MUSICP 425 Private Instruction: Violoncello (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 426 Private Instruction: Double Bass (3, max. 45) VLPA *Lieberman* Intended for undergraduate majors. Audition required.

MUSICP 427 Private Instruction: Flute (3, max. 45) VLPA *Shin* Intended for undergraduate majors. Audition required.

MUSICP 428 Private Instruction: Oboe (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 429 Private Instruction: Clarinet (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 430 Private Instruction: Bassoon (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 431 Private Instruction: Saxophone (3, max. 45) VLPA *Brockman* Intended for undergraduate majors. Audition required.

MUSICP 432 Private Instruction: Horn (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 433 Private Instruction: Trumpet (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 434 Private Instruction: Trombone (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 435 Private Instruction: Tuba (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 436 Private Instruction: Harp (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 437 Private Instruction: Percussion (3, max. 45) VLPA *Collier, Crusoe* Intended for undergraduate majors. Audition required.

MUSICP 438 Private Instruction: Guitar (3, max. 45) VLPA *Partington* Intended for undergraduate majors. Audition required.

MUSICP 439 Private Instruction: Viola da Gamba (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 440 Private Instruction: Timpani (3, max. 45) VLPA *Crusoe* Intended for undergraduate majors. Audition required.

MUSICP 441 Private Instruction: Mallet Percussion (3, max. 45) VLPA *Collier* Intended for undergraduate majors. Audition required.

MUSICP 442 Jazz Drum Set (3, max. 45) VLPA *Poor* Individual instruction in drum set techniques. Prerequisite: minimum of 18 credits of MUSICP 342. Offered: AWSp.

MUSICP 463 Private Instruction: Viola (3, max. 45) VLPA *Watras* Intended for undergraduate majors. Audition required.

MUSICP 494 Private Instruction: Jazz (3, max. 45) VLPA *Collier, Seales, Vu* Guides students through the process of historical examination of jazz while discovering and developing musical originality. Addresses jazz methods and approaches, aiming for mastery in jazz performance in a one-on-one environment with instrumentalists chosen from the core jazz instrumentation of trumpet, piano, bass, and drums. Offered: AWSp.

MUSICP 495 Private Instruction: Free Improvisation (3, max. 45) VLPA *Bergman, Hodge, Karpen, Vu* Guides students through the process of discovering and developing musical originality in improvised music. Students aim for mastery of improvised performance in a one-on-one environment with instructor chosen from various School of Music faculty. Primarily for jazz majors. Offered: AWSp.

MUSICP 500 Private instruction for Non-Majors: Voice (2, max. 44) Harper Intended for graduate non-majors. Audition required.

MUSICP 501 Private Instruction for Non-Majors: Piano (2, max. 44) McCabe, Seales, Sheppard Intended for graduate non-majors. Audition required.

MUSICP 502 Private Instruction for Non-Majors: Organ (2, max. 44) Terry Intended for graduate non-majors. Audition required.

MUSICP 503 Private Instruction for Non-Majors: Harpsichord (2, max. 44) Terry Intended for graduate non-majors. Audition required.

MUSICP 504 Private Instruction for Non-Majors: Violin (2, max. 44) *Patterson* Intended for graduate non-majors. Audition required.

MUSICP 505 Private Instruction for Non-Majors: Violoncello (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 506 Private Instruction for Non-Majors: Double Bass (2, max. 44) *Lieberman* Intended for graduate non-majors. Audition required.

MUSICP 507 Private Instruction for Non-Majors: Flute (2, max. 44) *Shin* Intended for graduate non-majors. Audition required.

MUSICP 508 Private Instruction for Non-Majors: Oboe (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 509 Private Instruction for Non-Majors: Clarinet (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 510 Private Instruction for Non-Majors: Bassoon (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 511 Private Instruction for Non-Majors: Saxophone (2, max. 44) *Brockman* Intended for graduate non-majors. Audition required.

MUSICP 512 Private Instruction for Non-Majors: Horn (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 513 Private Instruction for Non-Majors: Trumpet (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 514 Private Instruction for Non-Majors: Trombone (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 515 Private Instruction for Non-Majors: Tuba (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 516 Private Instruction for Non-Majors: Harp (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 517 Private Instruction for Non-Majors: Percussion (2, max. 44) *Collier, Crusoe* Intended for graduate non-majors. Audition required.

MUSICP 518 Private Instruction for Non-Majors: Guitar (2, max. 44) *Partington* Intended for graduate non-majors. Audition required.

MUSICP 519 Private Instruction for Non-Majors Viola da Gamba (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 520 Private Instruction: Voice (3, max. 45) *Harp-er* Intended for graduate majors. Audition required.

MUSICP 521 Private Instruction: Piano (3, max. 45) *McCabe, Sheppard* Intended for graduate majors. Audition required.

MUSICP 522 Private Instruction: Organ (3, max. 45) *Terry* Intended for graduate majors. Audition required.

MUSICP 523 Private Instruction: Harpsichord (3, max. 45) *Terry* Intended for graduate majors. Audition required.

MUSICP 524 Private Instruction: Violin (3, max. 45) *Patterson* Intended for graduate majors. Audition required.

MUSICP 525 Private Instruction: Violoncello (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 526 Private Instruction: Double Bass (3, max. 45) *Lieberman* Intended for graduate majors. Audition required.

MUSICP 527 Private Instruction: Flute (3, max. 45) *Shin* Intended for graduate majors. Audition required.

MUSICP 528 Private Instruction: Oboe (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 529 Private Instruction: Clarinet (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 530 Private Instruction: Bassoon (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 531 Private Instruction: Saxophone (3, max. 45) *Brockman* Intended for graduate majors. Audition required.

MUSICP 532 Private Instruction: Horn (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 533 Private Instruction: Trumpet (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 534 Private Instruction: Trombone (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 535 Private Instruction: Tuba (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 536 Private Instruction: Harp (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 537 Private Instruction: Percussion (3, max. 45) *Collier, Crusoe* Intended for graduate majors. Audition required.

MUSICP 538 Private Instruction: Guitar (3, max. 45) *Partington* Intended for graduate majors. Audition required.

MUSICP 539 Jazz Drum Set (3, max. 45) *Poor* Individual instruction in drum set techniques. Offered: AWSp.

MUSICP 540 Private Instruction: Timpani (3, max. 45) *Crusoe* Intended for graduate majors. Audition required.

MUSICP 541 Private Instruction: Mallet Percussion (3, max. 45) *Collier* Intended for graduate majors. Audition required.

MUSICP 542 Private Instruction: Viola da Gamba (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 543 Private Instruction for Non-Majors: Viola (2, max. 44) *Watras* Intended for graduate non-majors. Audition required. Offered: AWSpS.

MUSICP 563 Private Instruction: Viola (3, max. 45) *Watras* Intended for Master's degree candidates. Audition required. Offered: AWSpS.

MUSICP 570 Private Instruction: Voice (3, max. 45) *Harp-er* Intended for graduate majors. Audition required.

MUSICP 571 Private Instruction: Piano (3, max. 45) *McCabe, Sheppard* Intended for graduate majors. Audition required.

MUSICP 572 Private Instruction: Organ (3, max. 45) *Terry* Intended for graduate majors. Audition required.

MUSICP 573 Private Instruction: Harpsichord (3, max. 45) *Terry* Intended for graduate majors. Audition required.

MUSICP 574 Private Instruction: Violin (3, max. 45) *Patterson* Intended for graduate majors. Audition required.

MUSICP 575 Private Instruction: Violoncello (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 576 Private Instruction: Double Bass (3, max. 45) *Lieberman* Intended for graduate majors. Audition required.

MUSICP 577 Private Instruction: Flute (3, max. 45) *Shin* Intended for graduate majors. Audition required.

MUSICP 578 Private Instruction: Oboe (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 579 Private Instruction: Clarinet (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 580 Private Instruction: Bassoon (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 581 Private Instruction: Saxophone (3, max. 45) *Brockman* Intended for graduate majors. Audition required.

MUSICP 582 Private Instruction: Horn (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 583 Private Instruction: Trumpet (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 584 Private Instruction: Trombone (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 585 Private Instruction: Tuba (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 586 Private Instruction: Harp (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 587 Private Instruction: Percussion (3, max. 45) *Collier, Crusoe* Intended for graduate majors. Audition required.

MUSICP 588 Private Instruction: Guitar (3, max. 45) *Partington*

MUSICP 590 Private Instruction: Timpani (3, max. 45) *Crusoe* Intended for graduate majors. Audition required.

MUSICP 591 Private Instruction: Mallet Percussion (3, max. 45) *Collier* Intended for graduate majors. Audition required.

MUSICP 592 Private Instruction: Viola da Gamba (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 593 Private Instruction: Viola (3, max. 45) *Watras* Intended for Doctoral degree candidates. Audition required. Offered: AWSpS.

MUSICP 594 Private Instruction: Jazz (3, max. 45) *Collier, Seales, Vu* Guides students through the process of historical examination of jazz while discovering and developing musical originality. Addresses jazz methods and approaches, aiming for mastery in jazz performance in a one-on-one environment with instrumentalists chosen from the core jazz instrumentation of trumpet, piano, bass, and drums. Offered: AWSp.

MUSICP 595 Private Instruction: Free Improvisation (3, max. 45) *Bergman, Hodge, Karpen, Vu* Guides students through the process of discovering and developing musical originality in improvised music. Students aim for mastery of improvised performance in a one-on-one environment with instructor chosen from various School of Music faculty. Primarily for jazz majors. Offered: AWSp.

Near Eastern Languages and Civilization

229 Denny

Near Eastern languages and civilization focuses on the languages and civilizations of the Near East with an emphasis on the ancient and medieval roots of these civilizations as well as more recent cultural developments. Each language offered represents a major literary tradition. Arabic, Persian, Turkish, and Central Asian Turkic are the languages of the most significant literary manifestations of Islamic civilization. Hebrew and Aramaic are the languages of the Bible and are central to Judaism and Jewish culture. Egyptian languages (Coptic, hieroglyphic) and other Mesopotamian and Mediterranean languages (Akkadian, Ugaritic, Phoenician) are important to the ancient and Christian cultures of the Near East. These languages are taught in conjunction with courses on the social, cultural, and religious history of the Near East, providing students with a broad understanding and solid foundation for more advanced studies or professional career development.

UNDERGRADUATE PROGRAM

Adviser

219 Denny, Box 353120

(206) 685-3743

nelcua@uw.edu

The department offers the following programs of study:

- The Bachelor of Arts degree with a major in Near Eastern languages and civilization with options in Near Eastern languages and civilization, Near Eastern culture and civilization, comparative Islamic studies, and Biblical and ancient Near Eastern studies
- A minor in Near Eastern languages and civilization

Bachelor of Arts

Suggested First- and Second-Year College Courses: Courses in any discipline that deals with the Near East. Courses in writing, history, literature, comparative religion, French, and German are also recommended. Students should begin their studies of Near Eastern languages as soon as possible.

Department Admission Requirements

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

Major Requirements

Near Eastern Studies -- Languages and Civilization

69 credits as follows:

1. Two years of one Near Eastern language, or its equivalent as evidenced by examination
2. At least 9 credits in advanced literature or text courses in that language
3. NEAR E 210
4. One of the following: NEAR E 211, NEAR E 240, or RELIG 210
5. An approved program of 20 further credits in courses offered by the department or courses on the Near East offered by other departments, or both

Near Eastern Studies -- Culture and Civilization

73 credits as follows:

1. Two years of one Near Eastern language or its equivalent as evidenced by examination
2. NEAR E 210 or (with approval of adviser) NEAR E 220
3. One of the following: NEAR E 211, NEAR E 240, or RELIG 210
4. An approved program of 20 further credits in Near Eastern courses including at least one course from each of the following areas: Near Eastern civilization, Near Eastern religion, Near Eastern literature in translation
5. 8 credits in non-language, upper-division courses related to the Near East in the department or in other departments
6. A senior essay on a topic of Near Eastern civilization (5 credits)

Near Eastern Studies -- Comparative Islamic Studies

70 credits as follows:

1. Two years of one of the following languages or its equivalent as evidenced by examination: Arabic, Persian, Turkish, Uzbek, Kazakh, or other appropriate languages with approval of adviser
2. NEAR E 210
3. NEAR E 212 or NEAR E 240

4. An approved program of 10 credits in courses in Islamic religious traditions and texts, and 15 credits in history, society, and culture of Islam
5. A senior essay on a topic in comparative Islamic studies (5 credits).

Near Eastern Studies -- Biblical and Ancient Studies

73 credits as follows:

1. Two years of Biblical Hebrew or its equivalent as evidenced by examination (alternatively, a student may satisfy this language requirement by combining a minimum of four quarters of Biblical Hebrew with two quarters of other ancient Near Eastern languages, including Aramaic, hieroglyphic Egyptian, Coptic, Akkadian, second-year Greek, or other appropriate languages as approved by adviser and/or faculty)
2. NEAR E 220 and NEAR E 240
3. An approved program of 20 credits in courses in ancient Near Eastern history, society and culture, and ancient Near Eastern literature in translation
4. 8 credits in non-language, upper-division Near Eastern courses related to the ancient Near East
5. A senior essay on a topic in biblical and ancient Near Eastern studies (5 credits).

Minor

Minor Requirements: 25 credits as follows:

1. NEAR E 210 or NEAR E 220
2. One course from NEAR E 211, NEAR E 240, RELIG 210
3. Additional credits from Near Eastern civilization or language courses (may not include language courses at the beginning or intermediate level).

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The NELC undergraduate degree offers a liberal arts education with a particular focus on the study of cultures and languages of the Near East and Central Asia. Educational outcomes from this degree serve a broad spectrum of undergraduates, ranging from those intending to begin the acquisition of specific linguistic and cultural proficiencies for the purpose of pursuing some career, academic or otherwise, related to these regions, to students for whom the Near East and/or Central Asia are regions with histories and cultures that are of special intellectual or personal interest. Students often combine Near Eastern studies as a double major with some other degree program that may be in a quite different discipline. For these students the NELC undergraduate major offers the important opportunity, as a core element in a broader liberal arts education, for expanding their cultural vision and understanding in ways made possible only through serious study of a language and literature other than one's own. Graduates from the BA degree have followed a wide range of post-baccalaureate paths, including further graduate study in the humanities or social sciences, professional degree programs in law or medicine, and employment with government or non-governmental organizations.
- *Instructional and Research Facilities:* The department draws on collections of books, serials, and other resources in the UW libraries that are unusually rich in the quantity and quality of items relating to Near Eastern and Central Asian languages and cultures. Students in the department's language classes make use of the University's well-equipped Language Learning Center.
- *Honors Options Available:* With College Honors (Completion of Honors core curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.

- *Research, Internships, and Service Learning:* Undergraduate research is carried out under the supervision of faculty members. Students can also undertake research and internship opportunities while studying abroad.
- *Department Scholarships:* See departmental website for most current information.
- *Student Organizations/Associations:* There are no formal student organizations in the department, but the department frequently sponsors educational and cultural events organized by students and faculty involved in interest groups such as the Central Asian Circle or the Persian Circle.

GRADUATE PROGRAM

Graduate Program Coordinator

M25 Denny, Box 353120

(206) 543-6033

neareast@uw.edu

Master of Arts

The Department of Near Eastern Languages and Civilization offers a graduate program of studies leading to the master of arts degree. The program is designed to provide students with advanced training in at least one Near Eastern language and in a specific field of specialization. Students may concentrate in Arabic, Hebrew, Persian, Turkish, or Central Asian Turkic and may choose as their field of specialization a civilization or literature related to their language of concentration. The program is intended not only for those students who wish to continue their studies at the doctoral level but also for students who wish to pursue careers in government or business.

Admission Requirements

1. Statement of purpose
2. Sample of written academic work
3. Three letters of recommendation, of which at least two must attest to scholarly ability
4. Official transcripts from all collegiate institutions attended
5. Although knowledge of a Near Eastern language is not a prerequisite for admission, applicants are generally expected to have had the equivalent of two years' study of the language in which they plan to concentrate.
6. A bachelor's degree from an accredited institution
7. A minimum GPA of 3.00 or B for last 90 quarter (60 semester) credits
8. GRE scores
9. TOEFL scores for international students

Degree Requirements

36 credits, as follows:

1. Reading knowledge of French or German; or, with the prior approval of the student's MA committee, any other language pertinent to the research in the student's field of study. Normally, to satisfy this requirement, the student must pass a reading exam before beginning the second year of study towards the M.A.
2. A seminar paper representing the student's best work
3. Coursework determined in consultation with M.A. committee to prepare for written examinations.
4. A written examination consisting of four parts: (1) general culture of the Near East, (2) student's field of specialization, (3) student's language of concentration, (4) second Near Eastern language related to the language of concentration

Doctor of Philosophy

Some department faculty are part of an interdisciplinary faculty group which offers doctoral study in Near and Middle Eastern studies. The program is located administratively within the Graduate School. See the Interdisciplinary Graduate Degree Programs section of this catalog.

Summer Programs

The department offers summer intensive language programs in Arabic, Hebrew, and Central Asian languages (Uzbek, Kazakh, Tajik, and others).

Research Facilities

The University of Washington libraries hold an extensive collection of books and materials in the languages of the Near East, the Turkic regions of Central Asia, and in European languages on Near Eastern and Central Asian Turkic subjects. Candidates for the master's degree as well as doctoral students find in the collection adequate resources for their research. The library participated in the Library of Congress Middle East Cooperative program for the acquisition of Arabic serials, and the Library of Congress Cooperative program for Pakistan for the purchase of Persian books and serials. The library staff includes Near East and Central Asia specialists responsible for acquiring and cataloging the collection. The library maintains book exchanges with the Central Asian republics, handled through the Near East and Slavic sections of the University's Suzzallo Library, some exchanges beginning as early as 1961. Among its staff are an exchange librarian and a specialist trained in Central Asian Turkic languages. A book exchange with Xinjiang is administered through the East Asia Library.

Financial Aid

A limited number of teaching assistantships are available for graduate students in the department who are fluent in speaking and writing a Near Eastern language. A limited number of graduate fellowships are also available.

Exchange Agreements

The department participates actively in exchange programs involving institutions abroad, sending students for language and cultural study and research to a variety of locations, and training many students from institutions overseas. Students take advantage of existing formal UW exchange agreements with several universities in North Africa and the Middle East, such as American University in Cairo; Al-Akhawayn University in Ifrane, Morocco; Yarmouk University and Mu'tah University in Jordan; American University in Beirut; Hebrew University in Jerusalem; and Bogazici University in Istanbul. There have also been department-level exchange agreements with Xinjiang University in Urumchi, China (for Uighur, Kazakh, Kirghiz), or institutions in Central Asia such as Tashkent State University, the Humanities University of Bishkek, Kyrgyzstan, or Kyrgyz State National University, Bishkek. NELC students also study at other institutions in which there are not currently formal exchanges, such as the University of Damascus (for the study of Arabic and related subjects).

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at [www.uw.edu/students/crscat/](http://uw.edu/students/crscat/)

Arabic

ARAB 199 Study Abroad (1-15, max. 15) Credit for elementary or intermediate Arabic in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWPpS.

ARAB 399 Study Abroad (1-15, max. 15) Credit for elementary or intermediate Arabic in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWPpS.

ARAB 401 Intensive Elementary Arabic (15) Study of grammar, with oral and written drill and reading of simple texts. (Cannot be taken for credit if ARAB 411, ARAB 412, ARAB 413 taken.) If Arabic is the student's language of admission, only 10 credits count towards graduation. Offered: S.

ARAB 411 Elementary Arabic (5) Study of grammar, with oral and written drill and reading of simple texts. (Cannot be taken for credit if ARAB 401 taken.) First in a sequence of three.

ARAB 412 Elementary Arabic (5) Study of grammar, with oral and written drill and reading of simple texts. (Cannot be taken for credit if ARAB 401 taken.) Second in a sequence of three. Prerequisite: ARAB 411.

ARAB 413 Elementary Arabic (5) Study of grammar, with oral and written drill and reading of simple texts. (Cannot be taken for credit if ARAB 401 taken.) Third in a sequence of three. Prerequisite: ARAB 412.

ARAB 421 Intermediate Arabic (5) VLPA Reading of selected texts in standard Arabic, with continuing emphasis on grammar and syntax. First in a sequence of three. Prerequisite: either ARAB 401 or ARAB 413.

ARAB 422 Intermediate Arabic (5) VLPA Reading of selected texts in standard Arabic, with continuing emphasis on grammar and syntax. Second in a sequence of three. Prerequisite: ARAB 421.

ARAB 423 Intermediate Arabic (5) VLPA Reading of selected texts in standard Arabic, with continuing emphasis on grammar and syntax. Third in a sequence of three. Prerequisite: ARAB 422.

ARAB 424 Intensive Intermediate Arabic (15) VLPA Equivalent to one year of study of standard Arabic at intermediate level. Extension of knowledge in grammar, syntax and vocabulary, and skills in reading, writing, and conversation. May not be taken for credit if ARAB 421, ARAB 422, ARAB 423 previously taken for credit. Prerequisite: either ARAB 401 or ARAB 413. Offered: S.

ARAB 453 Historical Texts (3) VLPA/I&S Readings in Arab historians with particular reference to scholars such as Tabari, Ibn al-Jawzi, and Ibn al-Athir. Prerequisite: ARAB 423.

ARAB 454 Quran and Its Interpretation (3) VLPA Reading of selected passages from the Quran in relation to their interpretation in classical commentaries (tafsir) and in legal texts (ahkam al-Quran). Focus on the various types of classical scholarship applied to the text of the Quran (ulum al-Quran). Prerequisite: ARAB 423.

ARAB 457 Grammatical and Lexical Texts (3) VLPA Introduction to concepts and terminology of Arabic grammar and lexicography through readings from scholars such as Sibawayh, Ibn Aqil, and Ibn Manzur. Prerequisite: ARAB 423.

ARAB 458 Modern Poetry (3) VLPA DeYoung Neoclassical poetry of the nineteenth and twentieth centuries, and the development of modern verse. Prerequisite: ARAB 423.

ARAB 460 Islamic Theological and Mystical Literature (3) VLPA Reading of selected texts representative of Islamic theological and mystical schools. Prerequisite: ARAB 423.

ARAB 461 Modern Prose (3) VLPA Modern essays, fiction, and ideological writings. Prerequisite: ARAB 423.

ARAB 490 Supervised Study (1-6, max. 18) Special work in literary texts for graduates and undergraduates. Prerequisite: ARAB 423.

ARAB 496 Special Studies in Arabic (3-5, max. 15) VLPA Topics vary. Offered occasionally by visiting or resident faculty.

ARAB 499 Undergraduate Research (1-6, max. 18)

ARAB 596 Special Studies in Arabic (3-5, max. 15) Topics vary. Offered occasionally by visiting or resident faculty.

ARAB 600 Independent Study or Research (*-)

Aramaic

ARAMIC 411 Syriac (3) VLPA Beginning Syriac including basic grammar and vocabulary with selected readings from simple prose passages and poetry selected from early Christian and other late antique writings. No previous study of Aramaic required. First in a sequence of two. Offered: A.

ARAMIC 412 Syriac (3) Beginning Syriac including basic grammar and vocabulary with selected readings from simple prose passages and poetry selected from early Christian and other late antique writings. No previous study of Aramaic required. Second in a sequence of two. Offered: W.

ARAMIC 421 Biblical Aramaic (5) VLPA Fundamentals of Aramaic grammar and the differences that distinguish Aramaic from Hebrew; includes select Aramaic portions of the Bible. Emphasis on grammar and comprehension. Designed for students with some knowledge of Hebrew. Prerequisite: HEBR 402 or HEBR 426.

ARAMIC 423 Readings in Syriac (3) VLPA Readings from selected passages in Biblical and Christian literature with emphasis on writings of late antique and medieval Christian communities of Syria, Iraq, and Iran until the Mongol invasions. Prerequisite: ARAMIC 412. Offered: Sp.

Egyptian

EGYPT 101 Hieroglyphic Egyptian I (5) Provides an introduction to hieroglyphic Egyptian as written during the Middle Kingdom (circa 2040-1782 BCE). Students learn to read and write basic hieroglyphics so they can read a complete Egyptian text. No prior knowledge required.

EGYPT 411 Introduction to Coptic (5) Elements of grammar of the Sahidic dialect of the Coptic language.

EGYPT 422 Readings in Coptic (3) VLPA Readings from ancient Coptic Christian literature, with emphasis on the Nag Hammadi texts. Prerequisite: EGYPT 411.

EGYPT 423 Readings in Coptic (3) VLPA Readings from ancient Coptic Christian literature, with emphasis on the Nag Hammadi texts. Prerequisite: EGYPT 411.

EGYPT 511 Hieroglyphic Egyptian I (5) Provides an introduction to hieroglyphic Egyptian as written during the Middle Kingdom (circa 2040-1782 BCE). Students learn to read and write basic hieroglyphics so they can read a complete Egyptian text. No prior knowledge required.

Hebrew

HEBR 199 Study Abroad (1-15, max. 15) Credit for elementary Hebrew in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWPpS.

HEBR 250 Introduction to Hebrew Language and Culture (2) VLPA/I&S Introduces modern Hebrew language and culture, focusing on fundamental structures of the language, the revival of Hebrew in modern times, and connections between contemporary usage and Jewish traditions. Topics include: the alphabet, the verb system, the Hebrew calendar, Jewish and Israeli holidays, names, songs, popular sayings, and more. Credit/no-credit only.

HEBR 399 Study Abroad (1-15, max. 15) Credit for intermediate Hebrew in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWPpS.

HEBR 401 Intensive Elementary Modern Hebrew (15) Intensive study of grammar, with oral and written drill and reading of simple texts. (Cannot be taken for credit if HEBR 411, HEBR 412, HEBR 413 taken.) Offered: S.

HEBR 402 Intensive Elementary Biblical Hebrew (15) VLPA Intensive study of grammar with oral and written drills and reading of simple texts. Cannot be taken for credit if HEBR 414, HEBR 415, HEBR 426 previously taken. Offered: S.

HEBR 411 Elementary Modern Hebrew (5) Modern Israeli Hebrew. Core vocabulary, grammar, conversational text, and oral and written communication. Excerpts from modern Hebrew prose and poetry. (Cannot be taken for credit if HEBR 401 taken). First in a sequence of three.

HEBR 412 Elementary Modern Hebrew (5) Modern Israeli Hebrew. Core vocabulary, grammar, conversational text, and oral and written communication. Excerpts from modern Hebrew prose and poetry. (Cannot be taken for credit if HEBR 401 taken). Second in a sequence of three. Prerequisite: HEBR 411.

HEBR 413 Elementary Modern Hebrew (5) Modern Israeli Hebrew. Core vocabulary, grammar, conversational text, and oral and written communication. Excerpts from modern Hebrew prose and poetry. (Cannot be taken for credit if HEBR 401 taken). Third in a sequence of three. Prerequisite: HEBR 412.

HEBR 414 Elementary Biblical Hebrew (5) Offers an inductive introduction to the Biblical Hebrew language. Covers the basics of Hebrew grammar while reading the stories of Joseph in the book of Genesis. No prior knowledge of Hebrew necessary.

HEBR 415 Elementary Biblical Hebrew (5) Continues the inductive introduction to the Biblical Hebrew language begun in HEBR 414. Moves beyond the textbook and into select portions of the Hebrew Bible. Prerequisite: HEBR 414.

HEBR 420 Hebrew Conversation (2) VLPA/I&S Builds upon skills in Modern Hebrew and promotes cultural proficiency as an integrated and essential component of language learning. Enhances communication through the acquisition and use of vocabulary and structure of the Hebrew language in authentic cultural and social contexts. Prerequisite: HEBR 413. Credit/no-credit only.

HEBR 421 Intermediate Modern Hebrew (5) VLPA Readings of selected texts in modern Hebrew with continuing emphasis on grammar, syntax, composition, and conversation. First in a sequence of three. Prerequisite: either HEBR 401 or HEBR 413.

HEBR 422 Intermediate Modern Hebrew (5) VLPA Readings of selected texts in modern Hebrew with continuing emphasis on grammar, syntax, composition, and conversation. Second in a sequence of three. Prerequisite: HEBR 421.

HEBR 423 Intermediate Modern Hebrew (5) VLPA Readings of selected texts in modern Hebrew with continuing emphasis on grammar, syntax, composition, and conversation. Third in a sequence of three. Prerequisite: HEBR 422.

HEBR 426 Biblical Hebrew Prose (5) VLPA Explores select prose sections of the Hebrew Bible (Old Testament) in conjunction with English translations and commentaries. Emphasis on close readings, the grammatical insights of textual criticism, and the interpretive strategies and agendas of the English translations. Prerequisite: HEBR 415.

HEBR 427 Biblical Hebrew Poetry (5) VLPA Explores select poetic sections of the Hebrew Bible (Old Testament) in conjunction with English translations and commentaries. Emphasis on close readings, the grammatical insights of textual criticism, and the interpretive strategies and agendas of the English translations. Prerequisite: either HEBR 402 or HEBR 426.

HEBR 428 Inscriptions from Biblical Times (5) VLPA Surveys Northwest Semitic inscriptions that bear significantly on our understanding of Biblical history and ancient Hebrew including the Moabite stone, Israelite ostraca, Siloam engraving, Gezer calendar, Deir Alla (Gilead) inscriptions, the Asherah texts, Ammonite fragments, and Phoenician monuments. Prerequisite: HEBR 402 or HEBR 426.

HEBR 451 Introduction to Hebrew Literature (3) VLPA Literary texts and analysis. Grammar, composition, and dictionary skills. Primarily modern texts - short poetry, fiction, and essays - with some selections as well from Biblical passages, the liturgy, midrash, and medieval poetry. Prerequisite: HEBR 423.

HEBR 452 Introduction to Hebrew Literature (3) VLPA Literary texts and analysis. Grammar, composition, and dictionary skills. Primarily modern texts short poetry, fiction, and essays with some selections as well from Biblical passages, the liturgy, midrash, and medieval poetry. Prerequisite: HEBR 423.

HEBR 453 Introduction to Hebrew Literature (3) VLPA Literary texts and analysis. Grammar, composition, and dictionary skills. Primarily modern texts short poetry, fiction, and essays with some selections as well from Biblical passages, the liturgy, midrash, and medieval poetry. Prerequisite: HEBR 423.

HEBR 454 Hebrew Poetry (3) VLPA Selections of poetry by prominent twentieth-century Hebrew poets whose texts comment or elaborate on biblical texts. Original source considered side-by-side with modern poetry, to examine ways recent literature models itself on, draws upon, and revises traditional sources. Prerequisite: HEBR 423.

HEBR 455 Hebrew Fiction (3) VLPA Selections of fiction by prominent modern Hebrew writers, including S.Y. Agnon, Aharon Appelfeld, David Shahar, Aharon Megged, and others. Prerequisite: HEBR 423.

HEBR 456 Hebrew Poems and Prayers (3) VLPA Examines modern Hebrew poems side by side with texts from the traditional Jewish liturgy, analyzing how contemporary writers have drawn on classical sources to reflect on matters of faith and the language of prayer. Prerequisite: HEBR 423.

HEBR 457 Hebrew in Song (3) VLPA Selections of Israeli folksong, pop, rock, children's songs, and musika mizrahit. While building vocabulary and improving dictionary and composition skills, students examine the role of popular song in the construction of modern Hebrew culture and Israeli identity. Prerequisite: HEBR 423.

HEBR 490 Supervised Study (1-6, max. 18) Special work in literary texts for graduates and undergraduates. Prerequisite: HEBR 423.

HEBR 496 Special Studies in Hebrew (3-5, max. 15) VLPA Topics vary.

HEBR 499 Undergraduate Research (1-6, max. 18)

HEBR 596 Special Studies in Hebrew (3-5, max. 15) Topics vary.

HEBR 600 Independent Study or Research (*-)

Near Eastern Languages and Civilization

NEAR E 199 Study Abroad (1-15, max. 15) Credit for lower division NEAR E courses in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWSpS.

NEAR E 205 Religion, Violence, and Peace: Patterns Across Time and Tradition (5) I&S, DIV Investigates the complex relationship between violence and peace in a variety of religious traditions. Examines case studies from the ancient Near East, medieval East Asia, and the contemporary West from the standpoint of lived experiences and contemporary theories derived from several academic disciplines. Offered: jointly with HUM 205/JSIS C 205; W.

NEAR E 210 Introduction to Islamic Civilization (5) VLPA/I&S Major developments in Islamic civilization from advent of Islam in seventh century to present. Islamic history, law, theology, and mysticism, as well as the politics, cultures, and literatures of the various Islamic societies. Offered: jointly with JSIS A 210.

NEAR E 211 Islam (5) VLPA/I&S Introduction to important cultural and historical aspects of Islam, focusing on basic concepts and developments such as prophethood, Quran and Hadith, canon and law, ritual, social theory, Sufism, theology, and sectarianism. Special attention to comparison of varied Muslim practices and beliefs, and their relation to textual and personal authority. Offered: jointly with JSIS C 211.

NEAR E 212 Introduction to the Quran (5) VLPA/I&S Emphasis on the historical context of the Quran, the history of the text, its collection, organization, and interpretation. In English. Offered: jointly with JSIS C 212.

NEAR E 213 Introduction to the Modern Middle East (5) I&S Major social and political trends in the Middle East during the 18th, 19th, and 20th centuries. Basic principles of Islam and its diversity, changing balance of power during the early modern period; European colonialism and withdrawal; pan-Arabism, nationalism, feminism and religious resurgence. Offered: jointly with JSIS A 215.

NEAR E 220 Introduction to the Ancient Near East (5) VLPA/I&S Surveys the peoples, places, and events of the ancient Near East. Examines the cultures of Mesopotamia, Egypt, Canaan, and Israel with an eye to each culture's cultural contributions. Pays special attention to shared cultural elements as well as distinguishing characteristics of the peoples of these regions.

NEAR E 230 Themes in Near Eastern Literature (5) VLPA/I&S Significant and interesting aspects of Near Eastern culture and society as represented by literary themes. Aspects of Near Eastern life and art such as women, minority groups, mysticism, and modern literature. Content varies.

NEAR E 240 Introduction to the Hebrew Bible: Old Testament (5) VLPA/I&S Examines the Hebrew Bible (Old Testament) in translation and its relationship with literatures of ancient Near East. Comparisons drawn between Biblical text and literary works of Canaan, Egypt, Greece, Mesopotamia. Emphasis on the sophisticated literary techniques employed by Biblical writers. Offered: jointly with JSIS C 240.

NEAR E 242 Cultural History of Turkey: From Empire to Nation (5) VLPA/I&S Topics include: social, economic, and political structures of Ottoman and Turkish Anatolia; language, literature, and artistic tradition; social status of women, literacy and illiteracy, the secular enterprise of Kemal Ataturk; Islamic fundamentalism, educational institutions, Kurdish nationalism. Offered: W.

NEAR E 250 Iranian Culture and Civilization (5) VLPA/I&S Explores the culture and civilization of this Middle Eastern society through a multi-disciplinary approach that includes such manifestations as architecture, carpet-weaving, story-telling, and the composition of poetry.

NEAR E 251 Jewish Life in Literature and Film (3) VLPA/I&S Major themes of Jewish life treated in modern narrative and cinema. Topics include religious tradition and modernity. Jewish immigration to America, responses to the Holocaust and Zionism.

NEAR E 253 Voices of the Iranian Revolution (3) VLPA/I&S Includes critical readings of the 1979 Iranian Revolution as represented in essays, fiction, poetry, memoir, speeches, film, and other arts. Examines the ways that writers, artists, politicians, and intellectuals have depicted the origins and development of the Islamic Republic and the legacy of the revolution in Iranian society and culture today.

NEAR E 260 Death and Afterlife in the Ancient World (3) VLPA/I&S Explores human yearnings, obsessions, fears, and aspirations associated with death and afterlife by examining major political, military, social, economic, religious, literary, artistic, and architectural phenomena directly connected to the way ancient cultures, such as Egypt, Mesopotamia, Israel, and the Levant, have conceptualized death.

NEAR E 280 Introduction to Central Asian Turkic Literature in Translation (5) VLPA Provides an overview of the

major periods of Central Asian Turkic literature including: the Pre-Islamic Period (eighth-tenth centuries), the Islamic Period (tenth-twentieth centuries), the Modern Period (1905-1991), and the Post-Colonial period (1991-present). Centers on the Turkic peoples who lived under Russia and Soviet colonial rule.

NEAR E 296 Special Studies in Near Eastern Languages and Civilization (1-5, max. 15) I&S Offered occasionally by visitors or resident faculty.

NEAR E 310 Modern Near Eastern Literatures in English Translation (3) VLPA Contemporary cultures of the Middle East studied through exposure to a representative sample of their literary work. Texts selected address major issues in Middle Eastern societies, e.g., tradition versus modernity, national identity and the challenge of the West, Arab-Israeli conflict.

NEAR E 315 Israel: Dynamic Society and Global Flashpoint (5) I&S Introduces the people, institutions, and culture of Israel in the context of larger global forces. Examines domestic, regional, and international elements, both historically and in the contemporary period, that have shaped Israel's culture, politics, and special role in world affairs. Topics include nationalism, ethnicity, politics, religion, film, literature, and culture. Offered: jointly with JSIS A 314/POL S 314.

NEAR E 320 Prayer and Poetry in the Jewish and Islamic Traditions (5) VLPA/I&S Examines elements of traditional Jewish and Muslim prayers and worship with poems that draw on those classical sources. Introduces students to the language and practice of prayer for both Jews and Muslims. Examines poets from Europe, the Americas, Israel, and the Islamic world. Taught in English.

NEAR E 325 Modern Hebrew Literature in English (3) VLPA Major developments in Hebrew literature from the Enlightenment to the current Israeli literature.

NEAR E 326 Israeli Identities (5) VLPA Examines fiction and film, as well as selected poetry, popular songs, and essays, to explore diverse groups within contemporary Israeli society. Topics include the sabra ideal, holocaust survivors, Sephardic/Mizrahi communities, religious and secular Jews, Israel's Arab minority, and questions of gender.

NEAR E 335 Language Conflict and Identity in the Middle East and North Africa (5) VLPA/I&S Explores social and linguistic aspects of the languages and cultures of the Middle East and North Africa, focusing on the relationship between language and national/ethnic identity from the perspective of group conflict. Considers language policies in colonial and post-colonial states, and individual strategies of accommodation and resistance to these policies.

NEAR E 363 Oral Literature of the Turkic Peoples of Central Asia I: the Heroic Epos (3) VLPA Representative heroic poems of Central Asian Turkic peoples now living in the Central Asian Republics and China. Origin of the heroic epos, its relation to the romantic epos and other oral literary genres. Art of the singer and his role in nomadic Turkic society. Emphasis on Manas, the monumental epos of Kirghiz.

NEAR E 364 Islam and Muslims in China (5) I&S Introduces the lived experiences of Muslims in contemporary China. Examines Muslims' understanding of their faith; the relationship of Islam to the political, economic, and social lives of Muslims; how Islam shapes people's sense of culture and identity; and unity and diversity of various Chinese Muslim communities.

NEAR E 375 Turkic Peoples of Central Asia (3) I&S History of the Turkic peoples, AD 552 to present. Emphasis on current status of Turkic peoples in Central Asia. Geographical distribution, demographic data, reactions and adaptations to changes resulting from the 1917 revolution. Turkic viewpoint on past and present developments. Offered: jointly with JSIS A 379.

NEAR E 396 Intermediate Studies in Near Eastern Languages and Civilization (1-5, max. 15) Offered occasionally by visitors or resident faculty.

NEAR E 399 Study Abroad (1-15, max. 15) Credit for NEAR E 200-400-level courses in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWSpS.

NEAR E 402 Classical Arabic Literature in Translation (3) VLPA Examines development of Arabic literature from its beginnings through the fall of the Abbasid dynasty to the Mongols. Coincides with period when Arabic language and literature were dominant forces in Islamic civilization. Topics include: impact of Islam on the literature, courtly love, mystical poetry, the Thousand-and-One Nights, and Hispano-Arabic literature.

NEAR E 403 Colonialism, Nationalism, and the Modern Arabic Novel (3) VLPA/I&S Examines how representative novels from the modern canon in Arabic have both endorsed and critiqued aspects of nationalism and colonialist ideology. Prerequisite: either NEAR E 211 or NEAR E 212.

NEAR E 410 Middle East Through Cinema (3, max. 12) VLPA Analyzes the function of cinema in shaping communal and individual identities in Middle Eastern cultures. Examines topics including religious transformation, violence, identity, gender, immigration, and exile through film screenings, discussions, and supplementary readings.

NEAR E 411 Digital Media: The Middle East and Central Asia (5) VLPA Hands-on, project-based approach to imaging, new media, electronic text, databases, metadata and accessibility, rights management, and other issues central to contemporary humanities research on the Middle East and Central Asia.

NEAR E 414 Moses, Muhammad, and Malcolm X: Prophecy in Judaism, Christianity, and Islam (3) I&S Examines the phenomenon of prophecy in Jewish, Christian, and Muslim thought and writing from antiquity to modernity. Traces the development of prophetic expression in the Hebrew Bible, the New Testament, and the Quran. Surveys major themes and covers various eras, including prophecy in the American context.

NEAR E 415 Islam in Jewish Contexts, Judaism in Muslim Contexts (3) VLPA/I&S An introduction to the Jewish-Muslim encounter: a look at exchange, symbiosis, liminality, and confrontation between these two kindred religio-cultural systems, from the rise of Islam, to the end of its Classical Age - six centuries wherein the majority of the world's Jews lived among Muslim majorities.

NEAR E 421 Islamic Mystical Literature in English (3) VLPA Readings from the works of principal Sufi writers and poets. Prerequisite: either NEAR E 211 or NEAR E 212.

NEAR E 423 Persian Literature in Translation (3) VLPA Designed to familiarize students with an expanding collection of works translated from Persian literature, both classical and modern, into English. Focuses on a few representative texts and offers interpretations of the culture through close readings. Prior acquaintance with Iranian culture not required.

NEAR E 424 Classical Persian Literature in Translation (3) VLPA/I&S Introduces themes, forms, and historical development of Persian literature from the 10th to 19th centuries CE. Topics includes lyric and epic forms, Sufism, premodern poetics, and reception history of English translations. Reading include Rumi, Hafez, Khayyam, Ferdowsi, Sa'di among others. No prior knowledge of Persian language or literature required.

NEAR E 426 Modern Persian Literature in Translation (3) VLPA/I&S Introduces Persian literature from early modernizing projects in the 19th century up to today. Includes poetry, fiction, essays, and film. Examines various ways that Persian writers define modernity in their own works and

respond to writers in other languages and traditions. No prior knowledge of Persian language or literature required.

NEAR E 430 Scripture and Law in Islam (5) VLPA/I&S Examines concept and use of scripture in Islam, with special attention to issues of canon and commentary, heavenly books, talismanic uses, and the place of scripture in ritual. In English. Offered: jointly with JSIS C 430.

NEAR E 436 Arab American Writers (3) VLPA/I&S Explores the influence of Arab American writing both in the United States and the Arab world during the nineteenth and twentieth centuries. Discusses issues of emigration to the United States from the Arab world and its impact on the formation of a distinctive Arab American identity. Prerequisite: either NEAR E 211 or NEAR E 212.

NEAR E 437 Thousand and One Nights (3) VLPA An examination of the major story cycles of the Thousand-and-One-Nights collection, in its social and historical context.

NEAR E 441 Literature and the Holocaust (5) VLPA, DIV Examines fiction, poetry, memoir, diaries, monuments, film, and pop culture from several languages and cultural milieus, with emphases on English and Hebrew. Topics include survivor testimony, shaping of collective memory, the second generation, Holocaust education and children's literature, gender and the Holocaust, and fantasy and humor as responses to catastrophe. Offered: jointly with C LIT 441.

NEAR E 442 Turkish Literature in Translation (3) VLPA Covers major theoretical issues concerning Ottoman court literature and Turkish epic and troubadour poetry. Major writers and works of modern Turkish literature read and analyzed in their social, political, and theoretical contexts. Previous study of Turkish literature not required.

NEAR E 443 The Word and the Empire: Reading Ottoman Literature (3-5) VLPA/I&S Approaches Ottoman literature through translations and scholarly articles in English. Evaluates this particular literary tradition as an imperial production, through an analysis and critical reading of course materials.

NEAR E 452 The Biblical Song of Songs (3) VLPA *Noegel* Examines the erotic and beautiful Song of Songs within the context of ancient (and medieval) Near Eastern love poetry and correlates close readings of the book with various interpretations it has received from antiquity until today. No knowledge of Hebrew or the Bible required. Offered: jointly with JSIS C 451.

NEAR E 453 The Biblical Prophets (3) VLPA/I&S Explores the Biblical prophets (in translation) within their Near Eastern contexts. Historicity, literary and rhetorical sophistication, and ideological agendas. Seeks to uncover the meaning and distinctiveness of Israelite prophecy within the context of the larger Near East. No knowledge of the Bible required. Offered: jointly with JSIS C 449.

NEAR E 454 Israel: The First Six Centuries BCE (3) VLPA/I&S Traces the Israelites, from the Babylonian destruction of the Jerusalem Temple (586 BCE) to events following the destruction of the second Temple (first century CE). Focuses on primary historical and literary sources as well as archaeological and artistic evidence. No knowledge of Hebrew or the Bible required. Offered: jointly with JSIS C 454.

NEAR E 457 The History of Biblical Interpretation (3) VLPA/I&S Traces Biblical interpretation and translation technique from the earliest translations of the Hebrew Bible (Old Testament) to the various historical literary, deconstructionist, and holistic strategies of more recent times. Adopts a "hands-on" approach to the material and explores various hermeneutics by applying them in class. Offered: jointly with JSIS C 457.

NEAR E 472 Peoples and Cultures of Central and Inner Asia (5) I&S Introduces Central and Inner Asia with a multidisciplinary, comparative survey of the cultures and societies of contemporary China's Inner Asia (Mongolia, Xinjiang-Eastern Turkestan, Tibet, and Manchuria), the contemporary Muslim Central Asian republics (Kazakhstan, Kyrgyzstan,

Tajikistan, Turkmenistan, and Uzbekistan), and the adjacent areas of Afghanistan and Iran. Offered: jointly with ANTH 422/JSIS D 472.

NEAR E 490 Supervised Study (1-6, max. 18) Special work in Near Eastern studies for graduates and undergraduates.

NEAR E 491 Methodologies in Near Eastern Studies (5) Investigates prevalent approaches through a survey of scholarship on Near and Middle Eastern civilizations across time periods, cultures, and communities. Examines discourses developed on polytheistic and monotheistic religions, imperial and nationalist social systems, and ideological frameworks, such as Orientalism. Offered: jointly with JSIS A 491.

NEAR E 496 Advanced Studies in Near Eastern Languages and Civilization (3-5, max. 15) VLPA/I&S Offered occasionally by visitors or resident faculty. Content varies.

NEAR E 498 Senior Essay (5) VLPA/I&S Supervised individual research and writing of a major paper during the senior year. Offered: AWSp.

NEAR E 499 Undergraduate Research (1-6, max. 18)

NEAR E 510 Middle East Through Cinema (3, max. 12) Analyzes the function of cinema in shaping communal and individual identities in Middle Eastern cultures. Examines topics including religious transformation, violence, identity, gender, immigration, and exile through film screenings, discussions, and supplementary readings.

NEAR E 511 Digital Media: The Middle East and Central Asia (5) Hands-on, project-based approach to imaging, new media, electronic text, databases, metadata and accessibility, rights management, and other issues central to contemporary humanities research on the Middle East and Central Asia.

NEAR E 515 Islam in Jewish Contexts, Judaism in Muslim Contexts (3) An introduction to the Jewish-Muslim encounter: a look at exchange, symbiosis, liminality, and confrontation between these two kindred religio-cultural systems, from the rise of Islam, to the end of its Classical Age - six centuries wherein the majority of the world's Jews lived among Muslim majorities.

NEAR E 518 Foreign Language Teaching Methodology (2) *BrandI* Current foreign language teaching methods and approaches. Learning and teaching strategies and techniques for the four skills (reading, writing, speaking, listening) including cultural notions. Current and future trends in pedagogy and technology. Offered: jointly with GERMAN 518/SCAND 518/SLAV 518; A.

NEAR E 520 Prayer and Poetry in the Jewish and Islamic Traditions (5) Examines elements of traditional Jewish and Muslim prayers and worship with poems that draw on those classical sources. Introduces students to the language and practice of prayer for both Jews and Muslims. Examines poets from Europe, the Americas, Israel, and the Islamic world. Taught in English.

NEAR E 521 Research Methods (3) Introduction to research in Islamic civilization. Research methods, primary sources, evidence and documentation, reference works, transliteration systems, scholarly writing style.

NEAR E 524 Islamic Law (2-5) Selected topics in Islamic law that highlight major aspects of Islamic civilization. Offered: jointly with LAW B 556.

NEAR E 533 Islamic Poetry and Poetics (3) Detailed introduction to prosody and rhyme in classical Arabic and Persian, followed by critical analysis of selected texts. Prerequisite: advanced level of Arabic or Persian; recommended: some knowledge of the other language.

NEAR E 535 Language Conflict and Identity in the Middle East and North Africa (5) VLPA/I&S Explores social and linguistic aspects of the languages and cultures of the Middle East and North Africa, focusing on the relationship between language and national/ethnic identity from the perspective of group conflict. Considers language policies

in colonial and post-colonial states, and individual strategies of accommodation and resistance to these policies.

NEAR E 564 Islam and Muslims in China (5) Introduces the lived experiences of Muslims in contemporary China. Examines Muslims' understanding of their faith; the relationship of Islam to the political, economic, and social lives of Muslims; how Islam shapes people's sense of culture and identity; and unity and diversity of various Chinese Muslim communities.

NEAR E 572 Peoples and Cultures of Central and Inner Asia (5) Offered: jointly with ANTH 522/JSIS D 572.

NEAR E 590 Seminar on Near Eastern Civilization and Thought (3-5, max. 30)

NEAR E 591 Methodologies in Near Eastern Studies (5) Investigates prevalent approaches through a survey of scholarship on Near and Middle Eastern civilizations across time periods, cultures, and communities. Examines discourses developed on polytheistic and monotheistic religions, imperial and nationalist social systems, and ideological frameworks, such as Orientalism.

NEAR E 596 Special Studies in Near Eastern Languages and Civilization (3-5, max. 15) Offered occasionally by visitors or resident faculty. Content varies.

NEAR E 600 Independent Study or Research (*-)

NEAR E 700 Master's Thesis (*)

Persian

PRSAN 199 Study Abroad (1-15, max. 15) Credit for elementary Persian in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWSpS.

PRSAN 399 Study Abroad (1-15, max. 15) Credit for elementary or intermediate Persian in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWSpS.

PRSAN 401 Intensive Elementary Persian (15) Intensive study of grammar with oral and written drills and reading of simple texts. Cannot be taken for credit if PRSAN 411, PRSAN 412, PRSAN 413 previously taken. Offered: S.

PRSAN 402 Intensive Elementary Tajik (15) Intensive study of grammar with oral and written drill and reading of selected texts in Tajik, the literary language spoken and written in the Central Asian Republic of Tajikistan. Offered: S.

PRSAN 404 Intensive Persian for Native Speakers (15) VLPA Enables students with a degree of proficiency in spoken Persian to read and write, to translate rudimentary texts, and to conceptualize the use of the formal style of composition. Reading, writing, and comprehension, particularly of handwritten manuscripts of the scribal tradition. Also covers calligraphy, translation, journalistic prose, and other facets of the language and the script. Offered: S.

PRSAN 411 Elementary Persian (5) Conversation, pronunciation, and graded reading. Persian alphabet and basic sentence constructions. Offers rudimentary conversational and reading ability with a vocabulary of about two thousand words. First in a sequence of three.

PRSAN 412 Elementary Persian (5) Conversation, pronunciation, and graded reading. Persian alphabet and basic sentence constructions. Offers rudimentary conversational and reading ability with a vocabulary of about two thousand words. Second in a sequence of three. Prerequisite: PRSAN 411.

PRSAN 413 Elementary Persian (5) Conversation, pronunciation, and graded reading. Persian alphabet and basic sentence constructions. Offers rudimentary conversational and reading ability with a vocabulary of about two thousand words. Third in a sequence of three. Prerequisite: PRSAN 412.

PRSAN 421 Intermediate Persian (5) VLPA Reading of simple texts with emphasis on reading and writing, conversation skills, grammar, and syntax. Builds a vocabulary of standard Persian in preparation for advanced reading and comprehension of literary texts. First in a sequence of three. Prerequisite: either PRSAN 401 or PRSAN 413.

PRSAN 422 Intermediate Persian (5) VLPA Reading of simple texts with emphasis on reading and writing, conversation skills, grammar, and syntax. Builds a vocabulary of standard Persian in preparation for advanced reading and comprehension of literary texts. Second in a sequence of three. Prerequisite: PRSAN 421.

PRSAN 423 Intermediate Persian (5) VLPA Reading of simple texts with emphasis on reading and writing, conversation skills, grammar, and syntax. Builds a vocabulary of standard Persian in preparation for advanced reading and comprehension of literary texts. Third in a sequence of three. Prerequisite: PRSAN 422.

PRSAN 451 Introduction to Persian Literature (3) VLPA Selected texts from modern and classical Persian poetry and prose. Provides insights into Iranian culture and its past and present achievements in literature. Prepares the student for a more comprehensive and critical study of Persian literature. Prerequisite: PRSAN 423.

PRSAN 452 Modern Persian Literature: A Survey (3) VLPA Development of poetry and prose after Iran felt and absorbed the impact of Western cultures. Periods and genres. Works of such authors as Jamalzadeh, Hedayat, Dehkoda, Al-e Ahmad, Nima, Sepehri, and Forugh. Prerequisite: PRSAN 423.

PRSAN 453 Classical Persian Literature: A Survey (3) VLPA History of Persian literature from Rudaki to Hafiz. Studies epic, lyric, and mystic traditions placed in historical settings. Covers the most important genres such as the Qasida, the Ghazal, the Ruba'i and the Masnavi. Prerequisite: PRSAN 423.

PRSAN 454 The Epic Tradition in Iran (3) VLPA Focuses on the Shahnameh of Firdawsi: explores the ancient legends that gave rise to it and follows the fortunes of epic poetry after Firdawsi, touching on the rise, development, and decline of romance in classical Persian literature. Prerequisite: PRSAN 433.

PRSAN 455 The Persian Ghazal (3) VLPA The Ghazal as the leading medium for lyrical expression in classical Persian tradition. Follows this genre from conception to culmination in the poetry of Hafiz. Conventions and devices of the Ghazal. Development placed in historical and social context. Prerequisite: PRSAN 433.

PRSAN 456 Sufism: Thought and Expression (3) VLPA/I&S Dynamics of mystical thought and expression as evolved in the writings of the great Sufi masters and reflected in the poetry of Sana'i, Attar, Rumi, and others. The fundamental unity of the mystical vision, with special attention to the peculiarities of individual style and expression. Prerequisite: PRSAN 433.

PRSAN 490 Supervised Study (1-6, max. 18) Special work in literary texts for graduates and undergraduates. Prerequisite: PRSAN 423.

PRSAN 496 Special Studies in Persian (3-5, max. 15) VLPA Topics vary.

PRSAN 499 Undergraduate Research (1-6, max. 18)

PRSAN 596 Special Studies in Persian (3-5, max. 15) Topics vary.

PRSAN 600 Independent Study or Research (*-)

Turkic

TKIC 199 Study Abroad (1-15, max. 15) Credit for elementary Turkic in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWSpS.

TKIC 399 Study Abroad (1-15, max. 15) Credit for elementary or intermediate Turkic in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWSpS.

TKIC 401 Intensive Elementary Uzbek (15) Intensive study of grammar, with oral and written drill and reading of simple texts in Uzbek. Covers first-year Uzbek. Cannot be taken for credit if TKIC 411, TKIC 412, TKIC 413 taken. Offered: S.

TKIC 402 Intensive Elementary Kazak (15) Intensive study of grammar, with oral and written drill and reading of simple texts in Kazak. Covers first-year Kazak. Cannot be taken for credit if TKIC 414, TKIC 415, TKIC 416 taken. Offered: S.

TKIC 403 Intensive Elementary Kirghiz (15) Intensive study of grammar with oral and written drill of selected texts. Offered: S.

TKIC 404 Intensive Intermediate Uzbek (15) VLPA Allows students to complete second-year Uzbek in one quarter. Reading of selected texts in Uzbek, with continuing emphasis on oral and written practice, grammar, and advanced readings. Cannot be taken for credit if TKIC 421, TKIC 422, TKIC 423 taken. Prerequisite: either TKIC 401 or TKIC 413. Offered: S.

TKIC 405 Intensive Intermediate Kazak (15) VLPA Allows students to complete second-year Kazak in one quarter. Reading of selected texts in modern literary Kazak, with emphasis on grammar, syntax, and oral practice. Prerequisite: either TKIC 402 or TKIC 416. Offered: S.

TKIC 406 Intensive Advanced Uzbek (15) VLPA Advanced-level instruction in speaking, writing, reading, and listening skills. Students work independently on translation projects. Emphasis on extensive writing practices in Uzbek and student participation in an Uzbek email conversation circle. Prerequisite: TKIC 423. Offered: S.

TKIC 407 Intensive Elementary Uyghur (15) Covers all four linguistic skills: reading, writing, speaking, and listening. Offered: S.

TKIC 411 Elementary Uzbek (5) Introduction to the modern written and spoken language. Cannot be taken for credit if TKIC 401 taken. First in a sequence of three.

TKIC 412 Elementary Uzbek (5) Introduction to the modern written and spoken language. Cannot be taken for credit if TKIC 401 taken. Second in a sequence of three.

TKIC 413 Elementary Uzbek (5) Introduction to the modern written and spoken language. Cannot be taken for credit if TKIC 401 taken. Third in a sequence of three.

TKIC 414 Elementary Kazak (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing. Covers basic Kazak grammar and introduces some aspect of Kazak culture. Cannot be taken for credit if TKIC 402 taken. First in a sequence of three.

TKIC 415 Elementary Kazak (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing. Covers basic Kazak grammar and introduces some aspect of Kazak culture. Cannot be taken for credit if TKIC 402 taken. Second in a sequence of three.

TKIC 416 Elementary Kazak (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing. Covers basic Kazak grammar and introduces some aspect of Kazak culture. Cannot be taken for credit if TKIC 402 taken. Third in a sequence of three.

TKIC 417 Introduction to Uyghur (5) Designed for students with no prior knowledge of Uyghur. Includes acquisition of Uighur Arabic alphabet, general phonological rules, and basic grammar. Basic reading, listening, and oral comprehension practice all offered throughout the course. First in a sequence of three. Offered: A.

TKIC 418 Elementary Uyghur (5) Continuation of basic modern Uyghur: phonological rules, grammar, and vocabulary. Practice in reading, listening, and oral comprehension.

Second in a sequence of three. Prerequisite: TKIC 417. Offered: W.

TKIC 419 Elementary Uyghur (5) Continuation of basic modern Uyghur: phonological rules, grammar, and vocabulary. Practice in reading, listening, and oral comprehension. Third in a sequence of three. Prerequisite: TKIC 418. Offered: Sp.

TKIC 421 Intermediate Uzbek (3) VLPA Continuation of elementary Uzbek. Oral work, grammar, and readings in Uzbek literature. First in a sequence of three. Prerequisite: either TKIC 401 or TKIC 413.

TKIC 422 Intermediate Uzbek (3) VLPA Continuation of elementary Uzbek. Oral work, grammar, and readings in Uzbek literature. Second in a sequence of three. Prerequisite: TKIC 421.

TKIC 423 Intermediate Uzbek (3) VLPA Continuation of elementary Uzbek. Oral work, grammar, and readings in Uzbek literature. Third in a sequence of three. Prerequisite: TKIC 422.

TKIC 427 Intermediate Uyghur (5) VLPA Second-year Uyghur. Includes reading, translation, oral comprehension, and composition. First in a sequence of three. Prerequisite: TKIC 419. Offered: A.

TKIC 428 Intermediate Uyghur (5) VLPA Second-year Uyghur. Includes reading, translation, oral comprehension, and composition. Second in a sequence of three. Prerequisite: TKIC 427. Offered: W.

TKIC 429 Intermediate Uyghur (5) VLPA Second-year Uyghur. Includes reading, translation, oral comprehension, and composition. Third in a sequence of three. Prerequisite: TKIC 428. Offered: Sp.

TKIC 437 Advanced Uyghur (3-5) VLPA Focuses on reading, writing, translation, and oral comprehension at an advanced level. Students gain fluency in order to work in social and scientific environments where only the Uyghur language is used. First in a sequence of three. Prerequisite: TKIC 429. Offered: A.

TKIC 438 Advanced Uyghur (3-5) VLPA Focuses on reading, writing, translation, and oral comprehension at an advanced level. Students gain fluency in order to work in social and scientific environments where only the Uyghur language is used. Second in a sequence of three. Prerequisite: TKIC 437. Offered: W.

TKIC 439 Advanced Uyghur (3-5) VLPA Focuses on reading, writing, translation, and oral comprehension at an advanced level. Students gain fluency in order to work in social and scientific environments where only the Uyghur language is used. Third in a sequence of three. Prerequisite: TKIC 438. Offered: Sp.

TKIC 451 Introduction to Turkic Studies (3) VLPA Bibliography, problems, and methods of research in the field of Turkic studies for advanced students of Turkish/Turkic languages, including readings in those languages on the languages, literatures, and ethnography of past and present Turkic peoples.

TKIC 454 Introduction to Uzbek Literature (3) VLPA Readings from selected Uzbek writers. Content varies.

TKIC 455 Introduction to Uzbek Literature (3) VLPA Readings from selected Uzbek writers. Content varies.

TKIC 456 Introduction to Uzbek Literature (3) VLPA Readings from selected Uzbek writers. Content varies.

TKIC 490 Supervised Study (1-6, max. 18) Special work in literary texts for graduates and undergraduates. Prerequisite: either TKIC 404, TKIC 405, or TKIC 423.

TKIC 496 Special Studies in Turkic Languages (3-5, max. 15) VLPA Topics vary.

TKIC 499 Undergraduate Research (3-5, max. 15) For Turkic language and literature majors.

TKIC 542 Comparative and Historical Grammar of Turkic Languages (3) Classification of the Turkic languages; alphabets used; phonology, morphology, and syntax; lexical

composition; structure-changing developments. Prerequisite: TKIC 404.

TKIC 543 Comparative and Historical Grammar of Turkic Languages (3) Classification of the Turkic languages; alphabets used; phonology, morphology, and syntax; lexical composition; structure-changing developments. Prerequisite: TKIC 404.

TKIC 546 Old Turkic (3) Introduction to Runic script; phonology, morphology, and syntax of the oldest form of Turkic; reading and translation of eighth-century inscriptions of historical and literary importance. Prerequisite: permission of instructor.

TKIC 547 Old Uyghur (3) Introduction to script systems; phonology, morphology, and syntax. Reading and translation of mainly Buddhist texts in Uyghur script, eighth through eleventh centuries. Prerequisite: background in a Turkic language, or permission of instructor.

TKIC 561 Middle Turkic (3) Introduction to the phonology, morphology, and syntax of the Middle Turkic languages; reading and translation of texts in Karakhanid, Khorazmian Turkic, Kipchak, and Chagatai. Prerequisite: permission of instructor.

TKIC 562 Middle Turkic (3) Introduction to the phonology, morphology, and syntax of the Middle Turkic languages; reading and translation of texts in Karakhanid, Khorazmian Turkic, Kipchak, and Chagatai. Prerequisite: permission of instructor.

TKIC 563 Seminar on Turkic Literature (5) Topics in oral and written literature. Prerequisite: permission of instructor.

TKIC 596 Special Studies in Turkic Languages (3-5, max. 15) Topics vary.

TKIC 600 Independent Study or Research (*-)

Turkish

TKISH 199 Study Abroad (1-15, max. 15) Credit for elementary Turkish in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWSpS.

TKISH 399 Study Abroad (1-15, max. 15) Credit for elementary or intermediate Turkish in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWSpS.

TKISH 401 Intensive Elementary Turkish (15) Introduces modern Turkish. Focuses on pronunciation and conversation; grammar and composition; and graded reading. Uses Latin characters throughout. Cannot be taken for credit if credit earned in TKISH 411, TKISH 412, and TKISH 413. Offered: S.

TKISH 411 Elementary Turkish (5) Introduction to modern Turkish. Pronunciation and conversation, grammar and composition, graded reading. Latin characters used throughout. First in a sequence of three.

TKISH 412 Elementary Turkish (5) Introduction to modern Turkish. Pronunciation and conversation, grammar and composition, graded reading. Latin characters used throughout. Second in a sequence of three. Prerequisite: TKISH 411.

TKISH 413 Elementary Turkish (5) Introduction to modern Turkish. Pronunciation and conversation, grammar and composition, graded reading. Latin characters used throughout. Third in a sequence of three. Prerequisite: TKISH 412.

TKISH 421 Intermediate Turkish (5) VLPA Introduction to modern Turkish literature. First in a sequence of three. Prerequisite: TKISH 413.

TKISH 422 Intermediate Turkish (5) VLPA Introduction to modern Turkish literature. Second in a sequence of three. Prerequisite: TKISH 421.

TKISH 423 Intermediate Turkish (5) VLPA Introduction to modern Turkish literature. Third in a sequence of three. Prerequisite: TKISH 422.

TKISH 451 Readings in Turkish Literary History I: Modern (3) VLPA The development of modern Turkish literature and its ties to, and divergence from, the Ottoman tradition. Readings in modern and Tanzimat poetry, short story, drama, and novel.

TKISH 452 Readings in Turkish Literary History II: Literature of the Ottoman Empire (3) VLPA The parallel development of the classical high-culture literature and the popular literatures of the Ottoman Empire. Readings in poetry, history, travel-literature, drama, and popular narrative forms. Prerequisite: TKISH 423.

TKISH 453 Ottoman Travelers and Geography (3) VLPA Introduction to the geographic literature of Ottoman Turkish: readings from traditional cosmographies, travel journals, sailing instructions (portulans), ambassadorial and secret service reports. Prerequisite: TKISH 456.

TKISH 454 Turkish Literary Genres: Prose (3) VLPA Major genres, styles, and themes of Turkish art-prose from Ottoman times to present; creation of stylistic and critical norms. Prerequisite: TKISH 423.

TKISH 455 Turkish Literary Genres: Poetry (3) VLPA Poetic traditions of Turkey with a focus on the development of peculiarly Turkish aspects of style and structure. Social functions of poetry and the poetic milieu. Prerequisite: TKISH 423.

TKISH 456 Introduction to Ottoman Turkish (3) VLPA Introduction to Turkish in Arabic characters to cover the peculiar grammatical and syntactical problems of Ottoman.

TKISH 490 Supervised Study (1-6, max. 18) Special work in literary texts for graduates and undergraduates. Prerequisite: TKISH 423.

TKISH 496 Special Studies in Turkish (3-5, max. 15) VLPA Topics vary.

TKISH 499 Undergraduate Research (1-6, max. 18)

TKISH 596 Special Studies in Turkish (3-5, max. 15) Topics vary.

TKISH 600 Independent Study or Research (*-)

Ugaritic

UGARIT 451 Ugaritic I (3) VLPA Introduction to the Ugaritic (Canaanite) language of ancient Ugarit (modern Ras Shamra, circa fourteenth century BCE). Introduces the cuneiform alphabet and distinctive grammatical features; proceeds to an inductive reading of the Ugaritic tablets. Texts include the Epic of Aqhat, the Baal Epic, and the Epic of Kret. First in a three course sequence. Prerequisite: either HEBR 402 or HEBR 426. Offered: A.

UGARIT 452 Ugaritic II (3) VLPA Introduction to the Ugaritic (Canaanite) language of ancient Ugarit (modern Ras Shamra, circa fourteenth century BCE). Introduces the cuneiform alphabet and distinctive grammatical features; proceeds to an inductive reading of the Ugaritic tablets. Texts include the Epic of Aqhat, the Baal Epic, and the Epic of Kret. Second in a three course sequence. Prerequisite: UGARIT 451. Offered: W.

UGARIT 453 Ugaritic III (3) VLPA Introduction to the Ugaritic (Canaanite) language of ancient Ugarit (modern Ras Shamra, circa fourteenth century BCE). Introduces the cuneiform alphabet and distinctive grammatical features; proceeds to an inductive reading of the Ugaritic tablets. Texts include the Epic of Aqhat, the Baal Epic, and the Epic of Kret. Third in a three course sequence. Prerequisite: UGARIT 452. Offered: Sp.

UGARIT 551 Ugaritic I (3) Introduction to the Ugaritic (Canaanite) language of ancient Ugarit (modern Ras Shamra, circa fourteenth century BCE). Introduces the cuneiform alphabet and distinctive grammatical features; proceeds to an inductive reading of the Ugaritic tablets. Texts include

the Epic of Aqhat, the Baal Epic, and the Epic of Kret. First in a three course sequence. Prerequisite: either HEBR 402 or HEBR 426. Offered: A.

UGARIT 552 Ugaritic II (3) Introduction to the Ugaritic (Canaanite) language of ancient Ugarit (modern Ras Shamra, circa fourteenth century BCE). Introduces the cuneiform alphabet and distinctive grammatical features; proceeds to an inductive reading of the Ugaritic tablets. Texts include the Epic of Aqhat, the Baal Epic, and the Epic of Kret. Second in a three course sequence. Prerequisite: UGARIT 551. Offered: W.

UGARIT 553 Ugaritic III (3) Introduction to the Ugaritic (Canaanite) language of ancient Ugarit (modern Ras Shamra, circa fourteenth century BCE). Introduces the cuneiform alphabet and distinctive grammatical features; proceeds to an inductive reading of the Ugaritic tablets. Texts include the Epic of Aqhat, the Baal Epic, and the Epic of Kret. Third in a three course sequence. Prerequisite: UGARIT 552. Offered: Sp.

Neurobiology

318 Hitchcock

Neurobiology offers students an intense introduction to the study of nervous systems. Faculty in both the College of Arts and Sciences and the School of Medicine teach courses in the major. Students study the cellular and molecular properties of single nerve cells and the connections among them and learn how these properties determine animal behavior and human disease.

UNDERGRADUATE PROGRAM

Adviser

318 Hitchcock, Box 355320

(206) 616-3982

The Neurobiology Program offers the following program of study:

- The Bachelor of Science degree with a major in neurobiology

Bachelor of Science

Program Admission Requirements

1. BIOL 180, BIOL 200, BIOL 220, with minimum 2.0 grade in each
2. Completion of most supporting coursework in physics, math, and chemistry recommended (see specific course lists, below), with minimum 2.50 GPA in any such work completed at time of application
3. Admission is competitive; meeting minimum standards guarantees consideration but not acceptance. Early application is encouraged and may increase chances for acceptance. Since the program uses rolling admission, there is no specific deadline for applying. See adviser for details about applying.

Major Requirements

Minimum 86 credits, as follows:

1. *Supporting Coursework (minimum 48 credits):*
 - a. *Chemistry:* Pathway 1 -- CHEM 120, CHEM 220, CHEM 221; Pathway 2 (recommended) -- CHEM 142, CHEM 152, CHEM 162 (or CHEM 145, CHEM 155, CHEM 165); and CHEM 223, CHEM 224 (or CHEM 237, CHEM 238, CHEM 239) (or CHEM 335, CHEM 336, CHEM 337) (labs not required) (15 - 27 credits)

- b. *Physics:* Pathway 1 - PHYS 114, PHYS 115; Pathway 2 (recommended) - PHYS 121, PHYS 122. (8 to 10 credits)
 - c. *Mathematics:* Two quarters of calculus (MATH 124, MATH 125, or MATH 144, MATH 145, or Q SCI 291, Q SCI 292) (10 credits)
 - d. *Introductory Biology (minimum 15 credits):* BIOL 180, BIOL 200, BIOL 220 (15 credits)
2. *Introduction to Neurobiology (10 credits):* NBIO 301, NBIO 302.
 3. *Advanced Courses in Neurobiology (12 credits):* NBIO 401, NBIO 402, NBIO 403, NBIO 404.
 4. *Electives:* Minimum 16 credits from a wide variety of 400-level courses in the biological sciences. See adviser for list of courses. Courses not listed may be allowed with permission of program director. Students may apply up to 7 credits of undergraduate research toward the 16 elective credits.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Throughout the core sequence of neurobiology, students gain a deep understanding of the basic concepts of nervous system function and learn many of the basic techniques used to study nerve cells. Students also learn how to analyze neurophysiological data, and compose and present results. Graduates pursue careers in medicine, public health, education, pharmaceutical sales, computing, and graduate study.
- *Instructional and Research Facilities:* Laboratories are required with introductory courses. (NBIO 301 and NBIO 302). The program offers state-of-the-art facilities and equipment for each course.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Most neurobiology students participate in undergraduate research with faculty from both the College of Arts and Sciences and the School of Medicine.
- *Program Scholarships:* None offered.
- *Student Organizations/Associations:* Beta Beta Beta, the honor society for biological study; Alpha Epsilon Delta, the national premedical honorary society.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at uw.edu/students/crsat/

NBIO 301 Introduction to Cellular and Molecular Neurobiology (5) NW Moody Introduces students to the physiological and molecular properties of individual nerve cells and the synaptic connections between them, and to principles of nervous system development. Includes weekly laboratory sessions. Prerequisite: BIOL 220. Offered: W.

NBIO 302 Introduction to Systems and Behavioral Neurobiology (3/5) NW M. BOSMA, J. SISNEROS Introduces neuroethology, i.e., the mechanisms by which neurons and the synaptic connections among them produce sensory perceptions and complex behavioral outputs. Available with or without weekly laboratory sessions. Prerequisite: NBIO 301. Offered: A.

NBIO 303 Neuronal Coding and Computation (1-3) Introduces computational neuroscience, focusing on concepts that are related to neuronal and synaptic biophysics. Works through mathematical concepts and methods to describe neuronal dynamics, and introduce methods to analyze and

characterize neural coding. Uses Matlab as a programming language to implement models or neuronal dynamics to perform data analysis. Prerequisite: MATH 125. Credit/no-credit only. Offered: W.

NBIO 401 Systems Neurobiology (3) NW Robinson Introduces students to the anatomical and physiological organization of the major sensory, motor, and associative systems of the mammalian brain. Behavioral data used to stress functional integration of systems. Includes gross brain anatomy demonstration and computer tutorials. Prerequisite: NBIO 302. Offered: Sp.

NBIO 402 Diseases of the Nervous System (3) NW Froener, Horwitz Introduces the basic mechanisms of mammalian nervous system function through the study of human neurological diseases that result from specific disruption of neuronal signaling. Prerequisite: NBIO 401. Offered: W.

NBIO 403 Systems and Behavioral Neurobiology (3) NW Kim Topics include information processing in sensory and motor systems, sensory-motor integration, learning, and memory. Using examples from the field of neuroethology, encourages students to work independently on problems taken from the recent neurobiological research literature. Prerequisite: NBIO 401. Offered: W.

NBIO 404 Neuropharmacology (3) NW Stella Actions of drugs on the brain at clinical, cellular, and molecular levels. Therapeutic use of drugs in treatment of neurological and psychiatric diseases. Abuse of drugs and the mechanisms of addiction, tolerance, and withdrawal. Prerequisite: NBIO 401. Offered: Sp.

NBIO 440 Topics in Current Neurobiology Research (2, max. 6) NW Prerequisite: NBIO 302. Credit/no-credit only.

NBIO 450 Current Research Literature in Neurobiology (2, max. 6) NW Weekly journal club in neurobiology. Students read and discuss original research articles in neurobiology, centered around a specific topic each quarter. Prerequisite: BIOL 220. Credit/no-credit only.

NBIO 496 Peer Teaching Facilitator in Neurobiology (5, max. 10) M. KENNEDY For undergraduates assisting in Neurobiology courses as facilitators. Peer Facilitators assist with laboratories, attend lectures, and attend weekly course meetings, gaining direct course experience. Does not include independent teaching or grading. Credit/no-credit only. Offered: AW.

NBIO 499 Individual Research in Neurobiology (3-6, max. 18) Students carry out projects in laboratories of program faculty. Prerequisite: NBIO 302.

Philosophy

361 Savery

Philosophy is the study of the most fundamental issues concerning reality, knowledge, and value, and of the basic concepts, principles, and arguments of the major intellectual disciplines. Its fields include metaphysics, epistemology, logic, ethics, history of philosophy, political philosophy, aesthetics, philosophy of science, philosophy of mind, philosophy of language, philosophy of law, and philosophy of religion.

UNDERGRADUATE PROGRAM

Adviser

361 Savery, Box 353350

(206) 543-5855

philadv@uw.edu

The Department of Philosophy offers the following programs of study:

- The Bachelor of Arts degree with a major in philosophy
- The Bachelor of Arts degree with a major in history and philosophy of science, offered jointly with the Department of History
- A minor in philosophy

The Department of Philosophy also administers the interdisciplinary minor in ethics.

Bachelor of Arts

Philosophy

Suggested First- and Second-Year College Courses: Introductory courses in symbolic logic, social philosophy, major problems of philosophy, and history of philosophy. Courses to develop writing, language, and analytic skills.

Department Admission Requirements

Minimum 2.00 cumulative GPA and completion of 10 credits of philosophy coursework

Major Requirements

50 credits, to include:

1. One course from PHIL 115, PHIL 120, or an upper-division course in logic
2. One course from PHIL 320, PHIL 330, PHIL 335, or PHIL 340 (undergraduate adviser must approve substitutions)
3. One course from PHIL 322, PHIL 332, PHIL 342, or 400-level courses in the same areas (undergraduate adviser must approve substitutions)
4. At least four UW philosophy courses at the 400 level, excluding PHIL 484
5. At least 25 credits at the UW
6. Minimum 2.00 cumulative GPA for all philosophy courses taken

History and Philosophy of Science

Suggested First- and Second-Year College Courses: PHIL 120, PHIL 160. Courses that develop writing skills. Introductory science courses and mathematics courses through calculus.

Department Admission Requirements

1. HSTCMP 311, HSTCMP 312; PHIL 160 or PHIL 460; PHIL 120, each with a minimum 2.0 grade
2. Completion of 10 credits toward the Natural World (science) requirement (see below), each course with a minimum 2.0 grade
3. Minimum UW 2.00 GPA
4. Completion of 10 credits of composition/writing courses with a minimum 2.0 grade for each course. This requirement may be met by freshman English composition courses, "W" courses, or any courses in which the student has written a graded paper (to be reviewed by HPS faculty) of at least 10 pages.

Major Requirements

85 credits as follows:

1. *Core Courses:* HSTCMP 311, HSTCMP 312, HSTCMP 390; PHIL 160 or PHIL 460; PHIL 120 (25 credits). A minimum 2.0 grade in each course and an overall minimum 2.50 GPA.
2. *Electives:* 25 credits from the following, of which at least 10 must be PHIL courses and at least 5 must be HIST courses (or others upon petition): ESS 404, HIST 211, HIST 215, HIST 310, HIST 313 (or ASTR 313), HIST 314, HIST 315, HIST 316, HIST 317 (also MHE 422), HIST 318 (also MHE 424), HIST 412; PHIL 243, PHIL 350, PHIL 360, PHIL 406, PHIL 450, PHIL 460 (if PHIL 160 has been taken), PHIL 464, PHIL 466, PHIL 473, PHIL 481, PHIL 482, PHIL 483. A minimum 2.0 grade in each class.

3. *Capstone:* Completion of HPS 400, with a minimum 2.0 grade (5 credits)
4. *Science Component:* 30 credits of Natural World (NW) courses from anthropology, astronomy, atmospheric sciences, biology, chemistry, computer science, earth and space sciences, economics, environmental studies, mathematics, physics, psychology, and sociology, with a minimum 2.50 GPA in these courses and a minimum 2.0 grade in each course. At least 15 of the credits must be outside mathematics.

Minor

Minor Requirements: 30 credits, to include:

1. PHIL 115 or PHIL 120, or an upper-division course in logic
2. At least 15 UW philosophy credits at the 300 level or above, excluding PHIL 484.
3. 10 philosophy elective credits at any level

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Graduates of the Department of Philosophy acquire considerable skills in abstract thinking, analysis, and critical writing (constructing and critiquing arguments). Because of these skills, philosophical training is invaluable in almost any area of life. Recent graduates have been successful in software development, financial planning, journalism, teaching, and law. A few go on to graduate school and become professional philosophers.

Students' work is subjected to careful critical scrutiny. As a result, students benefit from philosophy courses with an increased competence in expository clarity, logical rigor, and analytical skill.

Philosophy is an excellent undergraduate major for pre-professional students. It is perhaps ideal for those who aspire to work in the legal profession. The history and philosophy of science major is of particular interest to those planning careers in the sciences. Courses in ethics offer students in any field the opportunity to think clearly about the normative dimensions of their career choices. Because the skills of philosophical analysis can be applied widely, philosophy is always a good complementary second degree for any major, whether it is in the physical sciences, social sciences, arts, or humanities.

- *Instructional and Research Facilities:* The Philosophy Writing Center provides a free tutoring service to any student writing a philosophical paper.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* The department offers internship credits for students participating in the philosophy of children program. Students may also arrange for internship credit with individual faculty. See adviser for details.
- *Department Scholarships:* The Kenneth Clatterbaugh scholarship acknowledges a student with financial need who has outstanding academic merit and commitment to philosophy. The Kenneth R. Parker Award for Excellence in Community Service award honors an undergraduate philosophy major or minor who has blended her or his studies in philosophy with a volunteer-based community project. The recipient receives a \$500 scholarship. A donation of \$250 is made on behalf of the recipient to a community organization of the student's choice. See adviser for details.
- *Student Organizations/Associations:* The undergraduate student club, Lyceum, is dedicated to the informal discussion of philosophical issues.

- *Of Special Note:* The department offers a new majors seminar for those wishing to explore the major.

GRADUATE PROGRAM

Graduate Program Coordinator

361 Savery, Box 353350

(206) 543-5855

philinfo@uw.edu

The Department of Philosophy offers programs of study leading to the Master of Arts and Doctor of Philosophy degrees, the MA program serving as the initial stage of the PhD program. The department's program on values in society offers an interdisciplinary graduate certificate.

The master of arts program option is a two-year non-thesis program which may be extended to three years depending on the outcome of the spring research papers. The student must take twelve courses in philosophy, satisfy a logic requirement, and at the end of the second year, submit three research papers for evaluation by the graduate faculty of the department. The courses and the papers must satisfy a distribution requirement. The departmental evaluation of the student's papers and coursework determines whether an MA degree is awarded and also whether admission to the PhD program is granted. The MA portion of the program serves as the initial stage of the PhD program.

The PhD program, which normally requires at least two years of study beyond the MA, has three general requirements: (1) general examination, (2) dissertation, and (3) final examination.

Master of Arts

Admission Requirements

In evaluating applications, the Department of Philosophy takes the following factors into account: the philosophical potential displayed in a sample of the applicant's written work, letters of recommendation, undergraduate record, and GRE scores.

1. Three letters of recommendation written on the recommender's departmental letterhead and addressed to the Graduate Admissions Committee. Recommenders may send their letters directly to the department, or the applicant may include the letters in sealed envelopes with the other application materials.
2. A sample of the applicant's written philosophical work, normally an essay or paper (approximately 8-15 pages) written for a course in philosophy. Applicants are allowed one writing sample only.
3. Official GRE scores (verbal, quantitative, and analytic).
4. A 200-300 word statement of the applicant's reasons for doing graduate work in philosophy and his or her professional objectives.
5. A complete set of official college transcripts.
6. An undergraduate major in philosophy is recommended although not required.
7. International applicants should refer to UW Graduate School policies.

Degree Requirements

The Philosophy Department at the University of Washington does not offer a terminal MA degree.

This is a non-thesis program. There is no language requirement for the MA degree.

The following requirements supplement the general requirements set forth by the UW Graduate School in the General Catalog (see the Graduate School admissions page for further information). All students, whether or not they have

earned an MA at another institution, must complete the MA requirements before entering the PhD program.

36 credits minimum, as follows:

1. *Logic Requirement:* Either a grade of 3.0 or better in one of the graduate-level logic courses or a passing score on the departmental logic examination. The department offers the logic exam once annually upon request. Part-time students must satisfy this requirement by the time they submit master's papers.
2. *Distribution Requirement:* Graduate courses are divided into three areas. Students must take at least three courses in each of the following three areas:
 - a. *Area One:*
 - i. *Greek Philosophy:* PHIL 430, PHIL 431, PHIL 433, PHIL 520
 - ii. *Medieval Philosophy:* PHIL 421
 - iii. *Modern Philosophy:* PHIL 422, PHIL 436, PHIL 437, PHIL 438, PHIL 522
 - iv. *Recent Philosophy:* PHIL 426, PHIL 469, PHIL 526
 - b. *Area Two:*
 - i. *Logic and Philosophy of Mathematics:* PHIL 470, PHIL 471, PHIL 472, PHIL 473, PHIL 474, PHIL 570
 - ii. *Philosophy of Science:* PHIL 459, PHIL 460, PHIL 466, PHIL 481, PHIL 482, PHIL 560, PHIL 566, PHIL 574
 - iii. *Philosophy of Mind:* PHIL 463, PHIL 464, PHIL 563
 - iv. *Philosophy of Language:* PHIL 453, PHIL 479, PHIL 553
 - v. *Epistemology:* PHIL 450, PHIL 490, PHIL 550
 - vi. *Metaphysics:* PHIL 456, PHIL 556, PHIL 587
 - c. *Area Three:*
 - i. *Ethics:* PHIL 416, PHIL 417, PHIL 440, PHIL 540
 - ii. *Philosophy of Art:* PHIL 445, PHIL 446, PHIL 449, PHIL 545
 - iii. *Philosophy of History:* PHIL 465, PHIL 565
 - iv. *Social and Political Philosophy:* PHIL 406, PHIL 407, PHIL 408, PHIL 409, PHIL 410, PHIL 411, PHIL 414, PHIL 461, PHIL 510, PHIL 514
 - v. *Philosophy of Religion:* PHIL 467, PHIL 567
3. Courses numbered below 400 cannot be used to satisfy graduate degree requirements.
4. *12-Course Requirement:* Students must complete twelve courses (numbered 400 or above) in philosophy, with a minimum grade of 3.0 in each course. At least four of these twelve courses must be seminars.
5. *Master's Papers:* At the end of their second year, in lieu of a master's thesis, students submit three papers, one in each distribution area. (Part-time students will submit their papers for evaluation upon completion of twelve courses in philosophy. A change of status from full-time to part-time student requires departmental approval.)
6. *Evaluation:* The graduate faculty of the department evaluates students' progress on the basis of coursework in philosophy and the papers submitted. The graduate faculty then decides whether students are (a) awarded an MA and admitted to the PhD program; (b) awarded an MA and invited to submit papers a second time; (c) awarded a terminal MA; or (d) dropped from the program without a degree. Students resubmitting papers must provide completely new ones that satisfy the distribution requirements. A completely new paper has not been submitted before and is not a revised version of one previously submitted. These papers are due the following year.
7. *Satisfactory Progress:* Students not yet admitted to the PhD program must take at least two courses (10 credits) per quarter with a grade of 3.0 or better to be in good

standing. An excessive number of incompletes may jeopardize a student's good standing. If a student does not make satisfactory progress in a given quarter, the director of graduate studies recommends to the dean of the Graduate School that the student be placed on probation.

8. *Other Courses:* Students may use three courses outside philosophy in determining whether they are making satisfactory progress. The courses must be approved by the director of graduate studies as part of a program of specialization. Courses in areas other than philosophy do not normally satisfy the twelve-course requirement.

Doctor of Philosophy

Admission Requirements

Admission to the PhD program is based on the level of performance with the MA requirements. (See above.)

Degree Requirements

Minimum 90 credits (60 credits minimum beyond the master's degree), as follows:

1. *General Requirements:* There are four general requirements for the completion of the doctoral degree:
 - a. General written examination
 - b. General oral examination
 - c. Dissertation
 - d. Final examination

The master's papers constitute the written portion of the general examination. The general oral examination is normally a presentation and defense of the student's dissertation proposal.
2. *Course Requirement:* The only departmental course requirement is that the student must complete a total of at least six seminars with a grade of 3.0 or better in each before being awarded the PhD (seminars taken to fulfill the MA requirements may count toward this total). A student's Supervisory Committee may, however, require additional courses.
3. *Language Requirement:* There is no departmental language requirement. However, in writing a dissertation a student must be able to deal with primary sources in the original language of the source. All language requirements are determined by the student's Supervisory Committee. A student should develop the needed language skills as early as possible in his or her career. The student should consult with the director of graduate studies during the first and second year in the MA program to insure that he or she is developing any needed language skills.
4. *Satisfactory Progress:* A student's Supervisory Committee determines whether a student in the PhD program is making satisfactory progress. Satisfactory progress for the PhD program includes steady and substantial progress toward the completion of the dissertation. Sanctions for failure to make satisfactory progress are the same as described for the master's requirements.

Financial Aid

The department has some teaching assistantships available to incoming students and the Graduate School offers some non-teaching assistantships.

Graduate Certificate in Values in Society

The program on values in society aims to facilitate graduate research in ethics as it arises across the disciplines. The program is designed to provide students with the knowledge and skills necessary for integrating ethics and ethics scholarship into their chosen field.

The graduate certificate program is open only to students already enrolled in other graduate degree programs at the

University of Washington. Successful completion of the certificate program is noted on official transcripts.

Certificate Requirements

1. Selection of a faculty adviser from the values in society core faculty
2. Completion of VALUES 511 and VALUES 512 (10 credits)
3. Completion of two other graduate-level values-laden courses specific to the student's field of study (6 credits). Courses from the student's home department are eligible. All courses must be approved by the student's faculty adviser and the program director.
4. Completion of VALUES 513 (2 credits)

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

Philosophy

PHIL 100 Introduction to Philosophy (5) I&S C. MARSHALL, M. ROSENTHAL, A. WOODY Major philosophical questions relating to such matters as the existence of God, the foundations of knowledge, the nature of reality, and the nature of morality. Approach may be either historical or topical. Offered: AWSpS.

PHIL 102 Contemporary Moral Problems (5) VLPA/I&S M. BLAKE Philosophical consideration of some of the main moral problems of modern society and civilization, such as abortion, euthanasia, war, and capital punishment. Topics vary. Offered: AWSpS.

PHIL 110 Introduction to Social and Political Philosophy (5) I&S An introduction to political theories such as conservatism, liberalism, and socialism and their treatment of select social issues.

PHIL 114 Philosophical Issues in the Law (5) I&S R. MOORE Analysis and critical assessment of various philosophical issues in law and legal reasoning. Material drawn from actual law cases, as well as writings by contemporary philosophers of law and lawyers. Topics include criminal responsibility, civil disobedience, abortion, enforcement of morals. Special legal or philosophical training not required.

PHIL 115 Practical Reasoning (5) I&S, QSR Lee Introduction to logic emphasizing concepts and methods useful for practical analysis of arguments in everyday contexts; meaning, syllogisms, logical diagrams, inductive and statistical inference, informal fallacies, argument structure, perhaps some beginning symbolic logic. Offered: AWSpS.

PHIL 120 Introduction to Logic (5) I&S/NW, QSR C. MAYO-WILSON, C. WELLER Elementary symbolic logic. The development, application, and theoretical properties of an artificial symbolic language designed to provide a clear representation of the logical structure of deductive arguments. Offered: AWSpS.

PHIL 160 Why Do We Believe in Quarks, Evolution, and Other Crazy Things? Perspectives on Science, Reason, and Reality (5) I&S/NW L. HANKINSON NELSON Study of how scientific theories are justified and why they are accepted, using selected examples from the history of science.

PHIL 200 Topics in Philosophy (3-5, max. 10) I&S A study of philosophical topics at the introductory level. The content of the course is entirely at the discretion of the instructor.

PHIL 205 Philosophy for Children (5) I&S J. LONE Introduction to the methods of "doing" philosophy with young people. Stresses the development of a community of inquiry in which budding philosophers are encouraged to ask their own relevant questions, develop views and articulate reasons for them, and to listen and learn from one another. Credit/no-credit only.

PHIL 206 Philosophy of Feminism (5) I&S, DIV Philosophical analysis of the concepts and assumptions central to feminism. Theoretical positions within the feminist movement; view of the ideal society, goals and strategies of the movement, intersections of the sex-gender system with other systems of oppression. Offered: jointly with GWSS 206/POL S 212.

PHIL 207 Issues of Global Justice (5) I&S M. BLAKE, J. MAYERFELD, W. TALBOTT Introduces issues of global justice. Topics include: global poverty and aid, immigration, transnational governance, gender in global relations, climate change, and cultural relativism. Offered: jointly with POL S 207/VALUES 207.

PHIL 240 Introduction to Ethics (5) VLPA/I&S S. GARDINER, J. ROBERTS, W. TALBOTT Critical introduction to various philosophical views of the basis and presuppositions of morality and moral knowledge. Critical introduction to various types of normative ethical theory, including utilitarian, deontological, and virtue theories.

PHIL 241 Topics in Ethics (5, max. 10) VLPA/I&S Introduction to ethics through in-depth study of one or more selected topics (e.g., limits of moral community, animal rights, moral education, and freedom). Topics vary.

PHIL 242 Introduction to Medical Ethics (5) VLPA/I&S S. GOERING Introduction to ethics, primarily for first- and second-year students. Emphasizes philosophical thinking and writing through an in-depth study of philosophical issues arising in the practice of medicine. Examines the issues of medical ethics from a patient's point of view.

PHIL 243 Environmental Ethics (5) VLPA/I&S L. NICHOLS Focuses on some of the philosophical questions that arise in connection with environmental studies. Topics to be considered include: the ideological roots of current issues, values and the natural world, public policy and risk assessment, intergenerational justice, and social change. Offered: jointly with ENVIR 243.

PHIL 267 Introduction to Philosophy of Religion (5) I&S Consideration of the sources of religious ideas and practices, the main kinds of religious views and the problems they raise, and the different forms that spirituality can take. Issues concerning the relations of religion to science and morality also treated.

PHIL 301 Intermediate Topics in Philosophy (3-5, max. 10) I&S Philosophical topics at the intermediate level. Content varies each quarter, depending on instructor.

PHIL 307 Justice Across Disciplinary Boundaries (5) I&S W. TALBOTT What is justice? One of the oldest questions in philosophy and also one of the most current. A multidisciplinary approach to understanding justice.

PHIL 314 Philosophy of Crime and Punishment (5) I&S R. MOORE Examination of philosophical theories regarding criminal habits and punishment and the philosophical problems connected with specific topics in criminal law. Examines proper subject matter of criminal law (drug use, pornography, euthanasia); limits of criminal sanctions; crime and privilege (corporate crime, white-collar crime, blackmail); justifications for punishment; mercy; and execution.

PHIL 320 Ancient Philosophy (5) I&S J. ROBERTS, C. WELLER Survey of ancient Greek philosophy, beginning with the pre-Socratics and proceeding on through Plato to Aristotle.

PHIL 322 Modern Philosophy (5) I&S C. MARSHALL, M. ROSENTHAL, C. WELLER Examination of metaphysical and epistemological problems from the works of Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume, and Kant.

PHIL 325 Nineteenth-Century Philosophy (5) I&S C. MARSHALL

PHIL 330 History of Ancient Political Philosophy (5) I&S J. ROBERTS Political philosophy of fourth- and fifth-century Greece, especially the Sophists, Plato, and Aristotle, stressing the connection between the political philosophy

and the underlying philosophical system of each philosopher.

PHIL 332 History of Modern Political Philosophy (5) I&S M. BLAKE, W. TALBOTT Examination of major political philosophies from the sixteenth century to the nineteenth century, with attention to the underlying philosophical methods and foundations.

PHIL 335 Plato's Republic (5) VLPA/I&S Designed especially for philosophy majors, but open to non-majors. Intensive study of Plato's masterpiece. Prerequisite: one PHIL course.

PHIL 338 Philosophy of Human Rights (5) I&S W. TALBOTT Theories of human rights and the bearing of these theories on issues of public policy such as legitimacy of war and terrorism, economic justice, and whether future generations have rights.

PHIL 340 History of Ancient Ethics (5) VLPA/I&S J. ROBERTS, C. WELLER Development of moral thought from Socrates through the Stoics. Particular emphasis on the ethical writings of Plato and Aristotle.

PHIL 342 History of Modern Ethics (5) VLPA/I&S M. ROSENTHAL, C. WELLER Development of moral thought from Hobbes through Nietzsche, with particular emphasis on the ethical writings of Hume, Kant, and John Stuart Mill.

PHIL 343 Ethics and the Environment (5) I&S L. NICHOLS Advanced introduction to environmental ethics, with an emphasis on nonanthropocentric value theory.

PHIL 344 History of Recent Ethics (5) VLPA/I&S Study of major ethical writings in the twentieth century, with principal emphasis on the Anglo-American tradition.

PHIL 345 Moral Issues of Life and Death (5) VLPA/I&S S. GOERING Examination of such topics as war and murder, famine relief, capital punishment, high-risk technologies, abortion, suicide, and the rights of future generations.

PHIL 346 Personal Values and Human Good (5) I&S S. GOERING Examination of the idea of a good human life. Emphases differ from year to year. Typical topics include happiness and prudence, rationality and life plans, personal values and the meaning of life, autonomy and false consciousness, self-respect and self-esteem, honesty and self-deception, faith and "vital lies."

PHIL 347 Philosophy in Literature (5) VLPA/I&S Study of philosophical ideas expressed in works of literature.

PHIL 350 Introduction to Epistemology (5) I&S C. MAYO-WILSON, W. TALBOTT Nature, definition, and possibility of knowledge.

PHIL 356 Introduction to Metaphysics (5) I&S Introductory examination of some of the main problems in metaphysics, such as the nature of truth and reality, the metaphysical status of properties, the existence of free will.

PHIL 360 Introductory Topics in Philosophy of Science (5, max. 10) I&S/NW L. HANKINSON NELSON, A. WOODY Study of one or more current topics in philosophy of science such as scientific realism, explanation, confirmation, causation. Prerequisite: one PHIL course; recommended: PHIL 120; PHIL 160.

PHIL 363 Introduction to the Philosophy of Mind (5) I&S C. LEE Various theories of the nature of mind, the relationship between mind and body, the self, introspection, and knowledge of other minds.

PHIL 373 Introduction to Philosophy of Mathematics (5) I&S Introduction to some of the main issues in philosophy of mathematics: to what degree are mathematical theorems justified by rational insight, sensory experience, purely symbolic computations; what is the infinite, and how can one reason about infinite sets, spaces, and numbers without becoming entangled in contradictions.

PHIL 399 Foreign Study (2-5, max. 10) Upper-division philosophy studies with no direct UW equivalents, taken through UW foreign study programs.

PHIL 401 Advanced Topics in Philosophy (3-5, max. 10) I&S A study of philosophical topics at the advanced level. Topics vary.

PHIL 406 Philosophical Topics in Feminism (5) I&S, DIV S. GOERING, L. HANKINSON NELSON, A. WOODY Detailed examination of questions raised by recent feminist scholarship in particular areas of philosophy, such as political theory, ethics, epistemology, or philosophy of science. Emphasis varies.

PHIL 407 International Justice (5) M. BLAKE, S. GARDINER Examines issues through investigation of the moral foundations of international politics. Issues include: What moral duties constrain the relationships between states? Is international poverty a matter of moral concern? Are we justified in preferring the interest of our fellow nations? Prerequisite: one course in philosophy.

PHIL 408 Philosophy of Diversity (5) I&S, DIV M. BLAKE Must a liberal political community respect all claims made on behalf of minority cultural groups? Are there moral limits to the forms of diversity compatible with just governance? Examines modern philosophical writings on these topics. Prerequisite: One philosophy course.

PHIL 409 Philosophy of Disability (3) I&S, DIV S. GOERING Rethinks the non-disabled assumption at the heart of much of western moral and political philosophy. Explores concepts of autonomy, opportunity, personhood, and dependence in regard to disability. Issues may include prenatal testing and reproduction, special education, requirements of accommodation, and social and legal interpretations of disability. Prerequisite: one philosophy course or LSJ 332/CHID 332, LSJ 433/CHID 433, or LSJ 434/CHID 434.

PHIL 410 Social Philosophy (5) I&S W. TALBOTT An examination of topics pertaining to social structures and institutions such as liberty, distributive justice, and human rights.

PHIL 411 Justice in Health Care (5) VLPA/I&S N. JECKER Examination of the ethical problem of allocating scarce medical resources. Emphasizes the fundamental principles of justice that support alternative health policies. Recommended: prior courses in philosophy or ethics. Offered: jointly with B H 474.

PHIL 412 Ethical Theory (5) I&S N. JECKER Studies the major normative ethical theories, including both teleological and deontological approaches. Emphasizes moral philosophy during the eighteenth and nineteenth centuries, as well as contemporary commentary. Recommended: one basic course in ethics. Offered: jointly with B H 402.

PHIL 413 Metaethical Theory (5) I&S N. JECKER Studies the major metaethical theories, including both cognitivist and noncognitivist approaches. Emphasizes moral philosophy during the twentieth century, as well as contemporary commentary. Recommended: one introductory philosophy course. Offered: jointly with B H 404.

PHIL 414 Philosophy of Law (5) I&S R. MOORE Nature and function of law. Relation of law to morality. Legal rights, judicial reasoning.

PHIL 415 Advanced Topics in Animal Welfare (5) I&S L. NICHOLS Critical examination of issues in the philosophy of animal welfare and animal rights. Prerequisite: one philosophy course.

PHIL 416 Ethics and Climate Change (5) I&S S. GARDINER, L. NICHOLS Critical examination of the ethical issues surrounding climate change. Prerequisite: either one philosophy or one environmental studies course. Offered: jointly with ENVIR 416.

PHIL 417 Advanced Topics in Environmental Philosophy (5) I&S S. GARDINER Critical examination of issues in environmental philosophy. Topics vary. Prerequisite: one philosophy course. Offered: jointly with ENVIR 417.

PHIL 418 Jewish Philosophy (5) I&S M. ROSENTHAL Introduces the central concepts and themes of Jewish philosophy. Focuses either on debates within a particular historical period - e.g., medieval or modern; or on a topic - e.g.,

reactions to the Enlightenment or to the Holocaust. Prerequisite: at least one previous course in philosophy. Offered: jointly with JSIS C 418.

PHIL 422 Studies in Continental Rationalism (5, max. 15) I&S C. MARSHALL, M. ROSENTHAL Study of one or more of the major continental rationalists: Descartes, Spinoza, Leibniz.

PHIL 426 Twentieth-Century Philosophy (5) I&S C. WELLER A study of development of contemporary analytic philosophy, the revolt against idealism, and the linguistic turn in philosophy.

PHIL 430 Hellenistic Philosophy (3) I&S J. ROBERTS Survey of the Epicurean, Stoic, and Skeptic philosophy of the Hellenistic period. Emphasis may vary.

PHIL 431 Philosophy of Plato (3, max. 6) I&S J. ROBERTS, C. WELLER Study of selected middle and late dialogues.

PHIL 433 Philosophy of Aristotle (3, max. 6) I&S J. ROBERTS, C. WELLER Study of several major Aristotelian treatises.

PHIL 436 British Empiricism (3) I&S C. WELLER Examination of the metaphysical and epistemological views of Locke and Berkeley, with perhaps some attention also to Hume. Prerequisite: either PHIL 322 or PHIL 350.

PHIL 437 Philosophy of Hume (3) I&S W. TALBOTT, C. WELLER Hume's analyses of knowledge, the passions, and morals.

PHIL 438 Philosophy of Kant (5) I&S C. MARSHALL, C. WELLER Systematic study of *The Critique of Pure Reason*.

PHIL 440 Ethics (5) I&S J. ROBERTS, W. TALBOTT Critical examination of the concepts and judgments of value, including an analytical treatment of the notions of good and bad, right and wrong, and obligation. Emphasis varies from quarter to quarter.

PHIL 445 Philosophy of Art (5) VLPA/I&S R. MOORE Critical examination of various accounts of the nature of art, artistic activity, the aesthetic experience. Problems in interpretation and evaluation of works of art.

PHIL 446 Development of Aesthetic Theory (5) VLPA/I&S R. MOORE Historical development of aesthetics, emphasizing such major figures as Plato, Aristotle, Hume, Kant, Hegel, and Goodman.

PHIL 450 Epistemology (5) I&S C. MAYO-WILSON, W. TALBOTT Systematic study of some of the main problems of the theory of knowledge, such as: the definition of "knowledge"; a priori knowledge; perception and knowledge of the external world; and whether knowledge has or requires a foundation. Emphasis varies from quarter to quarter.

PHIL 453 Philosophy of Language (5) VLPA/I&S Current theories of meaning, reference, predication, and related concepts. Offered: jointly with LING 476.

PHIL 459 Philosophy of Medicine (5) I&S N. JECKER Familiarizes students with central issues in the philosophy of medicine. Focuses on the nature of medical knowledge, the connection between theory and observation, the meaning of medical concepts, and the relationship between theories and the world. Recommended: prior courses in philosophy, history of science, or history of medicine. Offered: jointly with B H 440.

PHIL 460 Philosophy of Science (5) I&S/NW L. HANKINSON NELSON, A. WOODY Critical study of the nature of scientific knowledge. Topics include the relation of theory to observation, the use of mathematics, how theories change, the requirements for the meaningfulness of a theory, and nature of confirmation.. Prerequisite: one PHIL course; recommended: PHIL 120 or PHIL 160.

PHIL 461 Philosophical Anthropology (5) I&S Investigation of the question, "What is human reality?" Philosophical significance of this question and its relation to the human sciences. Typical answers. Implications of those answers for culture, religion, morals, and politics.

PHIL 463 Philosophy of Mind (5) I&S C. LEE Examination of current theories of the nature of the mind and mental processes.

PHIL 464 Philosophical Issues in the Cognitive Sciences (5) I&S/NW C. LEE Philosophical problems connected with research in psychology, artificial intelligence, and other cognitive sciences. Topics vary. Readings from both philosophical and scientific literature. Accessible to nonphilosophers with suitable interests and backgrounds.

PHIL 465 Philosophy of History (3) I&S M. WYLIE Analyses of basic concepts employed in historical interpretation, and study of some of the principal philosophers of history, such as Plato, Saint Augustine, Hegel, Marx, Spengler, Toynbee.

PHIL 466 Philosophy of the Social Sciences (5) I&S L. HANKINSON NELSON, W. TALBOTT, M. WYLIE Examination of fundamental issues in the foundations, methodology, and interpretation of the social sciences. Topics include value orientation and objectivity, methodological individualism, functionalism, reductionism, and the status of idealized models, including models involving idealized conceptions of individual rationality. Emphasis varies from quarter to quarter.

PHIL 467 Philosophy of Religion (5) I&S M. ROSENTHAL Study of selected topics and problems in the philosophy of religion, such as: arguments for the existence of God; the problem of evil; atheism; faith; religious experience and revelation; the attributes of God; miracles; immortality; and the relation between religion and morality. Readings from historical and contemporary authors.

PHIL 470 Intermediate Logic (5) I&S/NW, QSR An introduction to the concepts and methods of metatheory and their application to the sentential calculus.

PHIL 471 Advanced Logic (5) I&S/NW Study of the first-order predicate calculus with identity and function symbols. Consistency, soundness, completeness, compactness. Skolem-Lowenheim theorem. Formalized theories. Prerequisite: PHIL 470.

PHIL 472 Axiomatic Set Theory (5) I&S/NW Development of axiomatic set theory up to and including the consistency of the Axiom of Choice and Continuum Hypothesis with the Zermelo-Fraenkel Axioms.

PHIL 473 Philosophy of Mathematics (5) I&S/NW Study of the traditional accounts of the nature of mathematical entities and mathematical truth given by logicism, intuitionism, and formalism, and the impact of Godel's incompleteness theorems on these accounts.

PHIL 474 Modal Logic (5) I&S/NW Notions of necessity and possibility, using the classical systems T, S4, and S5, and the syntax and the semantics (Kripke models) of these systems.

PHIL 479 Semantics II (3) VLPA/I&S/NW T. OGIHARA Formal characterization of linguistic meaning. Emphasis on nature and purpose of formal semantics and on its relation to formal syntax. Prerequisite: LING 442. Offered: jointly with LING 479.

PHIL 481 Philosophy of Biology (5) I&S/NW L. HANKINSON NELSON Study of several current topics in philosophy of biology, which may include the logical structure of evolutionary theory, fitness, taxonomy, the concept of a living thing, reductionism, the concept of a biological species, evolutionary explanations, and philosophical consequences of sociology. Prerequisite: one PHIL course; recommended: college-level course in biological science.

PHIL 482 Philosophy of Physical Science (5, max. 10) I&S/NW A. WOODY Study of philosophical issues raised by theories in physics or chemistry, such as whether space (time) is a substance, how causation and locality are treated in quantum mechanics, temporal anisotropy and time travel, the nature of a field of force, the reduction of chemistry to physics. Prerequisite: one PHIL course.

PHIL 483 Induction and Probability (5) NW/I&S Introduction to current accounts of evidence and observation,

the confirmation of scientific theories, the logic of inductive reasoning, and the metaphysics and epistemology of chance. High school-level math used. Specific topics vary from year to year. Prerequisite: PHIL 120.

PHIL 484 Reading in Philosophy (1-5, max. 15) Individual study of selected philosophical works.

PHIL 490 Advanced Topics in Epistemology (5, max. 15) I&S W. TALBOTT Intensive study of a particular topic or area in epistemology. Prerequisite: either PHIL 350 or PHIL 450.

PHIL 495 Philosophy for Children Practicum (3) I&S S. GOERING, J. LONE Explores methods for introducing philosophy to K-12 students, focusing on ways to establish “communities of philosophical inquiry.” Students learn how to inspire philosophical discussions with pre-college students, and work in pairs with the instructor to lead philosophy sessions in the seminar and in local schools. Credit/no-credit only. Offered: A.

PHIL 498 Undergraduate Internship (1-5, max. 10) Independent fieldwork under the supervision of a faculty member. Individual experiences vary but could include an off-campus practicum or being trained as study group leader or tutor. Credit/no-credit only. Offered: AWSp.

PHIL 500 Proseminar in Philosophy (5) Introduces incoming graduate students to topics representative of the field and the faculty’s interest. Each class session is devoted to a separate topic taught by a different member of the faculty. In addition to reading and short written assignments, students prepare a term paper on a topic presented. Offered: A.

PHIL 505 Seminar in Teaching Philosophy (1, max. 10) First quarter: seminar on topics of importance to a graduate student teaching two quiz sections of a large lecture course. Second quarter: focus on helping student prepare to teach own course. Prerequisite: graduate standing in philosophy. Credit/no-credit only. Offered: AW.

PHIL 510 Seminar in Social Philosophy (5, max. 20) W. TALBOTT

PHIL 514 Seminar in Legal Philosophy (5, max. 20) R. MOORE

PHIL 520 Seminar in Ancient Philosophy (5, max. 20) J. ROBERTS, C. WELLER

PHIL 522 Seminar in Modern Philosophy (5, max. 20) C. MARSHALL, M. ROSENTHAL, C. WELLER

PHIL 526 Seminar in Recent Philosophy (5, max. 20) C. WELLER

PHIL 538 Philosophy of Human Rights (5, max. 20) W. TALBOTT

PHIL 540 Seminar in Ethics (5, max. 20) S. GOERING, J. ROBERTS, W. TALBOTT

PHIL 545 Seminar in the Philosophy of Art (5, max. 20) R. MOORE

PHIL 550 Seminar in Epistemology (5, max. 20) C. MAYO-WILSON, W. TALBOTT

PHIL 556 Seminar in Metaphysics (5, max. 20)

PHIL 560 Seminar in the Philosophy of Science (5, max. 20) L. HANKINSON NELSON, A. WOODY

PHIL 563 Seminar in the Philosophy of Mind (5, max. 20) C. LEE

PHIL 564 Seminar in Philosophy of the Cognitive Sciences (5) Examines philosophical questions raised in and by cognitive sciences, including the nature of explanation, the role of models in explanation, and debates about reductionism versus pluralism in the face of diverse research paradigms.

PHIL 565 Seminar in the Philosophy of History (5, max. 20)

PHIL 566 Seminar in Philosophy of the Social Sciences (5, max. 20) C. LEE, M. WYLIE

PHIL 570 Seminar in Logic (5, max. 20) Prerequisite: PHIL 470.

PHIL 574 Meta-archaeology: Philosophy and Archaeology (4) M. WYLIE Examines philosophical issues raised in and by archaeology, including theories of explanation and model building, analyses of evidential reasoning and hermeneutic interpretation, debates about ideals of objectivity and about science and values. Recommended: ARCHY 570. Offered: jointly with ARCHY 574.

PHIL 584 Reading in Philosophy (1-5, max. 12) Intensive reading in philosophical literature. Prerequisite: permission of Graduate Program Coordinator.

PHIL 587 Contemporary Analytic Philosophy (5, max. 20)

PHIL 595 Philosophy for Children Practicum (3) S. GOERING, J. LONE Explores methods for introducing philosophy to K-12 students, focusing on ways to establish “communities of philosophical inquiry.” Students learn how to inspire philosophical discussions with pre-college students, and work in pairs with the instructor to lead philosophy sessions in the seminar and in local schools. Credit/no-credit only. Offered: A.

PHIL 600 Independent Study or Research (*) Prerequisite: permission of Graduate Program Coordinator.

PHIL 800 Doctoral Dissertation (*)

Values in Society

VALUES 207 Issues of Global Justice (5) I&S M. BLAKE, J. MAYERFELD, W. TALBOTT Introduces issues of global justice. Topics include: global poverty and aid, immigration, transnational governance, gender in global relations, climate change, and cultural relativism. Offered: jointly with PHIL 207/POL S 207.

VALUES 291 Ethical Issues in the Non-Medical Sciences (3) I&S Provides an introduction to ethics and research ethics issues in the non-medical sciences. Possible topics include: publication and peer review, intellectual property, and the social responsibilities of scientists.

VALUES 495 Ethics in Practice (2) M. BLAKE, S. GARDINER, S. GOERING Culmination of the values-in-society minor. Synthesizes training in ethics with primary discipline. Includes a project of positive social engagement (service learning or research project with fieldwork). Limited to undergraduates completing the minor in values and society. Credit/no-credit only.

VALUES 511 Ethics Matters: An Exploration of Some Moral Qualities (5) S. GOERING Asks what we fundamentally require of ourselves and others if we are to live together in morally acceptable ways by discussing moral qualities as they appear in various arenas. Topics include: autonomy, respect, integrity, and trust.

VALUES 512 Justice Matters: An Exploration of Justice as a Social Ideal (5) S. GARDINER Asks what makes social policies and institutions morally acceptable, primarily through a discussion about justice and injustice. Topics include: relativism, the sources of competing conceptions of justice and equality, cost-benefit analysis, distributive justice, and beneficence.

VALUES 513 Capstone Workshop (2) M. BLAKE, S. GARDINER, S. GOERING Collaborative research workshop. Capstone course for the values-in-society graduate certificate program. Prerequisite: VALUES 511 and VALUES 512. Offered: Sp.

VALUES 591 Ethics Matters in Science: Research Questions as Moral Questions (3) Aims to introduce graduate and professional students from a wide range of primarily non-medical scientific backgrounds to some common moral questions that arise in the course of doing scientific research, and to provide a basic philosophical framework for thinking about related issues that arise within their own disciplines or fields.

Physics

C121 Physics-Astronomy Building

Physics is the study of the fundamental structure of matter and the interaction of its constituents, with the goal of providing a quantitative description of nature based on a limited number of physical principles.

UNDERGRADUATE PROGRAM

Adviser

C139A Physics-Astronomy, Box 351560

(206) 543-2772

The Department of Physics offers the following programs of study:

- The Bachelor of Science degree with a major in physics
- A minor in physics

Bachelor of Science

Suggested First- and Second-Year College Courses: MATH 124, MATH 125, MATH 126; PHYS 121, PHYS 122, PHYS 123, PHYS 224, PHYS 225, PHYS 227. (Note: MATH 134, MATH 135, and MATH 136 can be used in place of MATH 124, MATH 125, MATH 126, and MATH 308.)

These physics and mathematics courses are required prerequisites for junior-level work in physics, not only at the UW, but also at most colleges and universities in the United States. Students who do not complete them during the first two years in college either need to take more than four years to earn a degree or be limited to a minimal course of study for graduation in four years.

Admission Requirements

Students in good academic standing may declare the major at any time by visiting the department advising office to complete the necessary paperwork.

Major Requirements

Minimum 89-106 credits, including the following:

1. *Physics Core Courses (40 credits):* PHYS 121, PHYS 122, PHYS 123, PHYS 224, PHYS 225, PHYS 226, PHYS 227, PHYS 294, PHYS 321, PHYS 322, PHYS 334
2. *Mathematics Core Courses (18-19 credits from one of the following options):*
 - a. MATH 124, MATH 125, MATH 126, and one course from MATH 307/AMATH 351, MATH 308/AMATH 352, MATH 309/AMATH 353, MATH 324, MATH 326, or AMATH 401
 - b. MATH 134, MATH 135, MATH 136 and one course from MATH 309/AMATH 353, MATH 324, MATH 326, or AMATH 401
3. One of the four options shown below (31-48 credits): any course used to satisfy departmental degree requirements can only be used once in any option listed below.
 - a. *Comprehensive Physics Option (35-40 credits):*
 - i. 17 credits from PHYS 228; PHYS 324; minimum three courses from PHYS 323, PHYS 325, PHYS 328, PHYS 329, ASTR 321, or ASTR 322
 - ii. One additional math course from the core list (3-4 credits): MATH 307/AMATH 351, MATH 308/AMATH 352, MATH 309/AMATH 353, MATH 324, MATH 326, or AMATH 401
 - iii. *Advanced Laboratory (6-8 credits):* Two courses from PHYS 331, PHYS 335, PHYS 431, PHYS 432, PHYS 433, PHYS 434, and either ASTR 480 or ASTR 481

- iv. *Upper-Division Lecture Electives* (6 credits): See adviser for approved list of electives.
 - v. *Undergraduate Research*: 3 credits from any combination of PHYS 485, PHYS 486, PHYS 487, PHYS 494, PHYS 495, PHYS 496, PHYS 499, ASTR 481 or ASTR 499. (ASTR 481 may count as lab or research).
- b. *Applied Physics Option* (31-35 credits):
- i. PHYS 231 and AMATH 301 (7 credits)
 - ii. Two additional mathematical courses (6-8 credits) from PHYS 228, MATH 307/AMATH 351, MATH 308/AMATH 352, MATH 309/AMATH 353, MATH 324, MATH 326, or AMATH 401
 - iii. *Advanced Laboratory* (6-8 credits): Two courses from PHYS 331, PHYS 335, PHYS 431, PHYS 432, PHYS 433, PHYS 434, and either ASTR 480 or ASTR 481
 - iv. *Electives* (9 credits): See adviser for approved list of electives.
 - v. *Undergraduate Research*: 3 credits from any combination of PHYS 485, PHYS 486, PHYS 487, PHYS 494, PHYS 495, PHYS 496, PHYS 499, ASTR 481 or ASTR 499. (ASTR 481 may count as lab or research).
- c. *Biophysics Option* (48-52 credits):
- i. PHYS 228, PHYS 324, PHYS 328, PHYS 429 (14 credits)
 - ii. *Chemistry* (15 credits): CHEM 142, CHEM 144, or CHEM 145; CHEM 152, CHEM 154, or CHEM 155; and CHEM 162, CHEM 164, or CHEM 165
 - iii. *Biology* (10 credits): BIOL 180 and BIOL 200
 - iv. *Additional Chemistry and Biology* (6-10 credits): Two courses from CHEM 223 or CHEM 237, CHEM 224 or CHEM 238, CHEM 428, CHEM 452 or CHEM 456, CHEM 453 or CHEM 457, BIOL 220, BIOL 340, BIOL 350, BIOL 355, BIOL 401, BIOL 427, BIOL 467, BIOC 405, or BIOC 440
 - v. *Undergraduate Research*: 3 credits from any combination of PHYS 499, BIOC 499, BIOL 499, CHEM 499, GENOME 499, MICROM 499, N BIO 499, P BIO 499, or BIOEN 499
- d. *Teacher Preparation Option* (35-39 credits):
- i. 11-12 credits from PHYS 228; PHYS 324; one course from PHYS 323, PHYS 328, PHYS 329
 - ii. *Physics by Inquiry* (15 credits): PHYS 407, PHYS 408, and PHYS 409
 - iii. One additional mathematics course from the core list (3-4 credits): MATH 307/AMATH 351, MATH 308/AMATH 352, MATH 309/AMATH 353, MATH 324, MATH 326, or AMATH 401
 - iv. *Advanced Laboratory* (3-5 credits): One course from PHYS 331, PHYS 335, PHYS 431, PHYS 432, PHYS 433, PHYS 434, and either ASTR 480 or ASTR 481
 - v. *Teaching Practicum* (3 credits): PHYS 499, working on a project that involves teaching

1. *Core Courses*: PHYS 121, PHYS 122, PHYS 123, PHYS 224, and PHYS 225
2. One of the following options:
 - a. *Physics Education*: PHYS 407, PHYS 408, PHYS 409 (total 36 physics credits)
 - b. *Experimental Physics*: PHYS 231, PHYS 334, and one course from PHYS 331, PHYS 335, PHYS 431, PHYS 432, PHYS 433, or PHYS 434 (total 30 physics credits)
 - c. *Mathematical Physics*: PHYS 227, PHYS 228 (MATH 308 required), and one course from PHYS 321 or PHYS 324 (MATH 324 required) (total 30 physics credits)
3. Minimum grade of 2.0 required for each physics course counted toward the minor.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: The program is one of the largest in the nation, with approximately 80-100 majors graduating every year. Graduates may join the work force in a variety of technical occupations where analytical, computational, and problem-solving skills are highly valued, both in government and the private sector. They may also continue with further studies in physics or in other fields (such as astronomy, medicine, law, business, biology, or engineering).
- *Instructional and Research Facilities*: The Physics and Astronomy Departments share a modern building which contains excellent instructional and research facilities. Undergraduate students are strongly encouraged to participate in ongoing research in the department.
- *Honors Options Available*: With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning*: Most undergraduate physics majors participate in a research experience, either on campus or off. Research internships in physics and related departments are available for both pay and course credit. Many students participate in national programs, typically the summer after their junior year. The department also maintains an exchange program with Universitat Justus-Leibig in Gießen, Germany.
- *Department Scholarships*: Select scholarships available every spring upon nomination by an instructor.
- *Student Organizations/Associations*: Society of Physics Students, www.uwsp.org; Career Development Organization for Physicists and Astronomers, students.washington.edu/cdophys/CAREER/
- *Of Special Note*: One year of high school physics is strongly recommended before taking PHYS 121.

GRADUATE PROGRAM

Graduate Program Coordinator
C139 B Physics-Astronomy, Box 351560
(206) 543-2488

The Department of Physics offers studies leading to the degrees of Master of Science and Doctor of Philosophy. The department has a permanent faculty of 46 members, about 14 research faculty, and about 56 adjunct, affiliate, and emeritus faculty. An average of twenty PhD and thirty MS degrees in physics have been awarded annually in recent years.

Research Facilities

The department is well equipped, both in staff and facilities, for instruction and research in a discipline that emphasizes fundamental problems in the understanding of the physical universe. Areas of research available to the PhD student within the department include atomic physics, astrophysics, condensed-matter physics, elementary-particle physics, nuclear physics, and physics education. In addition, students may do research in physics with adjunct faculty members whose primary appointment is in another department such as Aeronautics and Astronautics, Astronomy, Biochemistry, Bioengineering, Chemistry, Earth and Space Sciences, Materials Science and Engineering, or Physiology and Biophysics.

Experimental work in atomic physics is concentrated on the measurement of fundamental physical properties through laser, ion trap, and radiofrequency techniques. The emphasis on fundamental measurements is continued in experiments on the gravitational force, carried out by faculty and students in atomic physics, nuclear physics, and astrophysics. Condensed-matter experiment includes research on surfaces, interfaces, nanotubes, lower-dimensional and bulk matter, with materials as diverse as high-temperature superconductors and low-temperature hydrogen monolayers. Facilities used range from synchrotron radiation and neutron sources in the United States and abroad to on-campus laboratories with low-temperature, high-pressure, scanning-probe microscopy, x-ray and light scattering, and surface-physics equipment.

Members of the high-energy and particle astrophysics experimental groups are heavily engaged in experiments at the European Center for Nuclear Research in Geneva, Kamiokande, KEK in Japan, and Fermilab in Illinois. Faculty and students of the nuclear physics group are involved in a broad spectrum of research including studies of neutrino properties, relativistic heavy ions, fundamental symmetries and nuclear astrophysics. Researchers use the on-campus accelerators of the Center for Experimental Physics and Astrophysics (CENPA), as well as major facilities in the United States, Canada, and Europe.

Theorists in the department are concerned with problems in the theories of elementary particles and quantum fields, string theory, nuclear and high-energy reactions from the very lowest to the very highest energies, phase transitions and statistical mechanics, condensed-matter physics from localization in disordered systems to electron transport in mesoscopic systems, atomic physics, general relativity, and astrophysics. The Institute for Nuclear Theory, a national facility closely associated with the department, offers a unique opportunity for students to pursue research with distinguished permanent and visiting staff. Students in physics have the opportunity to obtain a physics degree in a number of interdisciplinary and applied physics areas through research with faculty members in other departments.

Department facilities are housed in the Physics-Astronomy Building and the Center for Experimental Physics and Astrophysics (CENPA).

Master of Science (Applications of Physics)

Admission Requirements

This option is designed for students who are currently employed and whose background is in physical science, engineering, mathematics, or computer science. Admission is based on course grades in physics and related fields, adequacy of preparation in physics, and interest in areas of instruction offered in the physics department. Entering students are expected to have an undergraduate background equivalent to a BS degree in physical science, engineering, mathematics, or computer science. This program is part time, with classes offered evenings.

Continuation Policy

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

Minor

Minor Requirements: 30-36 physics credits (in addition to 15 credits of MATH 124, MATH 125, and MATH 126) as follows:

Degree Requirements

As part of the standard Graduate School requirements, students are expected to complete the sequence of core courses PHYS 441, PHYS 541, and PHYS 543, and to select appropriate elective courses. In addition, students must complete an independent-study project in consultation with a faculty member. This project may be carried out at the University or at the student's place of employment. A written report as well as an oral presentation of the project are required. Students must take at least 3 credits of PHYS 600 while completing the project, and must complete a total of 36 credits of work at the 400 level or above, with at least 18 of those credits at the 500 level or above. Of the 36 credits, at least 18 credits must be from numerically graded courses. No thesis is required.

Master of Science, Doctor of Philosophy

Admission Requirements

Undergraduate preparation should include upper-division courses in mechanics; electricity and magnetism; statistical physics and thermodynamics; modern physics, including an introduction to quantum mechanics; and advanced laboratory work. Preparation in mathematics should include vector analysis, complex variables, ordinary differential equations, Fourier analysis, boundary-value problems, and special functions. Admission is determined by the applicant's undergraduate program, undergraduate grades, Graduate Record Examination aptitude and advanced physics scores, letters of recommendation, and a statement of educational and professional objectives.

Master of Science

Degree Requirements

Students must take at least 3 credits of PHYS 600 while completing the project, and must complete a total of 36 credits of work at the 400 level or above, with at least 18 of those credits at the 500 level or above. Of the 36 credits, at least 18 credits must be from numerically graded courses. A qualifying examination is required. No thesis is required.

Doctor of Philosophy

Degree Requirements

The student is expected to obtain here, or elsewhere with a master's degree, a background in physics equivalent to that contained in the following basic graduate courses: PHYS 505, PHYS 506, PHYS 511, PHYS 513, PHYS 514, PHYS 515, PHYS 517, PHYS 518, PHYS 519, PHYS 520, and PHYS 524; specialized courses appropriate to each student's interests; and two advanced elective courses outside the student's area of research. The student is required to pass, successively, a written qualifying examination (typically at the beginning of the second year), an oral general examination for admission to candidacy, and an oral final examination. In order to take the general examination, the student must have been accepted by a graduate faculty member as a research student and have completed the graduate studies outlined above. This examination concentrates on the area in which the dissertation research is planned. Teaching experience is required of all candidates. Courses in teaching techniques in physics, PHYS 501 through PHYS 503, are required of students holding teaching assistantships.

Financial Aid

Most graduate students are supported by fellowships and assistantships. Applications for the PhD program are automatically considered for these fellowships and assistantships.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/.

PHYS 101 Physical Science by Inquiry I (5-) NW, QSR

PHYS 104 Facilitated Group Inquiry I (2) NW Laboratory-based development of concepts and reasoning skills. Develops problem-solving techniques and scientific method in a large group setting. Co-requisite: PHYS 114. Offered: A.

PHYS 105 Facilitated Group Inquiry II (2) NW Laboratory-based development of concepts and reasoning skills. Develops problem-solving techniques and scientific method in a large group setting. Co-requisite: PHYS 115. Offered: W.

PHYS 106 Facilitated Group Inquiry III (2) NW Laboratory-based development of concepts and reasoning skills. Develops problem-solving techniques and scientific method in a large group setting. Co-requisite: PHYS 116. Offered: Sp.

PHYS 107 Physics Concepts for Non-Scientists (5) NW Wilkes Overview of physical science, from subatomic particles to cosmology. Intended to help students understand the importance of scientific research in society with emphasis on basic ideas about how the universe operates. Readings from popular books by leading scientists for non-science majors. For students without high school physics or with limited mathematics background. Offered: W.

PHYS 110 Liberal Arts Physics (5) NW, QSR Basic concepts of physics presented with emphasis on their origin and their impact on society and the Western intellectual tradition. Primarily for students in the arts, humanities, and social sciences. Offered: WSp.

PHYS 114 General Physics (4) NW, QSR Basic principles of physics presented without use of calculus. Suitable for students majoring in technically oriented fields other than engineering or the physical sciences. Mechanics. Credit is not given for both PHYS 114 and PHYS 121. Recommended: working knowledge of algebra and trigonometry; one year high school physics; concurrent registration in PHYS 117. Offered: AWSpS.

PHYS 115 General Physics (4) NW Basic principles of physics presented without use of calculus. Suitable for students majoring in technically oriented fields other than engineering or the physical sciences. Heat and electromagnetism. Credit is not given for both PHYS 115 and PHYS 122. Prerequisite: PHYS 114 or PHYS 121; recommended: concurrent registration in PHYS 118. Offered: AWSpS.

PHYS 116 General Physics (4) NW Basic principles of physics presented without use of calculus. Suitable for students majoring in technically oriented fields other than engineering or the physical sciences. Sound, light, and modern physics. Credit is not given for both PHYS 116 and PHYS 123. Prerequisite: PHYS 115 or PHYS 122; recommended: concurrent registration in PHYS 119. Offered: AWSpS.

PHYS 117 General Physics Laboratory (1) NW Mechanics laboratory. Credit is not given for both PHYS 117 and the PHYS 121 laboratory. Prerequisite: PHYS 114 which may be taken concurrently. Credit/no-credit only. Offered: AWSpS.

PHYS 118 General Physics Laboratory (1) NW Heat and electromagnetism laboratory. Credit is not given for both PHYS 118 and the PHYS 122 laboratory. Prerequisite: PHYS 115 which may be taken concurrently. Credit/no-credit only. Offered: AWSpS.

PHYS 119 General Physics Laboratory (1) NW Sound, light, and modern physics laboratory. Credit is not given for both PHYS 119 and the PHYS 123 laboratory. Prerequisite: PHYS 116 which may be taken concurrently. Credit/no-credit only. Offered: AWSpS.

PHYS 121 Mechanics (5) NW, QSR Basic principles of mechanics and experiments in mechanics for physical science and engineering majors. Lecture tutorial and lab components must all be taken to receive credit. Credit is not given for both PHYS 114 and PHYS 121. Prerequisite: either MATH 124 or MATH 134, which may be taken concurrently; recommended: one year high school physics. Offered: AWSpS.

PHYS 122 Electromagnetism (5) NW Covers the basic principles of electromagnetism and experiments in these topics for physical science and engineering majors. Lecture tutorial and lab components must all be taken to receive credit. Credit is not given for both PHYS 115 and PHYS 122. Prerequisite: either MATH 125 or MATH 134, which may be taken concurrently; PHYS 121. Offered: AWSpS.

PHYS 123 Waves (5) NW Explores electromagnetic waves, the mechanics of oscillatory motion, optics, waves in matter, and experiments in these topics for physical science and engineering majors. Lecture tutorial and lab components must all be taken to receive credit. Credit is not given for both PHYS 116 and PHYS 123. Prerequisite: either MATH 126 or MATH 134, which may be taken concurrently; PHYS 122. Offered: AWSpS.

PHYS 207 The Physics of Music (3) NW The nature of sound; vibrations; traveling and standing waves; response of the ear to sound; production of musical sounds.

PHYS 210 Physics by Inquiry I (5) NW Selected topics in physics with emphasis on depth of understanding and development of skills essential to the scientific process. Develops perspective of science as a process of inquiry. Prerequisite: either PHYS 116 or PHYS 123. Offered: A.

PHYS 211 Physics by Inquiry I (5) NW Selected topics in physics with emphasis on depth of understanding and development of skills essential to the scientific process. Develops perspective of science as a process of inquiry. Prerequisite: PHYS 210. Offered: W.

PHYS 212 Physics by Inquiry I (5) NW Selected topics in physics with emphasis on depth of understanding and development of skills essential to the scientific process. Develops perspective of science as a process of inquiry. Prerequisite: PHYS 211. Offered: Sp.

PHYS 214 Light and Color (5) NW, QSR Compares past explanation of certain familiar natural phenomena with present understandings. Lamps and lighting, outdoor light, optical devices, color vision, perspective, paints, and pigments. Quantitative comparison critical to the course, but college-level mathematics background not required. Intended for non-science students.

PHYS 216 Science and Society (5) I&S/NW Chaloupka Investigation of the relationship between science, technology, and society. Nuclear physics and molecular biology serve as concrete examples of fields with significant impact on society. Offered: jointly with JSIS B 216; Sp.

PHYS 217 Energy Future: The Technical and Social Barriers to Large-Scale Sustainable Energy (5) I&S/NW Seidler Surveys the scientific, technological, and social barriers to large-scale renewable energy implementation. Includes discussion of solar, wind, nuclear, and other sustainable modalities; energy efficiency; large-scale energy storage; the greenhouse effect; and numerous domestic and international case studies of sustainable energy efforts. Offered: A.

PHYS 224 Thermal Physics (3) NW Introduces heat, thermodynamics, elementary kinetic theory, and statistical physics. Prerequisite: either MATH 126 or MATH 136, which may be taken concurrently; PHYS 122, which may be taken concurrently. Offered: ASpS.

PHYS 225 Introduction to Quantum Mechanics (3) NW Emphasizes two-state systems. Introduces spin and applications in nuclear magnetic resonance. Prerequisite: minimum 2.0 grade in PHYS 121, PHYS 122, and PHYS 123; PHYS 227. Offered: WS.

PHYS 226 Particles and Symmetries (3) NW Introduction to the fundamental constituents of matter and the symmetries which characterize their interactions. Topics include special relativity; strong, weak, and electromagnetic interactions; quarks and leptons; baryons and mesons; and neutrinos and nuclei. Prerequisite: PHYS 225; recommended: PHYS 228. Offered: ASp.

PHYS 227 Elementary Mathematical Physics (4) NW Applications of mathematics in physics with emphasis on the mechanics of particles and continuous systems. Develops and applies computational methods, both analytic and numerical. Prerequisite: either MATH 134, MATH 135, and MATH 136, or one of MATH 307, MATH 308, MATH 309, MATH 324, AMATH 401, AMATH 351, AMATH 352, any of which may be taken concurrently; minimum 2.0 grade in PHYS 121, PHYS 122, and PHYS 123. Offered: ASp.

PHYS 228 Elementary Mathematical Physics (4) NW Applications of mathematics in physics with emphasis on the mechanics of particles and continuous systems. Develops and applies computational methods, both analytic and numerical. Prerequisite: minimum 2.0 grade in PHYS 227. Offered: WS.

PHYS 231 Introductory Experimental Physics (3) NW Introduction to data acquisition and analysis using experiments which measure fundamental constants or properties of nature (Planck's constant, Boltzmann's constant, speed of light, charge of electron). Prerequisite: minimum 2.0 grade in PHYS 123. Offered: A.

PHYS 232 Introduction to Computational Physics (3) NW Computational techniques applied to physics and data analysis in laboratory setting. Emphasis on numerical solutions of differential equations, least square data fitting, Monte Carlo methods, and Fourier Analysis. A high-level language taught and used; no previous computing experience required. Prerequisite: PHYS 227.

PHYS 248 Introductory Selected Topics (1-5, max. 15) NW

PHYS 294 Introduction to Research: Frontiers of Physics (1) NW Provides a survey of contemporary research in experimental and theoretical physics, with an emphasis on subfields seeing revolutionary changes in understanding. Recommended: PHYS 123. Offered: W.

PHYS 321 Electromagnetism (4) NW First of a three-quarter sequence. Charges at rest and in motion; dielectric and magnetic media; electromagnetic waves; relativity and electromagnetism; physical optics. Prerequisite: minimum grade of 2.0 in PHYS 227; two of PHYS 228, MATH 307 or AMATH 351, MATH 308 or AMATH 352, MATH 309 or AMATH 353, MATH 324, MATH 326, or AMATH 401; recommended: either PHYS 228 or MATH 324. Offered: ASp.

PHYS 322 Electromagnetism (4) NW Continuation of PHYS 321. Charges at rest and in motion; dielectric and magnetic media; electromagnetic waves; relativity and electromagnetism; physical optics. Prerequisite: PHYS 321. Offered: WS.

PHYS 323 Electromagnetism (4) NW Continuation of PHYS 322. Charges at rest and in motion; dielectric and magnetic media; electromagnetic waves; relativity and electromagnetism; physical optics. Prerequisite: PHYS 322. Offered: Sp.

PHYS 324 Quantum Mechanics (4) NW First part of a two-quarter sequence. Introduction to nonrelativistic quantum mechanics: need for quantum theory, Schrodinger equation, operators, angular momentum, the hydrogen atom, identical particles, and the periodic table. Prerequisite: minimum 2.0 grade in both PHYS 225 and PHYS 228; either MATH 307 or AMATH 351, MATH 308 or AMATH 353, MATH 309 or AMATH 353, MATH 324, MATH 326, or AMATH 401. Offered: AS.

PHYS 325 Quantum Mechanics (4) NW Continuation of PHYS 324. Introduction to nonrelativistic quantum mechanics: perturbation theory, the variational principle, radiation; application of quantum mechanics to atomic phys-

ics, magnetic resonance, scattering, and various special topics. Prerequisite: PHYS 324. Offered: W.

PHYS 328 Statistical Physics (3) NW Elements of statistical mechanics and their applications. Prerequisite: PHYS 224; PHYS 324, which may be taken concurrently. Offered: A.

PHYS 329 Mathematical Methods and Classical Mechanics (3) NW Mathematical methods applied to classical mechanics, including Lagrangian mechanics. Prerequisite: minimum grade of 2.0 in PHYS 228. Offered: Sp.

PHYS 331 Optics Laboratory (3) NW Measurements of interference and diffraction, optical properties of matter, image processing, interferometry, holography. Prerequisite: PHYS 228. Offered: A.

PHYS 334 Electric Circuits Laboratory (3) NW Basic elements of DC, AC, and transient circuits; electronic devices; electrical measurements. Prerequisite: either MATH 126 or MATH 136; minimum 2.0 grade in PHYS 123; recommended: PHYS 227. Offered: WS.

PHYS 335 Electric Circuits Laboratory (3) NW Electrical measurements, data management, digital electronics of microprocessor systems. Building a microprocessor application. Prerequisite: PHYS 334. Offered: Sp.

PHYS 401 Special Problems (*, max. 30) Supervised individual study. Offered: AWSpS.

PHYS 402 Special Problems (*, max. 30) Supervised individual study. Offered: AWSpS.

PHYS 403 Special Problems (*, max. 30) Supervised individual study. Offered: AWSpS.

PHYS 405 Physical Science by Inquiry II (5-) NW Emphasis on depth of understanding and development of reasoning and representational skills essential to the scientific process. Provides background for teaching physical science as a process of inquiry and develops scientific literacy. Offered: A.

PHYS 406 Physical Science by Inquiry II (-5) NW Emphasis on depth of understanding and development of reasoning and representational skills essential to the scientific process. Provides background for teaching physical science as a process of inquiry and develops scientific literacy. Offered: W.

PHYS 407 Physics by Inquiry II (5) NW Selected topics in physics, with emphasis on depth of understanding and development of skills essential to the scientific process. Background for teaching physics at secondary school and introductory college levels. Some mathematical proficiency required. Prerequisite: minimum grade of 2.0 in PHYS 123. Offered: A.

PHYS 408 Physics by Inquiry II (5) NW Selected topics in physics, with emphasis on depth of understanding and development of skills essential to the scientific process. Background for teaching physics at secondary school and introductory college levels. Some mathematical proficiency required. Prerequisite: PHYS 407. Offered: W.

PHYS 409 Physics by Inquiry II (5) NW Selected topics in physics, with emphasis on depth of understanding and development of skills essential to the scientific process. Background for teaching physics at secondary school and introductory college levels. Some mathematical proficiency required. Prerequisite: PHYS 408. Offered: Sp.

PHYS 410 Physics by Inquiry for In-Service Teachers (1-2, max. 30) NW A "hands-on" inquiry-oriented approach designed to train in-service teachers in the use of the physical science content for any of several science programs selected by a school or school district. Credit/no-credit only.

PHYS 411 Physics by Inquiry for Lead Teachers (1-4, max. 4) NW Extends the content covered in previous courses and helps prepare lead teachers to train colleagues to use any of several science programs selected by schools or districts. Prerequisite: two courses selected from PHYS 405,

PHYS 406, PHYS 407, PHYS 408, or PHYS 409. Credit/no-credit only. Offered: A.

PHYS 412 Physics by Inquiry for Lead Teachers (1-4, max. 4) NW Extends the content covered in previous courses and helps prepare lead teachers to train colleagues to use any of several science programs selected by schools or districts. Prerequisite: two courses selected from PHYS 405, PHYS 406, PHYS 407, PHYS 408, or PHYS 409. Credit/no-credit only. Offered: A.

PHYS 413 Physics by Inquiry for Lead Teachers (1-4, max. 4) NW Extends the content covered in previous courses and helps prepare lead teachers to train colleagues to use any of several science programs selected by schools or districts. Prerequisite: two courses selected from PHYS 405, PHYS 406, PHYS 407, PHYS 408, or PHYS 409. Credit/no-credit only. Offered: A.

PHYS 421 Contemporary Atomic Physics (3) NW Survey of the principal phenomena of atomic and molecular physics. Prerequisite: PHYS 322; PHYS 325; recommended: PHYS 323. Offered: Sp.

PHYS 422 Contemporary Nuclear and Particle Physics (3) NW Survey of the principal phenomena of nuclear and elementary-particle physics. Prerequisite: PHYS 226; PHYS 322; PHYS 325. Offered: A.

PHYS 423 Contemporary Condensed Matter Physics (3) NW Survey of the principal phenomena of solid-state physics. Prerequisite: a minimum 2.0 grade in PHYS 324; recommended: PHYS 328. Offered: W.

PHYS 427 Applications of Physics (1-3, max. 12) NW Current applications of physics to problems in the sciences and technology.

PHYS 428 Selected Topics in Physics (1-5, max. 12) NW

PHYS 429 Biophysics (3) Application of the concepts and methods of physics to biological systems. Prerequisite: PHYS 224; PHYS 225; recommended: PHYS 328. Offered: W.

PHYS 431 Modern Physics Laboratory (3) NW Measurement in modern atomic, molecular, and solid-state physics. Prerequisite: PHYS 225; PHYS 334; recommended: 30 credits in physics. Offered: WS.

PHYS 432 Modern Physics Laboratory (3) NW Measurement in modern atomic, molecular, and solid-state physics. Prerequisite: PHYS 225; PHYS 334; recommended: 30 credits in physics. Offered: Sp.

PHYS 433 Modern Physics Laboratory (3) NW Techniques in nuclear and elementary-particle research. Prerequisite: PHYS 225; PHYS 334; recommended: 30 credits in physics; PHYS 226. Offered: A.

PHYS 434 Application of Computers to Physical Measurement (3) NW Laboratory giving specific instruction and experience in interfacing laboratory equipment to computers. Prerequisite: PHYS 334; recommended: PHYS 335; 30 credits in physics. Offered: A.

PHYS 436 Nonlinear Dynamics and Chaos (4) NW Variational Principle, Lagrangian and Hamiltonian Mechanics, phase space, nonlinear dynamics, approach to chaos, Lyapunov exponents, applications to physical systems. Numerical exercises to illustrate phenomena. Prerequisite: MATH 309.

PHYS 441 Quantum Physics (4) NW Introduction to concepts and methods of quantum physics: wave mechanics (de Broglie wavelength, uncertainty principle, Schrodinger equation), one-dimensional examples (tunneling, harmonic oscillator), formalism of quantum physics, angular momentum and the hydrogen atom. Recommended: 30 credits in physical science or engineering. Offered: A.

PHYS 451 Issues for Ethnic Minorities and Women In Science and Engineering (3/5) I&S Addresses issues faced by women and ethnic minorities in physical sciences and engineering. Focuses on participation, barriers to participation, and solutions to those issues for women and ethnic

minorities in physical sciences and engineering. Offered: jointly with GWSS 485.

PHYS 460 Water in the Environment (3) NW Discusses the unique physical and chemical properties of the water molecule in relation to the atmospheric greenhouse effect, precipitation formation, oceanic circulations, infiltration of water through soils, geyser eruptions, and glacier and sea ice thickness. Prerequisite: either ESS 310, MATH 126, or MATH 136; PHYS 123. Offered: jointly with ATM S 460/ESS 424.

PHYS 485 Senior Honors Seminar (1, max. 3) NW Prerequisite: Honors standing; 12 credits of physics. Offered: A.

PHYS 486 Senior Honors Seminar (1, max. 3) NW Prerequisite: Honors standing; 12 credits of physics. Offered: W.

PHYS 487 Senior Honors Seminar (1, max. 3) NW Prerequisite: Honors standing; 12 credits of physics. Offered: Sp.

PHYS 494 Seminar on Current Problems in Physics (1, max. 3) NW Supervised, independent study of topics (chosen by faculty in charge) of current interest in physics. Written and oral presentations summarizing work accomplished are required. Recommended: 12 credits in physics above 200 level. Offered: A.

PHYS 495 Seminar on Current Problems in Physics (1, max. 3) NW Supervised, independent study of topics (chosen by faculty in charge) of current interest in physics. Written and oral presentations summarizing work accomplished are required. Recommended: 12 credits in physics above 200 level. Offered: W.

PHYS 496 Seminar on Current Problems in Physics (1, max. 3) NW Supervised, independent study of topics (chosen by faculty in charge) of current interest in physics. Written and oral presentations summarizing work accomplished are required. Recommended: 12 credits in physics above 200 level. Offered: Sp.

PHYS 499 Undergraduate Research (1-6, max. 18) Research in physics and study of physics literature. Credit/no-credit only. Offered: AWSps.

PHYS 501 Tutorials in Teaching Physics (1, max. 2) Preparation for teaching introductory physics; use and critical analysis of instructional materials in a collaborative learning environment; supervised teaching practicum in which instructional materials are used with undergraduates. Credit/no-credit only. Offered: A.

PHYS 502 Tutorials in Teaching Physics (1, max. 2) Preparation for teaching introductory physics; use and critical analysis of instructional materials in a collaborative learning environment; supervised teaching practicum in which instructional materials are used with undergraduates. Credit/no-credit only. Offered: W.

PHYS 503 Tutorials in Teaching Physics (1, max. 2) Preparation for teaching introductory physics; use and critical analysis of instructional materials in a collaborative learning environment; supervised teaching practicum in which instructional materials are used with undergraduates. Credit/no-credit only. Offered: Sp.

PHYS 505 Mechanics (3) Lagrangian and Hamiltonian dynamics, with applications to various topics such as coupled oscillators, parametric resonance, anharmonic oscillations, chaos. Offered: W.

PHYS 506 Numerical Methods (3) Integration, solution of differential equations, Monte Carlo methods, function minimization, data analysis, modern computing techniques, computation in experimental physics. Offered: WSp.

PHYS 507 Physical Applications of Group Theory (3) Applications of finite and continuous groups, representation theory, symmetry, and conservation laws to physical systems. Offered: Sp.

PHYS 511 Topics in Contemporary Physics (3, max. 9) Topics of current experimental, theoretical, or technological interest in modern physics. Offered: Sp.

PHYS 513 Electromagnetism and Relativity (3) First of a three-part sequence. Principles of electrostatics, complex variable techniques, boundary value problems and their associated mathematical techniques, Green's functions. Offered: A.

PHYS 514 Electromagnetism and Relativity (4) Continuation of PHYS 513. Electric and magnetic fields in free space and material media, wave guides and cavity resonators. Offered: W.

PHYS 515 Electromagnetism and Relativity (4) Continuation of PHYS 514. Special relativity, electromagnetic radiation from accelerated charges, synchrotron radiation, Cerenkov radiation, radiation reaction. Offered: Sp.

PHYS 517 Quantum Mechanics (4) First of a three-part sequence. Modern non-relativistic quantum mechanics developed, beginning with its basic principles. Dirac and abstract operator notation introduced, starting with simple examples. Offered: A.

PHYS 518 Quantum Mechanics (4) Continuation of PHYS 517. Modern non-relativistic quantum mechanics. The character of the theory illustrated both with physical examples and with conceptual problems. Topics include: atomic structure, scattering processes, density operator description of mixed states, and measurement theory. Abstract operator methods emphasized in the exposition of angular momentum, scattering, and perturbation theory. Offered: W.

PHYS 519 Quantum Mechanics (4) Continuation of PHYS 518. Modern non-relativistic quantum mechanics. Physical examples and conceptual problems. Topics include: atomic structure, scattering processes, density operator description of mixed states, and measurement theory. Abstract operator methods emphasized in the exposition of angular momentum, scattering, and perturbation theory. Offered: Sp.

PHYS 520 Advanced Quantum Mechanics - Introduction to Quantum Field Theory (4) Multi-particle systems, second quantization, diagrammatic perturbation theory, radiation, correlation functions and multi-particle scattering, relativistic theories, renormalizability, basic quantum electrodynamics, and other applications. Offered: A.

PHYS 521 Advanced Quantum Mechanics - Introduction to Quantum Field Theory (3) Multi-particle systems, second quantization, diagrammatic perturbation theory, radiation, correlation functions and multi-particle scattering, relativistic theories, renormalizability, basic quantum electrodynamics, and other applications. Offered: W.

PHYS 522 Advanced Quantum Mechanics: Introduction to Modern Quantum Field Theory (3) Functional integrals, symmetry breaking, critical phenomena and continuum limits, and non-perturbative methods. Credit/no-credit only. Offered: Sp.

PHYS 524 Thermodynamics and Statistical Mechanics (4) Statistical mechanical basis of the fundamental thermodynamical laws and concepts; classical and quantum statistical distribution functions; applications to selected thermodynamic processes and examples of Bose and Fermi statistics. Offered: A.

PHYS 525 Statistical Mechanics (3) Introduction to equilibrium and non-equilibrium aspects of many-body systems; scale invariance and universality at phase transitions and critical phenomena; exactly soluble models; Markov processes, master equations and Langevin equation in non-equilibrium stochastic processes. Prerequisite: PHYS 524. Offered: Sp.

PHYS 527 Current Problems in Physics (1) Introduction to current research topics for beginning graduate students. Credit/no-credit only. Offered: A.

PHYS 528 Current Problems in Physics (1) Introduction to current research topics for beginning graduate students. Credit/no-credit only. Offered: A.

PHYS 530 Laser Physics (4) Physics underlying laser design and operation in the context of common laboratory systems. Topics may include continuous and pulsed lasers; solid, liquid, and gas gain media; Q-switching, mode-locking, resonator theory, nonlinear optics, and others. Prerequisite: basic quantum mechanics, electromagnetism, and optics; recommended: PHYS 541.

PHYS 532 Liquid Crystal Devices (4) Physics of liquid crystals and applications to practical display devices. Phases, phase transitions, optical and dielectric properties, molecular and device "engineering," future prospects.

PHYS 536 Introduction to Acoustics and Digital Signal Processing (4) *Chaloupka* Introduces mathematical and physics principles of acoustics in digital signal processing applications. Complex analysis and Fourier methods, physics of vibrations and waves, solutions of the wave equation, digital convolution and correlation methods, and Maximum Length Sequence method in signal analysis and spread-spectrum applications. Prerequisite: PHYS 123; MATH 120.

PHYS 541 Applications of Quantum Physics (4) Techniques of quantum mechanics applied to lasers, quantum electronics, solids, and surfaces. Emphasis on approximation methods and interaction of electromagnetic radiation with matter. Prerequisite: PHYS 421 or PHYS 441 or equivalent. Offered: Sp.

PHYS 542 Numerical Methods in Physics (4) Numerical methods for analysis and computation in physics. Topics may include integration, differential equations, partial differential equations, optimization, data handling, and Monte Carlo techniques. Emphasis is applications in physics. Prerequisite: 30 credits in physical sciences, computer science, or engineering.

PHYS 543 Electromagnetic Theory (4) Principal concepts of electromagnetism. Static electric and magnetic fields. Boundary-value problems. Electric and magnetic properties of materials. Electromagnetic waves and radiation. Prerequisite: 30 credits in physical sciences, computer science, or engineering. Offered: W.

PHYS 544 Applications of Electromagnetic Theory (4) Emphasis may vary from year to year. Topics may include electromagnetic waves, radiation, scattering, wave guides, plasma physics, quantum electronics, and accelerator physics. Prerequisite: PHYS 543 or equivalent.

PHYS 545 Contemporary Optics (4) Coordinated lecture and laboratory treatment of topics in contemporary optics. Subjects include Fourier optics, lens systems, interferometry, laser optics, holography, polarization, crystal optics, birefringence, laser and conventional light sources, optical detectors. Prerequisite: PHYS 543 or equivalent.

PHYS 546 Condensed-Matter Physics (4) Introduction to the theory of solids: crystal structure in real space and reciprocal space, phonons, free electrons, band theory, semiconductor devices. Prerequisite: PHYS 441 or equivalent.

PHYS 547 Electronics for Physics Research (4) Electronic techniques as applied in physics research. Topics include noise, control-system analysis, operational amplifiers, lock-in amplifiers, precision power supplies and metering, data transmission, microprocessors. Several integrated measurement systems are examined in the context of specific research problems. Prerequisite: elementary electronics.

PHYS 549 Low-Temperature Physics and Cryogenics (4) Condensed-matter physics at low and ultralow temperatures. Production of low temperatures; liquefaction of gases, dilution refrigeration, magnetic and compressional cooling. Macroscopic quantum effects: superconductivity, superfluidity. Applications of superconductors. The ultralow temperature frontier.

PHYS 550 Atomic Physics (3) Theory of atomic structure and spectra; atomic and molecular beams; resonance techniques; atomic collisions; topics of current interest. Prerequisite: PHYS 519.

PHYS 551 Atomic Physics (3) Theory of atomic structure and spectra; atomic and molecular beams; resonance techniques; atomic collisions; topics of current interest. Prerequisite: PHYS 519.

PHYS 552 Introduction to Cosmic Ray Physics (3) The nature and cosmological significance of cosmic ray photons and particles. The motion and confinement of particles in the geophysical, interplanetary, and interstellar medium. Theories of the processes involved in the high-energy interaction of cosmic rays, including shower theory. Methods of measurement and current problems. Prerequisite: introductory quantum mechanics. Credit/no-credit only.

PHYS 554 Nuclear Astrophysics (3) Big bang nucleosynthesis; nuclear reactions in stars; solar neutrinos and neutrino oscillations; core-collapse supernovae; nucleosynthesis in stars, novae, and supernovae; neutron stars; composition and sources of cosmic rays; gamma ray bursts; atmospheric neutrinos. Offered: jointly with ASTR 510; A.

PHYS 555 Cosmology and Particle Astrophysics (3) Big bang cosmology; relativistic world models and classical tests; background radiation; cosmological implications of nucleosynthesis; baryogenesis; inflation; galaxy and large-scale structure formation; quasars; intergalactic medium; dark matter.

PHYS 557 High Energy Physics (3) First quarter of a three-quarter series. Emphasis on the experimental foundations of particle physics. Prerequisite: PHYS 519; recommended: PHYS 520, which may be taken concurrently. Offered: A.

PHYS 558 High Energy Physics (3) Second quarter of a three-quarter series. Phenomenology of the standard model of strong and electro-weak interactions, including an introduction to Feynman diagrams. Prerequisite: PHYS 519; recommended: PHYS 520; PHYS 521, both of which may be taken concurrently. Offered: W.

PHYS 559 High Energy Physics (3) Third quarter of a three-quarter series. Topics of current interest in high-energy particle physics. Prerequisite: PHYS 519; recommended: PHYS 520; PHYS 521, both of which may be taken concurrently. Offered: Sp.

PHYS 560 Theoretical Nuclear Physics (3) First of a two-part sequence. Nuclear structure, scattering, reactions, and decays in terms of elementary properties of nucleons and current theoretical models. Prerequisite: PHYS 519. Offered: A.

PHYS 561 Theoretical Nuclear Physics (3) Continuation of PHYS 560. Nuclear structure, scattering, reactions, and decays in terms of elementary properties of nucleons and current theoretical models. Prerequisite: PHYS 519. Offered: W.

PHYS 564 General Relativity (3) First of a two-part sequence. General covariance and tensor analysis, the relativistic theory of gravitation as given by Einstein's field equations, experimental tests and their significance, and applications of general relativity, particularly in the areas of astrophysics and cosmology. Prerequisite: PHYS 515.

PHYS 565 General Relativity (3) Continuation of PHYS 564. General covariance and tensor analysis, the relativistic theory of gravitation as given by Einstein's field equations, experimental tests and their significance, and applications of general relativity, particularly in the areas of astrophysics and cosmology. Prerequisite: PHYS 515.

PHYS 567 Theory of Solids (3) First quarter of a course on modern solid state and condensed matter physics, aimed at bringing student's knowledge up to the level of current literature. Topics include structural, electronic, and vibrational properties; optical response functions and dynamics; transport theory; and cooperative phenomena. Prerequisite: PHYS 519, PHYS 524. Offered: AW.

PHYS 568 Theory of Solids (3) Second quarter of a course on modern solid state and condensed matter physics, aimed at bringing the student's knowledge up to the level of current literature. Additional topics (see PHYS 567) in-

clude magnetism, quantum Hall effect, superconductivity. Offered: WSp.

PHYS 570 Quantum Field Theory (3) Emphasizes either relativistic quantum field theory or the many-body problem. Normally offered credit/no-credit only. Prerequisite: PHYS 522.

PHYS 571 Quantum Field Theory (3) Emphasizes either relativistic quantum field theory or the many-body problem. Normally offered credit/no-credit only. Prerequisite: PHYS 522.

PHYS 572 Modern Quantum Field Theory (3) Advanced topics in quantum field theory. Prerequisite: PHYS 570, PHYS 571. Credit/no-credit only.

PHYS 575 Selected Topics in Applications of Physics (*, max. 30)

PHYS 576 Selected Topics in Experimental Physics (*, max. 30)

PHYS 578 Selected Topics in Theoretical Physics (*, max. 30) Credit/no-credit only.

PHYS 580 Physics Colloquium (*, max. 30) Credit/no-credit only. Offered: AWSp.

PHYS 581 Seminar in High-Energy Physics (1-3, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 582 Seminar in Particle Theory (1-3, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 583 Seminar in Relativistic Astrophysics (1-3, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 584 Seminar in Recent Developments in Atomic Physics (1-3, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 585 Seminar in Experimental Nuclear Physics (1-3, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 586 Seminar in Condensed Matter Physics (1-3, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 587 Seminar in Nuclear Theory (1-3, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 588 Particle Astrophysics Seminar (1-3, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 589 Seminar in Problems of Physics Education (1-3, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 590 Seminar in Statistical Physics (1-3, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 600 Independent Study or Research (*-) Study or research under the supervision of individual faculty members. Prerequisite: permission of supervisor. Credit/no-credit only. Offered: AWSpS.

PHYS 800 Doctoral Dissertation (*-) Prerequisite: permission of Supervisory Committee chairperson. Credit/no-credit only. Offered: AWSpS.

Political Science

101 Gowen

Political science, broadly conceived, is the study of governments and other political actors, including their origins and foundations, interactions with groups and individuals, and interactions with nations. Within this larger framework political scientists study power, authority, conflict, economic relationships, culture, laws, policy, values, ethics, justice, equality, rights, legitimacy, and representation, to list only a few. Using these and other concepts, they analyze the political impacts of social issues such as war, peace, poverty, crime, education, the environment, race, gender, and globalization. Modes of inquiry are highly interdisciplinary.

UNDERGRADUATE PROGRAM

Adviser

215 Smith, Box 353530

(206) 543-1824

polsadv@uw.edu

The Department of Political Science offers the following programs of study:

- The Bachelor of Arts degree with a major in political science and options in political economy and in international security
- A minor in political science

Coursework in the discipline covers four major fields of political science: American politics, comparative politics, international relations, and political theory. In addition to major requirements, students may pursue faculty-supervised internships, research, independent study projects and an optional senior thesis.

Bachelor of Arts

Suggested First- and Second-Year College Courses: Courses that develop writing skills and breadth of knowledge. Introductory statistics.

Department Admission Requirements

1. Minimum 2.00 cumulative GPA
2. Three introductory political science courses (15 credits) with a minimum 2.0 grade in each from the following: POL S 101, POL S 201, POL S 202, POL S 203, POL S 204, POL S 205
3. Students are admitted all quarters. Applications are due the second Friday of each quarter. Applications and additional information available from advisers in 215 Smith and on the Political Science Department website.
4. Applicants who meet the stated requirements are admitted in time to register for the following quarter as majors.

Major Requirements

50 credits in political science as follows:

1. *Introductory Requirement (15 credits):* Three courses from POL S 101, POL S 201, POL S 202, POL S 203, POL S 204, POL S 205
2. *Field Requirement (15 credits):* One course numbered POL S 210 or above in three different fields of political science chosen from political theory, comparative politics, international relations, American politics, and research methods, with a grade of at least 2.0 in each
3. *Electives (20 credits):* Four courses numbered POL S 210 or above with a grade of at least 2.0 in each.
4. *GPA Requirement:* Minimum cumulative GPA of 2.25 in political science courses at graduation and a minimum grade of 2.0 in each political science course taken to fulfill requirements for the major
5. Transfer and postbaccalaureate students must meet all the above requirements and complete a minimum of 10 political science credits numbered 210 or above at the UW.

Political Economy: This interdisciplinary option is a specialized program that combines study of political science and economics. Students who wish to pursue this option should consult with a political science adviser. A list of recommended coursework is available.

International Security: This option, recommended to students interested in an in-depth study of international security, concentrates on the relationship between politics and security, and specifically on the causes of war and the use and control of force, threats, promises, and the tac-

tics, techniques, and ethics of violence. Teaches theories to address security issues and provides historical context for understanding contemporary security issues. Option coursework is completed in addition to the requirements of the major, however, up to 25 credits from the option may also be used to fulfill requirements for the political science major. A list of recommended coursework is available.

45 credits as follows:

1. POL S 203, POL S 321, POL S 407 (15 credits)
2. 30 additional credits from an approved list of courses maintained in the department. At least 15 elective credits must be at the 300 or 400 level.

Minor

Minor Requirements: 30 political science credits as follows:

1. One introductory course chosen from POL S 101, POL S 201, POL S 202, POL S 203, POL S 204, or POL S 205
2. 25 elective credits numbered POL S 210 and above. (Internship and independent study courses such as POL S 496, POL S 498, POL S 499 do not count toward the minor)
3. Minimum cumulative GPA of 2.00 for courses applied to the minor
4. Minimum 15 credits for the minor completed in residence at UW

Student Outcomes and Opportunities

- **Learning Objectives and Expected Outcomes:** The study of political science arms students with substantive knowledge of the discipline, including its concepts and theories. It also prepares them to be knowledgeable and active citizens. Through their study, students develop critical thinking, analytical, research, writing, interpersonal, and communication skills.

Graduates of political science pursue careers in many fields, including government (federal, state, and local), business, trade, public service (including non-governmental and international organizations), law, journalism, and teaching.

- **Instructional and Research Facilities:**
 - **Political Science Laboratory:** This facility has 25 computer stations. It functions as a computer classroom and also as a general lab.
 - **Center for Social Science Computation and Research** maintains an extensive data archive and offers many statistical and software consulting services.
 - **Political Science/Jackson School/Law, Societies, and Justice/Comparative History of Ideas Writing Center:** The Writing Center is staffed by peer tutors and provides free help to students seeking feedback about their writing. The Writing Center director works with instructors to design workshops to help students with assignments.

The Department of Political Science is affiliated with a number of research centers:

- **The Center for American Politics and Public Policy** is a focal point for the study of politics and policy processes in the United States. Research relates to public policy processes, including issues of agenda setting, decision making, implementation, quantitative and qualitative measures of policy change, and the role of ideas and dialogue in policy change. Policy arenas include education reform, health care, environmental regulation, and building code enforcement.
- **The Center for Communication and Civic Engagement** investigates how innovative communication can improve the quality of civic life. The center's primary focus is to understand how new information

technologies can supplement more traditional forms of communication to facilitate civic engagement.

- **The University of Washington's Institute for the Study of Ethnicity, Race, and Sexuality** is an interdisciplinary research center dedicated to bringing the tools of contemporary social science inquiry to the careful examination of issues of social, economic, and political exclusion and disadvantage of marginalized minority populations in the United States, and their potential solutions.
- **Harry Bridges Center for Labor Studies** promotes the study of labor as a central concern in higher education and focuses on labor's contribution to society—locally, nationally, and worldwide. The center supports research, teaching, and community outreach.
- **The Comparative Law and Society Studies Center** is committed to promoting interdisciplinary research and teaching as well as community service regarding law, justice, and human rights throughout the world.
- **European Union Center** promotes the study of the European Union and trans-Atlantic relations.
- **Honors Options Available:** With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- **Research, Internships, and Service Learning:** The department offers three internship programs that range from part-time to full-time programs. Students may work in local agencies (POL S 496), in the state legislature (POL S 497), and in Washington, D.C. (POL S 498).

Listings of local internships and applications are available in 215 Smith.

The Washington State Legislative Internship Program is a winter-quarter program in Olympia and is open to students from all majors. Students earn 15 credits for the internship and attend a class taught by a political science faculty member. Applications are available from departmental advisers in 215 Smith and are due by the end of October.

Students in all majors may apply for The Washington Center, a comprehensive internship program that places students in Washington, D.C. Students earn 15 credits for the internship. Additional information is available from departmental advisers in 215 Smith.

- **Department Scholarships:**
 - **Hugh Bone Scholarship:** The endowed Hugh A. Bone Scholarship was established by the Department of Political Science in 1986 to recognize Professor Bone, a former department chair, and to continue his commitment to a "participative citizenry." Professor Bone founded the Washington State Legislative Internship Program and many of the students who studied with him continue active political lives due to his stewardship and interest. The scholarship was established in his name to help students with financial need to study and intern away from the UW-Seattle campus.
 - **Agnes C. Nelson Memorial Scholarship:** The departments of Political Science and Economics make annual full-tuition awards to students who demonstrate interest in the interrelationship of politics and economics and who meet financial eligibility requirements. To apply for the scholarship, students must have completed a minimum of 25 credits in political science and economics with at least 10 credits in each discipline. Deadlines are posted early in spring quarter.
- **Department Awards**
 - **The Robert A. Dahl Award:** The Department of Political Science recognizes an outstanding graduating senior with the Robert A. Dahl Award. To be eligible for

consideration, a student must demonstrate scholarship excellence as well as interest in political science as a discipline.

- **Daniel C. Lev Award:** The Department of Political Science created this award to recognize the contribution of Professor Dan Lev to the department's Honors program. The award recognizes an exceptional Senior Honors Thesis.
- **Sharon S. Redeker Award for Public Service:** The Department of Political Science created this award in honor of Sharon Redeker, who served for many years as the department's Director of Academic Services. This award recognizes the exceptional public service of a political science senior while at the UW.
- **Student Organizations/Associations:** Pi Sigma Alpha (Political Science Honor Society), Phi Alpha Delta (pre-law fraternity). See adviser for details.

GRADUATE PROGRAM

Graduate Program Coordinator

215 Smith, Box 353530

(206) 543-1898

polsgrad@uw.edu

Graduate study in political science integrates traditional education in political science's primary fields with other fields in the social sciences, allowing an eclectic, interdisciplinary approach.

The department has an outstanding reputation in comparative politics, international relations, American politics, political theory, political economy, race and ethnic politics, public policy, public law, political communication, and methodology. Graduate students can incorporate study in other campus units, such as the School of Marine Affairs, the Daniel J. Evans School of Public Affairs, the Henry M. Jackson School of International Studies, and the Department of Communication.

Graduate work in political science is primarily for preparation for the Doctor of Philosophy degree. The Master of Arts requirement serves as the initial stage of the PhD program; the department does not offer a terminal Master of Arts degree and admits students for the PhD program only.

Doctor of Philosophy

Admission Requirements

1. Statement of Purpose detailing academic background, including any research experience and methodological skills; plans and goals for study, including intellectual interests and areas of specialization; and reasons for interest in studying at the University of Washington
2. **Writing Sample:** A relatively short paper (not to exceed 20 pages) or excerpts from a larger work (e.g., honors thesis) demonstrating the ability to write critically and analytically.
3. Resume
4. Letters of recommendation
5. Transcripts
6. **Test Scores:** GRE General Test scores sent directly by the Educational Testing Service (ETS). English Proficiency scores for international students, sent directly by the Educational Testing Service (ETS)-

Degree Requirements

Minimum 124 credits, to include:

The department recognizes four "general fields" in political science: American politics, comparative politics, international relations, and political theory. The department requires each PhD student to select one general field, in

which the student must become familiar with the main body of literature, major intellectual issues, and develop competence in that field's mode of analysis. All students are required to take at least one additional core course in another general field.

A student must also prepare in a second general field or in one of the specialized fields: area study public law, political communication, political economy, political methodology, public policy processes, and minority and race politics. Specialized fields are periodically redefined, given faculty/student interests.

During their first year, students complete a series of courses designed to prepare them to achieve a minimum level of competence in political research methods. Demonstration of competence in a foreign language is not required for the PhD. Students who select a field(s) where the Supervisory Committee believes that competence in a language would be beneficial are so advised.

After completing a minimum of requirements in two fields and the methodology courses students are expected to complete the MA degree (46 credits), including an essay of distinction and a final oral examination to demonstrate substantive field knowledge and the ability to synthesize and apply that knowledge to new problems. The MA is usually completed within the first two years of study.

The doctoral student continues preparation in the first two chosen fields and in a required third field. The third field can be another general field and/or one or more of the specialized fields listed above, and/or at most one non-designated field. A non-designated field is constructed from another academic discipline such as anthropology or sociology, or individually defined by the student. International law, public administration, urban politics, political psychology, and philosophy of social science are examples of recent non-designated fields.

The doctorate usually takes at least an additional three years beyond the MA (124 credits minimum, including at least 27 credits for the dissertation). Students must pass comprehensive written and oral examinations in each of the three fields. They must also write and defend their dissertation prospectus for what is termed the general examination. Successful completion of the general examination constitutes advancement to candidacy. Approval of the prospectus leads to the research and writing of the dissertation. A final oral examination and committee approval of the doctoral dissertation complete the degree requirements.

Research Facilities

Access to computing facilities and extensive data holdings is available through the Center for Social Science Computation and Research and the Political Science Laboratory. The Department of Political Science is also affiliated with several research centers, including the Center for American Politics and Public Policy, the Center for Communication and Civic Engagement, the Center for Statistics and Social Sciences, the Comparative Law and Society Studies Center, the Harry Bridges Labor Studies Center, the Center for Comparative and Historical Analysis of Organizations and States, and the UW's Institute for the Study of Ethnicity, Race, and Sexuality. The University is also a member of the Inter-University Consortium for Political and Social Research.

Financial Aid

Fellowships, research assistantships, and teaching assistantships are available to qualified graduate students, including those in their first year of study. Provided they make satisfactory progress, students are eligible for departmental financial assistance for five consecutive years.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/.

POL S 101 Introduction to Politics (5) I&S Political problems that affect our lives and shape the world around us.

POL S 110 Political Argumentation (5) VLPA/I&S Skills- and practice-based approach to political argumentation. Suitable for non-majors.

POL S 195 Study Abroad: Political Science (1-10, max. 15) I&S Lower-division political science courses taken through a UW approved study abroad program. Specific content varies and must be individually evaluated. Credit does not apply to major requirements.

POL S 201 Introduction to Political Theory (5) I&S Philosophical bases of politics and political activity. Provides an introduction to the study of politics by the reading of books in political philosophy. Organized around several key political concepts, such as liberty, equality, justice, authority, rights, and citizenship. Offered: AWSpS.

POL S 202 Introduction to American Politics (5) I&S Institutions and politics in the American political system. Ways of thinking about how significant problems, crises, and conflicts of American society are resolved politically. Offered: AWSpS.

POL S 203 Introduction to International Relations (5) I&S The world community, its politics, and government. Offered: AWSpS.

POL S 204 Introduction to Comparative Politics (5) I&S Political systems in a comparative framework. Traditional and contemporary approaches to the study of governments and societies in different countries. Offered: AWSpS.

POL S 205 Political Science as a Social Science (5) I&S, QSR Methodological perspectives of social science disciplines: commonalities and differences in assumptions, values, and paradigms. Current issues from the multiple perspective of social sciences; limits of the social sciences in resolving key social issues.

POL S 207 Issues of Global Justice (5) I&S M. BLAKE, J. MAYERFELD, W. TALBOTT Introduces issues of global justice. Topics include: global poverty and aid, immigration, transnational governance, gender in global relations, climate change, and cultural relativism. Offered: jointly with PHIL 207/VALUES 207.

POL S 212 Philosophy of Feminism (5) I&S, DIV Philosophical analysis of the concepts and assumptions central to feminism. Theoretical positions within the feminist movement; view of the ideal society, goals and strategies of the movement, intersections of the sex-gender system with other systems of oppression. Offered: jointly with GWSS 206/PHIL 206.

POL S 213 The Korean Peninsula and World Politics (5) I&S Ha Introduces Korean politics, economics, society, and international relations. Overviews the development in politics, economy, and society since the late nineteenth century. Addresses the evolution of Korea in the international society by comparing Korea experience with that of China and Japan. Offered: jointly with JSIS A 213.

POL S 246 African American Politics (5) I&S, DIV C. PARKER Survey of African Americans within the U.S. sociopolitical processes. Situates African Americans within a post-civil rights context where there is debate about race's centrality to an African American politics. Recommended: either AES 150, AFRAM 201, or POL S 202. Offered: jointly with AFRAM 246.

POL S 249 Introduction to Labor Studies (5) I&S Conceptual and theoretical issues in the study of labor and work. Role of labor in national and international politics. Formation of labor movements. Historical and contemporary role

of labor in the modern world. Offered: jointly with HSTCMP 249/SOC 266.

POL S 270 Introduction to Political Economy (5) I&S A. GILL Political economy as a tool for understanding and evaluating the political world. Combines theory, methods, and insights derived from economics and political science and applies them to a range of substantive issues.

POL S 273 The Concept of Political Power (5) I&S How to understand and explain relationships of power. Readings from Marxism, Weberian sociology, anarchism, classical political philosophy, and contemporary political science. May also include works of fiction.

POL S 281 Literature and American Political Culture (5) VLPA/I&S Introduction to the methods and theories used in the analysis of American culture. Emphasizes an interdisciplinary approach to American literature, including history, politics, anthropology, and mass media. Offered: jointly with ENGL 251.

POL S 295 Study Abroad: Political Science (1-10, max. 15) I&S Political science courses taken through a UW approved study abroad program. Specific content varies and must be individually evaluated.

POL S 299 Special Topics in Political Science (2-5, max. 10) I&S Examines a different subject or problem of current interest within the discipline.

POL S 301 Topics in Political Theory (5, max. 10) I&S Study of topics in political theory.

POL S 302 Free Will, Nature, and Nurture in Politics and Society (5) I&S M. SMITH Examines beliefs and actions in politics and other domains from the standpoint of free will, nature, and nurture. Compares political science to other disciplines in explaining why people think and act as they do.

POL S 303 Public Policy Formation in the United States (5) I&S Policy decision making with emphasis on: how issues arise, the way they become part of the policy agenda of the executive and the legislature, how these institutions organize to handle policy issues, and the roles of the legislature, the executive, and the bureaucracy. Public policy literature and familiarization with key aspects of policy decision making at the national, state, and local levels.

POL S 304 The Press and Politics in the United States (5) I&S Journalists' role in elections and public policy. Relationship between news coverage and political campaigns. Study and analysis of local political newswriting, reporting, and response by local and state political figures. Extensive off-campus experience included. Offered: jointly with COM 304.

POL S 305 The Politics of Mass Communication in America (5) I&S Role of mass audiences in politics from the standpoint of the communication strategies used to shape their political involvement. Topics include: social structure and political participation, political propaganda and persuasion, the political uses of public opinion, and the mass media and politics. Offered: jointly with COM 305.

POL S 306 Media, Society, and Political Identity I&S (5) I&S W. BENNETT Explores how society and culture are both represented in and shaped by communication technologies and media content. Media include film, advertising, news, entertainment television, talk shows, and the Internet. Explores how media represent and affect individual identity, values, and political engagement. Offered: jointly with COM 306.

POL S 307 Religion and World Politics (5) I&S A. GILL Explores the intersection of religion and politics in various regions of the world, including the United States, Europe, Middle East, Latin America, and other regions. Presents an historical perspective on religion alongside contemporary issues in religion, politics, and church-state relations. Offered: jointly with JSIS C 307.

POL S 308 The Western Tradition of Political Thought, Ancient and Medieval (5) I&S Origin and evolution of major

political concepts from ancient Greece to the medieval period.

POL S 309 The Western Tradition of Political Thought, Pre-Modern (5) I&S Continuation of POL S 308, treating materials from the fifteenth through eighteenth centuries.

POL S 310 The Western Tradition of Political Thought, Modern (5) I&S Continuation of POL S 308 and POL S 309, focusing on material from the eighteenth through twentieth centuries.

POL S 311 Individual and the State (5) I&S Individualism and communitarian critics. Political and ethical implications of both. Nature of the state, liberty, responsibility, cooperation. Important individualist and collectivist literature, dealing with market institutions and citizen politics, critically assessed.

POL S 312 Survey of American Political Thought (5) I&S Survey of American political thought from colonial times to the 1980s. Topics include the idea of the self-made man; the intellectual contexts of the Declaration of Independence and the Constitution; slavery, abolition, and the Civil War; progressivism; Cold War liberalism; the Civil Rights Movement and its critics; and modern conservatism. Prerequisite: cannot be taken for credit if POL S 318 or POL S 319 already taken.

POL S 313 Women in Politics (5) I&S, DIV Theoretical, historical, and empirical studies of women's participation in political and social movements. Women's diverse efforts to improve their political, social, and economic status. Policy issues of particular concern to women. Women's political experiences in household, local, regional, national, and international arenas. Offered: jointly with GWSS 313.

POL S 314 Israel: Dynamic Society and Global Flashpoint (5) I&S Introduces the people, institutions, and culture of Israel in the context of larger global forces. Examines domestic, regional, and international elements, both historically and in the contemporary period, that have shaped Israel's culture, politics, and special role in world affairs. Topics include nationalism, ethnicity, politics, religion, film, literature, and culture. Offered: jointly with JSIS A 314/NEAR E 315.

POL S 315 Black Identities and Political Power (5) I&S Rivers Relates the deployment of political power within institutions to shifting racial identities. Shows how racial identities both reflect and inflect relations of domination and resistance within and between cultures in the black diaspora. Prerequisite: either AES 150, AFRAM 150, AFRAM 201, or POL S 201. Offered: jointly with AFRAM 315.

POL S 316 African-American Political and Social Thought (5) I&S C. PARKER Race relations in U.S. politics as defined by the struggle of African Americans for economic, political, and social equality. Studies of African-American political and social thought; expands and clarifies our understanding of the strengths and weaknesses of American democratic ideals.

POL S 317 The Politics of Race and Ethnicity in the United States (5) I&S, DIV M. FRANCIS Introduction to the history and development of racial hierarchy, focusing on how race and ethnicity shape political institutions (e.g., the Constitution, political parties, voting systems). Examination of political relationships between Whites, African Americans, Latinos, and Asian Americans. Case studies of minority representation and the politics of welfare, crime, immigration, and terrorism. Offered: jointly with LSJ 331.

POL S 318 American Political Thought I (5) I&S J. TURNER III Major thinkers and themes in American political and cultural development from Puritan origins to the Civil War. Prerequisite: cannot be taken for credit if POL S 312 already taken.

POL S 319 American Political Thought II (5) I&S J. TURNER III Major thinkers and themes in American political and cultural development from the Civil War to the present. Prerequisite: cannot be taken for credit if POL S 312 already taken.

POL S 320 State-Society Relations in Third World Countries (5) I&S, DIV Bachman, Callahan Relationships among political, social, and economic changes in Asia, Africa, and Latin America. Problems of economic and political development, revolution and reform, state-society relations, imperialism and dependency. Offered: jointly with JSIS B 310.

POL S 321 American Foreign Policy (5) I&S Constitutional framework; major factors in formulation and execution of policy; policies as modified by recent developments; the principal policymakers - president, Congress, political parties, pressure groups, and public opinion.

POL S 322 International Political Economy of Latin America (5) I&S V. MENALDO Exploration of politics underlying Latin America's economic development. Topics covered include import-substituting industrialization, mercantilism, the debt crisis, neoliberalism, market integration, and poverty. Review of major theoretical perspectives such as modernization theory, dependency, and the new political economy. Offered: jointly with JSIS A 322.

POL S 324 Europe in World Politics (5) I&S Independent and coordinated efforts of Britain, France, and West Germany to adapt to the post-World War II global system. Creation and development of the Atlantic Alliance. Relations with postcommunist states. Decolonization and the evolution of relations with the Third World. The movement for European integration. Recommended: POL S 203.

POL S 325 The Arab-Israeli Conflict (5) I&S The politics of conflicting ideologies: Zionism and Arab nationalism; formation of the state of Israel; development of Palestinian nationalism; Arab-Israeli wars. Re-emergence of Palestinian activism; domestic sources of foreign policy.

POL S 326 Scandinavia in World Affairs (5) I&S C. INGEBRITSEN Introduction to the foreign relations of Scandinavia with a focus on Nordic security, international economic pressures, and global conflict resolution. Includes a survey of the national settings for international involvements and highlights the dilemmas for industrial societies exposed to the pressures of interdependence. Offered: jointly with SCAND 326.

POL S 327 Women's Rights as Human Rights (5) I&S R. CICHOWSKI Women's rights in comparative perspective, focusing on varying settings that alter the meaning and practical application. Domestic level: areas including abortion politics to trafficking in women. International level: areas including equality claims before European supranational judicial bodies, rape as war crime in international law. Offered: jointly with LSJ 327.

POL S 328 International Organizations (5) I&S Explores historical, theoretical, and empirical aspects of the United Nations, its specialized agencies, and other international organizations, both governmental and nongovernmental. Recommended: POL S 203.

POL S 329 Global Communication (5) I&S Introduction to the history, purpose, channels, content, technologies, policy, and regulation of international communications systems. Issues covered include disparities in media development between post-industrial and developing nations, imbalances in international news and information flow, and the emergence of global communications. Offered: jointly with COM 322.

POL S 330 Communications in International Relations (5) I&S Looks at communications in relations between international groups and states. Examines the range of functions and roles communication media play in international affairs, global issues, and intergroup relations. Also examines the strategic use of communications by various groups. Offered: jointly with COM 321.

POL S 331 Government and Politics in the Middle East and North Africa (5) I&S Breakdown of traditional society and the problems of building modern political systems.

POL S 332 Topics in Comparative Politics (5, max. 10)

POL S 333 Topics in International Relations (5, max. 10)

POL S 334 Topics in American Politics (5, max. 10)

POL S 335 Topics in Political Economy (5, max. 10)

POL S 337 Collective Violence and the State (5) I&S, DIV Comparative study of how and why genocides have occurred in modern times. Examines how ethnic, religious, and nationalist conflicts have sometimes led to violent conflict, and how political leaders and governments have mitigated or exacerbated them, sometimes engaging in state sponsored mass killing. Offered: jointly with JSIS B 337.

POL S 338 Topics in Public Policy (5, max. 10)

POL S 340 Government and Politics of South Asia (5) I&S Comparison of problems of national integration and political development in India, Pakistan, and Sri Lanka. Offered: jointly with JSIS A 340.

POL S 341 Government and Politics of Canada (5) I&S Critical analysis of parliamentary institutions, political parties, and the federal system in Canada. Offered: jointly with JSIS A 321.

POL S 342 Government and Politics of Latin America (5) I&S Analysis of the political dynamics of change in Latin America comparing various national approaches to the political problems of modernization, economic development, and social change. Offered: jointly with JSIS A 342.

POL S 343 Politics and Change in Southeast Asia (5) I&S Government and politics in the countries of Southeast Asia, with attention given to the nature of the social and economic environments that condition them. Offered: jointly with JSIS A 343.

POL S 346 Governments of Western Europe (5) I&S Modern government and politics of Great Britain, France, Germany, and Italy.

POL S 348 European Union as Global Actor (5) I&S Surveys the European Union's evolution as a global actor and emergence as a potential superpower with increasingly unified foreign and defense policies. Covers institutions and interests that have driven this process; specific examples of European Union global engagement; and the potential implications for U.S. foreign policy. Offered: jointly with JSIS A 348.

POL S 350 Government and Interest Groups in the United States (5) I&S Agrarian, labor, professional, business, and ethnic interest in politics; impact on representative institutions and governmental processes.

POL S 351 The American Democracy (5) I&S Democratic theory; constitutional theory; the presidency; Congress; the Supreme Court; civil rights and civil liberties. Designed for nonmajors.

POL S 352 American Political Parties (5) I&S Theories of American parties, campaigns, and voting behavior; party leadership; political socialization and participation.

POL S 353 United States Congress (5) I&S J. WILKERSON Organization and procedure of Congress, state legislative politics, lobbying, legislative roles, theory and practice of representative government.

POL S 354 Elections and Voting in the United States (5) I&S Electoral institutions and processes of the United States: the idea and practice of elections, the electoral system, individual voting behavior, collective voting behavior, and the impact of elections on policy.

POL S 355 The American Presidency (5) I&S R. THORPE The American presidency; its evolution, its occupants, and its place within the American system. Topics include presidential character, war, elections, impeachment, the economy, and the Constitution.

POL S 356 Society and Politics (5) I&S Causes of political change in democratic countries, including public opinion, social movements, interest group activity, and party organization. Offered: jointly with SOC 356.

POL S 357 Minority Representation and the Voting Rights Act (5) I&S Explores whether and how African-Americans and Latinos are able to organize effectively and press their

demands on the political system. Focuses on minority political behavior, the effect of these groups at the polls, the responsiveness of elected officials, and legal or constitutional obstacles affecting these phenomena.

POL S 358 American Political Culture (5) Examines the origins and content of Americans' political values and beliefs. Topics include American exceptionalism, the culture war, freedom, civic engagement, the American dream, individualism, and political ideology.

POL S 359 U.S. Latino Politics (5) I&S, DIV M. BARRETO Examines historical and current political incorporation of Latinos in the United States. Topics include Latino voting and voter mobilization, office seeking and representation, Latino public opinion, and public policy formation on "Latino issues." Offered: jointly with CHSTU 359.

POL S 360 Introduction to United States Constitutional Law (5) I&S G. LOVELL Growth and development of the United States Constitution as reflected in decisions of the Supreme Court; political, social, and economic effects. Offered: jointly with LSJ 360.

POL S 361 United States Courts and Civil Liberty (5) I&S G. LOVELL Cases and literature bearing on protection of constitutionally guaranteed private rights, with particular reference to the period since 1937. Offered: jointly with LSJ 361.

POL S 363 Law in Society (5) I&S Inquiry into how law matters in social practice. Examines general theories of law, the workings of legal institutions, and the character of legally constituted practices and relationships in diverse terrains of social life. Instructor: McCann. Offered: jointly with LSJ 363.

POL S 365 Lawyers in American Politics (5) I&S Influence of lawyers on American politics. Official and unofficial political roles, lawyers as lobbyists, as legislators, in the bureaucracy, politics of the American Bar Association. Includes study of legal education, professional values, and avenues of political access.

POL S 367 Comparative Law and Courts (5) I&S R. CICHOWSKI Introduction to comparative judicial politics, focusing on the relationship between law and politics in cross-national perspective, as well as on the functioning of supranational and international legal entities in the international system. May not be taken for credit if student has taken LSJ/JSIS B 366. Offered: jointly with LSJ 367.

POL S 368 The Politics and Law of International Human Rights (5) I&S, DIV J. MAYERFELD Studies the international human rights movement in its legal and political context. Focuses on institutions which influence, enable, and constrain the international promotion of human rights. Offered: jointly with LSJ 320.

POL S 370 Privacy (5) I&S S. Pekkanen Explores how individuals, corporations, and governments respond to privacy challenges in the digital age. Examines evolution of the idea of privacy using case studies of actual privacy policies, legal cases, and real-world situations. Covers legal, political, and social facets of this fundamental human issue. Offered: jointly with JSIS B 370/LSJ 370; Sp.

POL S 381 Urban Politics and Policy in the United States (5) I&S Fraga Introduces actors, institutions, processes, and policies of substate governments in the United States. Provides and intensive comparative examination of historical and contemporary politics and policy-making. Promotes understanding of city government and its role within the larger context of state and national governments.

POL S 382 State Government (5) I&S J. WILKERSON Focus on the structures, processes, and policy outputs of state governments in the United States.

POL S 383 Environmental Politics and Policy in the United States (5) I&S Interrelation between technological and environmental change and policy formation. Consideration of political behavior related to these phenomena and the capacity of urban public organizations to predict change

and to formulate policies that can take future states into account.

POL S 384 Global Environmental Politics (5) I&S K. LITFIN Examines the globalization of environmental problems, including climate change, ozone depletion, and loss of biodiversity, as well as the globalization of political responses to these problems within the framework of globalization as set of interlinked economic, technological, cultural, and political processes. Offered: jointly with ENVIR 384.

POL S 385 Political Ecology of the World Food System (5) I&S/NW K. LITFIN Investigates the intersection of globalization and food politics, the pivotal role of petroleum in the world food system, and the commodity chains for some foods. Includes an optional service learning component. Offered: jointly with ENVIR 385.

POL S 395 Study Abroad: Political Science (1-10, max. 15) I&S Political science courses taken through a UW approved study abroad program. Specific content varies and must be individually evaluated.

POL S 398 Honors Seminar (5, max. 15) I&S Intensive and advanced studies in various aspects of political science. Open only to participants in the departmental Honors program. Offered: AWSp.

POL S 401 Advanced Seminar in Political Theory (5, max. 10) I&S Topics can include, but are not limited to, analytical theory pertaining to justice, exploitation, and freedom; revolution and social changes; collective choice and action; sexuality and politics; critical theory; Marxist theory; post-structuralism. Content varies. Recommended: POL S 201.

POL S 402 Advanced Seminar in Human Rights (5, max. 10) I&S J. MAYERFELD Examines selected human rights topics including questions relating to the meaning, justification, promotion, implementation, suppression, or denial of human rights.

POL S 403 Advanced Seminar in International Relations (5, max. 10) I&S Examination of contemporary developments in the field of international relations. Content varies according to the nature of developments and research interests of the instructor.

POL S 404 Topics in Public Policy (3-5, max. 6) I&S Examines selected issues of importance in all areas of public policy. Focus on in-depth analysis of vital public policy issues and the integration of economic, political, and administrative perspectives on them. Offered: jointly with PB AF 499.

POL S 405 Advanced Seminar in American Politics (5, max. 10) I&S Intensive reading and research in selected problems or fields of political analysis.

POL S 406 Marxian Political Economy (5) I&S Explores the relationship between social classes, the state, and political power in advanced capitalist societies. Investigates this relationship primarily by means of the tools of Marxian political economy and, in the process, evaluates these tools. Emphasis on theoretical perspectives, although the reading list has a few empirical applications as well. Recommended: POL S 201.

POL S 407 International Conflict (5) I&S E. KIER, J. MERCER Examines different theoretical explanations for the causes of war, including the role of international, state, organizational, and individual factors; additional topics vary with instructor. May include the development of warfare, deterring weapons of mass destruction, terrorism, intelligence, and the ethics of warfare.

POL S 409 Undergraduate Seminar in Political Economy (5, max. 10) I&S Seminar in political economy with focus on Marxian and public choice approaches to political economy. Explores the questions raised by each approach, the assumption(s) and testability of hypotheses, and applies these approaches to a number of problems in political economy. Recommended: ECON 300; POL S 270. Offered: jointly with ECON 409.

POL S 410 Technology, Politics, and the State (5) I&S Relationships between politics and technological change. Considers whether the relations between political and economic systems of industrial societies have been fundamentally altered by the increased importance and interdependence of government, experts, and new technological possibilities for intervention in social life.

POL S 411 Theories of the State (5) I&S Topics may include origins and development of the state; arguments about the necessity, desirability, and proper role of the state; the nature and operation of modern states and the international state system; the legitimacy of modern state power.

POL S 412 Democratic Theory (5) I&S Explores the concept of democracy and theoretical models purporting to describe its central features: majority rule, participation, and deliberation. Themes also include: representative vs. direct democracy; the rights of minorities; the relationship between democracy and other political theories such as liberalism, socialism, and conservatism. Recommended: POL S 201.

POL S 413 Contemporary Political Theory (5, max. 10) I&S Analysis of political theorists, exploring contemporary theories of humanity and society that form the basis for differing political ideas. Recommended: POL S 201.

POL S 414 Politics and Culture (5) I&S How people interpret and shape the political world around them through the use of such cultural resources as language, symbolism, myth, and ritual. The various uses of these cultural elements establish the place of the individual in society, influence the perception of political events, and create opportunities for individual and mass political responses.

POL S 415 Women's Rights in an Integrated Europe (5) I&S Examines the transformation in women's rights policy within the European community from the late 1950s through the present. Focuses on the legal rules and bodies that govern not only these policy domains, but also their evolution and impacts. Offered: jointly with LSJ 428.

POL S 416 Economic Theory as Applied to the Political System (5) I&S Explanation and evaluation of the political system, using elementary economics theory. Topics include alternative voting rules, the political effectiveness of various types of groups, causes and consequences of logrolling, and bureaucratic organizations. Prerequisite: ECON 300. Offered: jointly with ECON 452.

POL S 417 Political Economy of India (5) I&S Analysis of relationships among processes of economic change, political institutions, and structures of political power in contemporary India. Includes contrasting approaches to Indian economic development, land reform, radical and agrarian political movements, and role of foreign aid. Offered: jointly with JSIS A 417.

POL S 418 Japanese Trade Politics (5) I&S R. Pekkanen Survey of Japan's foreign trade diplomacy. Examines evolution of Japan's trade patterns in exports and foreign direct investment with key partners. Covers institutional and legal frameworks of Japan's trade relations, such as bilateral fora, regional options including free trade agreements, and multilateral venues such as the WTO. Recommended: either JSIS A 437 or POL S 424. Offered: jointly with JSIS A 487.

POL S 419 United States-China Relations (5) I&S Bachman Surveys the history of United States-China relations and examines the evolution of bilateral relations, particularly since 1949. Focus on the period since 1972 and the major issues as they have evolved since that time, including trade, human rights, security, and Taiwan. Offered: jointly with JSIS A 459.

POL S 420 Soviet and Russian Foreign Policy (5) I&S Ideological, historical, and strategic components of Soviet foreign policy; Gorbachev's "new thinking" and the collapse of the USSR; redefining post-Soviet "Russia"; Russian military and security policy; Russia and the West; Russian relations with the newly independent states.

POL S 421 Relations Among Communist and Post-Communist States (5) I&S Major disputes and types of relationships among different communist states; international effects of the communist collapse; comparative dynamics of state-building, market reform, and democratic transition; international integration and domestic politics in the former Soviet bloc; ethnic conflict and the problem of state boundaries; redefining security in the post-communist milieu.

POL S 422 International Environmental Politics Seminar (5) I&S Study of the practical and theoretical challenges associated with global ecological interdependence. Examination of international treaties and institutions, state, and nonstate actors with an emphasis on the emerging concept of sustainability.

POL S 424 International Relations of Japan (5) I&S S. Pekkanen Comprehensive examination of Japan's international relations. Covers issues such as trade, security, environment, aid, and human rights. Investigates Japan's participation in international organizations, including the UN, World Bank, IMF, and WTO. Examines Japan's relations with the United States, the European Union, Asia, Latin America, Africa, and other regions. Recommended: JSIS A 242. Offered: jointly with JSIS A 437.

POL S 425 War and Deterrence (5) I&S Seminar addresses the strengths and weaknesses of deterrence theory and then applies it to a variety of international security issues. Topics may include deterring the use of nuclear, chemical, and biological weapons, the use of brute force when deterrence fails, and the role for humanitarian intervention.

POL S 426 World Politics (5) I&S The nation-state system and its alternatives, world distributions of preferences and power, structure of international authority, historical world societies and their politics. Offered: jointly with JSIS B 426.

POL S 427 International Political Economy (5) I&S Examines major theoretical problems, substantive issues, and schools of thought in international political economy (IPE), including issues of trade, production, and finance. Preparation for critical analysis of dilemmas entailed in establishing and maintaining an instrumentally effective and ethically acceptable IPE system.

POL S 428 Military Intervention (5) I&S Historical and theoretical analysis of military intervention in the post-World War II era. Considers how and why interventions occur and evaluates intervention as a foreign-policy response.

POL S 429 Political Parties in Japan and East Asia (5) I&S R. Pekkanen Focus on political parties in Japan. Combines theoretical readings on political parties with intensive study of Japanese political parties. Recommended: either JSIS A 242, JSIS A/POL S 435, or JSIS A 424/HSTAS 424. Offered: jointly with JSIS A 436.

POL S 430 Civil-Military Relations in Democracies (5) I&S E. KIER Explores issues of civil-military relations in the United States including debates about the garrison state hypothesis; military advice on the use of force; the civil-military "gap"; and issues of race, gender, and sexual orientation in the military.

POL S 431 International Relations in the Middle East (5) I&S Study of domestic sources of foreign policy in the Middle East; politics of oil; the East-West rivalry in the arena; and conflict and collaboration among the local powers.

POL S 432 Political Islam and Islamic Fundamentalism (5) I&S Robinson Study of resurgence, since mid-1970s, of political Islam and what has come to be called Islamic fundamentalism, especially in the Middle East. Topics include the nature and variety of political Islam today, causes and implications of the current resurgence, and comparison with previous resurgences. Offered: jointly with JSIS B 406.

POL S 433 International Relations in Southeast Asia (5) I&S Analysis of the problems affecting relations among the countries of Southeast Asia.

POL S 434 International Relations of South Asia (5) I&S Interrelationships of domestic, interstate, and extraregional forces and their effects upon the resolution or expansion of interstate conflicts in South Asia. Offered: jointly with JSIS A 434.

POL S 435 Japanese Government and Politics (5) I&S Government and politics of Japan with emphasis on the period since 1945. Recommended: JSIS A 242. Offered: jointly with JSIS A 435.

POL S 436 Ethnic Politics and Nationalism in Multi-Ethnic Societies (5) I&S Provides a broad theoretical base, both descriptive and analytical, for the comparative study of ethnicity and nationalism. Examples drawn from ethnic movements in different societies. Some previous exposure either to introductory courses in political science or to courses in ethnicity in other departments is desirable. Offered: jointly with JSIS B 436.

POL S 437 Politics in Scandinavia (5) I&S C. INGEBRITSEN Twentieth-century politics in Scandinavia. How Scandinavian countries have been governed. Costs and consequences of their governmental style and its uncertain future. Optimal size of polities, problems of mature welfare states, process of leadership and representation in multi-party systems, decline of political parties. Offered: jointly with SCAND 437.

POL S 438 Politics in France (5) I&S Study of contemporary France. Structures of government in the Fifth Republic; nature of French voting behavior and evolution of the bipolarized political party system; behavior of political interest groups; training of France's administrative elite and functioning of the state bureaucracy; dynamics of policy-making.

POL S 439 Politics of Divided Korea (5) I&S Governments, politics, and economy of South and North Korea, the inter-Korea relations, and the two Koreas' relationship with the major powers - especially the United States - with emphasis on the post-cold war period. Offered: jointly with JSIS A 439.

POL S 440 European Fascism (5) I&S Analysis of fascism as revolutionary movement and type of political system in post-World War I Europe: Hitler's Third Reich, Mussolini's Italy, and Vichy France. Consideration of dynamics of resistance, policies that produced Holocaust, and questions raised at trials of fascist leaders in Nuremberg and elsewhere.

POL S 441 Government and Politics of Russia (5) I&S Ideological and historical bases of Soviet politics; Leninism; Stalinism; Gorbachev's perestroika and the collapse of the USSR; the role of Yeltsin; problems of Russian state-building, market reform, and democratic transition; political parties and civil society; the relationship between the center and the regions; the problem of Russian national identity.

POL S 442 Government and Politics of China (5) I&S S. WHITING Post-1949 government and politics, with emphasis on problems of political change in modern China. Offered: jointly with JSIS A 408.

POL S 443 Comparative Political Societies (5) I&S Analyses of modern and premodern types of stable political society; special attention to contemporary representative democracy.

POL S 444 Revolutionary Regimes (5) I&S Analysis of the several types of political regimes concerned with effecting fundamental social change; emphasis on the twentieth century.

POL S 445 Politics and Society in Eastern Europe (5) I&S Political and social issues in lands east of the Elbe, treating some historical problems but focusing particularly on developments since 1945. Includes all communist states of Eastern Europe and their successors. Offered: jointly with JSIS D 445.

POL S 447 Advanced Seminar in Comparative Politics (5, max. 10) I&S Selected comparative political problems, po-

litical institutions, processes, and issues in comparative perspective. Strongly Recommended: POL S 204.

POL S 448 Politics of the European Union (5) I&S Examines the origins, structures, and political dynamics of the European Union. Attention given to theories of integration, to relations between the European Union and member states, and to the role of the European Union in world politics.

POL S 449 Politics of Developing Areas (5) I&S Comparative study of problems of national integration and political development in the new states of Asia and Africa.

POL S 451 Communication Technology and Politics (5) I&S Employs some core concepts of political communication and theories of democracy to examine the emerging role of information and communication technologies in candidate and issue campaigning; online voting; protest and advocacy movements; law-making and electronic governance in the United States and internationally. Offered: jointly with COM 407.

POL S 452 Mass Media and Public Opinion (5) I&S Examines the foundations of the idea of public opinion in a democratic environment and the role of mass communication in the organization, implementation, and control of that opinion. Considers these relationships from the perspectives of societal elites, media, and citizens. Offered: jointly with COM 414.

POL S 453 The State Legislature (5) I&S Study of American state legislatures, with special reference to Washington State legislature. Student must spend several Fridays in Olympia when the legislature is in session. Those desiring a more extensive involvement with the legislature should enroll in the political internship.

POL S 454 Political Communication Seminar (5, max. 10) I&S Contemporary topics studying how communication affects citizen engagement with public life. Offered: jointly with COM 411.

POL S 455 Political Deliberation (5) I&S Exploration of philosophical and empirical writings on political deliberation in small groups, campaigns, and other public settings. Contemporary deliberative theory. Participation in face-to-face discussions on current issues. Recommended: either COM 273 or COM 373. Offered: jointly with COM 417.

POL S 457 Topics in Labor Research (5, max. 10) I&S Analysis of the post-World War II decline of national labor movements and strategies employed to reverse this trend. Requires a major research project on organizing, bargaining, or another question in labor studies. Prerequisite: either POL S 249, HIST 249, or SOC 266. Offered: jointly with HSTCMP 457.

POL S 460 Political Economy of the European Union (5) I&S J. CAPORASO Historical foundation of the European Economic Community; major phases of its development; theoretical explanations for European integration.

POL S 461 Mass Media Law (5) I&S Survey of laws and regulations that affect the print and broadcast media. Includes material on First Amendment, libel, invasion of privacy, freedom of information, copyright, obscenity, advertising and broadcast regulation, and matters relating to press coverage of the judicial system. Offered: jointly with COM 440.

POL S 462 The Supreme Court in American Politics (5) I&S Explores the US Supreme Court as a political institution. Topics include processes that bring issues before the court, influences on judicial decision making, the impact of the court on democratic processes, the role of the court in constitutional development, and the court's interactions with other branches. Prerequisite: either POL S 360 or POL S 361.

POL S 464 The Politics of American Criminal Justice (5) I&S Political forces and value choices associated with the enforcement of criminal law. Distribution of resources among participants in the criminal justice system (e.g., police, attorneys, defendants, and judges). Understanding

and evaluation of the interaction of criminal justice processes with the political system.

POL S 465 Law and Public Policy in the United States (5) I&S Relationship between law and public policy, with particular attention to problems of social, economic, and political change. Considers legal and constitutional processes as they relate to such problems of public policy as race relations, the environment, and the economy.

POL S 467 Comparative Law in Society (5) I&S Legal systems around the world as they actually work in their respective political, social, and economic contexts. Emergence and development of European legal systems, legal customs at variance with those of Europe, problems of legal processes in the modern state.

POL S 468 Comparative Media Systems (5) I&S Provides students an understanding of policies that shape national communication processes and systems. Uses comparative analysis to identify both similarities and differences among media structures of nations at different levels of development. Primary emphasis on broadcast media. Offered: jointly with COM 420/JSIS B 419.

POL S 469 Law and Rights in Authoritarian Regimes (5) I&S S. WHITING Explores role of law and courts and nature of rights in authoritarian regimes. Questions addressed include why authoritarian regimes promote "rule-of-law", who is empowered by law, and the political consequences of "rule-of-law" promotion. Recommended: LSJ 366/JSIS B 366 or POL S 367/LSJ 367. Offered: jointly with JSIS B 469/LSJ 469.

POL S 470 Public Bureaucracies in the American Political Order (5) I&S Growth, power, and roles of governmental bureaucracies in America: conflict and conformity with American political thought, other political institutions, and the public.

POL S 471 Politics of Risk (5) I&S May Examines risks that occur infrequently but have catastrophic impacts, including health and environmental harms, terrorism, and natural disasters. Considers social science theorizing about risks, how risks enter the policy agenda, and political and policy responses to different risks within the United States.

POL S 472 Electoral Systems (5) I&S R. Pekkanen Explores a fundamental link between citizens and political representation: how electoral systems shape party systems, what kinds of people become candidates, how parties work, representation, and policy. Covers effects and mechanics of the various voting systems. Offered: jointly with JSIS B 472.

POL S 473 Decision-Making in Politics (5) I&S Process of decision-making in politics at elite and mass levels, comparison of approaches based on the comprehensive rationality of decision makers with approaches based on limitations on the cognitive capacities of decision makers. Applications to real decision-making situations.

POL S 474 Government and the Economy (5) I&S Interaction between politics and the economy. Impact of policy makers on economic performance. Models of partisan and political business cycles. Concepts of economic voting. Marxist theories of modern capitalist economics.

POL S 475 Public Choice (5) I&S A. GILL Problems and prospects for collective action in a political democracy. Designing rules and institutions for effective central authority and effective constraints on governmental power. Social choice theory and game theory. Recommended: either POL S 270 or POL S 474.

POL S 476 Strategy in Politics (5) I&S Explores the problem of finding fair methods for making social decisions, and examines alternative methods of social choice. Emphasis on the importance of agenda control for outcomes, and the implications of theories of social choice for common interpretations of concepts such as democracy and the general will. Recommended: either POL S 101 or POL S 202; POL S 481.

POL S 477 African Political Development (5) I&S Topics in contemporary African politics related to development of the African state in comparative perspective, including state formation; nationalism and the struggle for independence; civil wars, genocide, and under-development; democratic transition, elections, and voting; economic growth; film and literature; gender and ethnicity; and corruption and terrorism. Prerequisite: POL S 204.

POL S 479 Contemporary Central Asian Politics (5) I&S Radnitz Examines the politics of contemporary post-Soviet Central Asia. Analyzes issues relevant to the region in comparative perspective, including democratization, religion, terrorism, civil society, economic reform, ethnic identity, and international influences. Uses theory to shed light on current policy debates. Offered: jointly with JSIS A 479.

POL S 480 Comparative Politics and Korea Studies (5) I&S Ha Approaches Korean politics, political economy, and society from a comparative perspective. Examples of major comparative questions based on Korean case include democratization, strong state dynamics, civil society, and impact of globalization. Offered: jointly with JSIS A 466.

POL S 481 Big City Politics (5) I&S Contemporary big city politics, focusing on Seattle and the largest 25 cities. Social, economic, and political trends that have shaped characteristics of large American cities. Distribution and use of economic and political power among parties and groups. Future of large cities and politics of change.

POL S 488 Honors Senior Thesis (5-) I&S Political Science Honors students individually arrange for independent study of selected topics under the direction of a faculty member. Research paper is student's honors thesis.

POL S 489 Honors Senior Thesis (-5) I&S Political Science Honors students individually arrange for independent study of selected topics under the direction of a faculty member. Research paper is student's honors thesis.

POL S 495 Study Abroad: Political Science (1-10, max. 20) I&S Political science courses taken through a UW approved study abroad program for which there are no direct UW equivalents. Specific content varies and must be individually evaluated.

POL S 496 Undergraduate Internship (2-5, max. 15) Students serving in approved internships. Credit/no-credit only.

POL S 497 Political Internship in State Government (5, max. 20) Students serving in approved internship program with state government agencies.

POL S 498 The Washington Center Internship (15) Full-time academic internship with the Washington Center in Washington, DC. Includes internship activities, academic seminar, assemblies, and related activities. Recommended: POL S 202; 45 UW credits. Credit/no-credit only.

POL S 499 Undergraduate Readings and Research (1-5, max. 20) Intensive study with faculty supervision.

POL S 500 Political Research Design and Analysis (5) Major quantitative methods of empirical research in political science. Primary emphasis on research design, data collection, data analysis, and use of computers.

POL S 501 Advanced Political Research Design and Analysis (5) Testing theories with empirical evidence. Examines current topics in research methods and statistical analysis in political science. Content varies according to recent developments in the field and with interests of instructor. Offered: jointly with CS&SS 501.

POL S 502 Qualitative Research Methods (5) Introduction to qualitative methods in political science, emphasizing practical experience with techniques. Readings and exercises cover research design, multiple methods, varieties of qualitative data, measurement and validation, participant observation, interviewing, and content analysis. Research decision-making issues include analytical strategies, presentation of data, ethics, epistemology, and theory-building.

POL S 503 Advanced Quantitative Political Methodology (5) Theory and practice of likelihood inference. Includes probability modeling, maximum likelihood estimation, models for binary responses, count models, sample selection, and basis time series analysis. Offered: jointly with CS&SS 503.

POL S 504 Multi-Method Field Research (5) J. LONG IV Provides training in how to design and implement multi-method field research in American, comparative, and international politics, covering qualitative/ethnographic approaches; survey design, implementation, and analysis; and the design and implementation of field experiments and randomized impact evaluation.

POL S 505 Comparative Politics Core (5) Modern theories, approaches, and methods in the study of comparative politics.

POL S 509 Political Theory Core (5, max. 10) Central themes in political theory and the works of major political theorists, past and present.

POL S 510 Maximum Likelihood Methods for the Social Sciences (5) C. ADOLPH Introduces maximum likelihood, a more general method for modeling social phenomena than linear regression. Topics include discrete, time series, and spatial data, model interpretation, and fitting. Prerequisite: POL S 501/CS&SS 501; POL S 503/CS&SS 503. Offered: jointly with CS&SS 510; W.

POL S 511 Seminar in Ethical and Political Theory (5) Ethical writings of major political philosophers. Coherent themes arising from these works and assessment of their impact on concepts of politics.

POL S 513 Issues in Feminist Theory (5, max. 10) Contemporary issues in feminist theory as they affect studies of women, politics, and society. Content varies according to recent developments in the field and the research interests of the instructor.

POL S 514 Selected Topics in Political Theory (5, max. 15) Selected topics, historical and conceptual, national, regional, and universal. Prerequisite: permission of instructor.

POL S 515 Political Theory Research Seminar (5) Survey of paradigmatic research approaches in political theory through the exploration of a theme (canonical text, theoretical concept, and specific topic). Methods covered may include rational choice, psychoanalytic, Straussian, Marxian, and feminist approaches. Students carry out substantive theoretical research. Recommended: second- or third-year graduate standing.

POL S 516 Special Topics in American Political Thought (3/5) Special topics or themes in the development of American political culture.

POL S 517 Marxism and Critical Theory (5) Works of Marx and Engels as well as selected works of twentieth-century Marxist and critical theorists. Themes such as Marx's method, twentieth-century interpretations of Marx, and relationship of twentieth-century theorists to their eighteenth- and nineteenth-century forebears.

POL S 519 Modern Scandinavian Politics (5) Analyzes the political, economic, and historical development of Sweden, Norway, Denmark, Iceland, and Finland from World War II to the present. Readings focus on domestic and foreign policies that distinguish these countries from other advanced industrial societies. Offered: jointly with SCAND 519.

POL S 520 Seminar on Russian Foreign Policy (3) Selected topics in the development and objectives of the foreign policy of the Russian Federation.

POL S 521 International Relations Core (5) Key theories, concepts, and debates in the study of world politics and international relations. Provides an overview of the field and prepares students for the IR comprehensive exam.

POL S 522 International Political Economy (5) Theories of international political economy. Focuses on the emergence and development of the modern world system, the transi-

tion from feudalism to capitalism, and the institution of the nation-state system. Examines the political economy of trade, investment, and the international division of labor from a variety of theoretical perspectives. Prerequisite: POL S 521.

POL S 524 International Security (5) *E. KIER* Introduces some of the major debates concerning the use of force in international politics. Covers traditional issues in international security such as alliances and the causes of war, as well as some of the new and important questions, such as explaining war outcomes and war termination.

POL S 525 International Law and Institutions (5) *K. LITFIN* Inputs of international law into the decisional process in foreign policy. Effect of policy on law. Relevant roles of individuals and institutions in routine and crisis situations.

POL S 526 The Security of China (5) *Bachman* Examines how the Chinese state conceptualizes its national security interests and how it pursues strategies designed to achieve those interests. Topics include use of force, military modernization, civil-military relations, and defense industrialization. Offered: jointly with JSIS A 526.

POL S 527 Special Topics in International Relations Research (5, max. 15) Examination of current topics in the theory and practice of world politics. Content varies according to recent developments in the field and research interests of the instructor.

POL S 530 Transatlantic Relations: The United States and Europe in World Politics (3) Fulfills required component of "American Module" of Transatlantic Studies program. Addresses political dynamics of relations between United States and Europe from American republic's founding to post-Cold War era. Limited to students in Transatlantic Studies program.

POL S 532 The Chinese Political System (5) *S. WHITING* Examination of key approaches, interpretations, and secondary literature in the study of contemporary Chinese politics. Offered: jointly with JSIS A 532.

POL S 533 Seminar on Contemporary Chinese Politics (5) Research on selected problems in contemporary Chinese politics. Prerequisite: POL S 532, or permission of instructor. Offered: jointly with JSIS D 533.

POL S 534 International Affairs (3) Provides a broad understanding of international issues and United States policy. Students explore U.S. foreign policy and theories of major international actors in international trade, security, and strategic concerns, refugee policy, conflict resolution, development assistance, and the environment. Offered: jointly with JSIS B 534/PB AF 530.

POL S 535 International Relations of Modern China (5) Foreign policy of the People's Republic of China: historical antecedents; domestic and international systemic determinants; and Chinese policies toward major states, regions, and issues. Prerequisite: a course on contemporary Chinese politics or history, or permission of instructor. Offered: jointly with JSIS A 535.

POL S 537 Approaches to East European Politics (3-5) Selected concepts and methodologies useful for the analysis of politics and social structure in the socialist countries of east-central and southeastern Europe. Prerequisite: permission of instructor. Offered: jointly with JSIS A 563.

POL S 538 Government and Politics in the Middle East and North Africa (5) Political change in the area within the context of comparative politics; breakdown of traditional political systems; new range of choice expressed in competing ideologies; governmental and nongovernmental instrumentation of change; and problems of international relations and regional conflict and integration.

POL S 539 International Relations of Northeast Asia (5) *Hellmann* Comprehensive survey of contemporary international relations of Northeast Asia with emphasis on Russia, Japan, China, and the United States. Multidisciplinary approach placing contemporary problems in historical

context, drawing on modern social science theories. Connections between defense and economics are examined. Prerequisite: permission of instructor. Offered: jointly with JSIS A 551.

POL S 540 Problems in South Asian Politics (3) Research problems in contemporary Indian politics.

POL S 541 Institutions and Institutional Change in the Soviet Union, Russia, and the Newly Independent States (5) Critical appraisal of the principal theories and research methods dealing with the development of the Soviet state from 1917-1991 and the formation of the newly independent states after the Soviet collapse.

POL S 542 Seminar: State and Society (5) *Migdal* Examines the mutually conditioning relationship between states and the societies they seek to govern. Studies states as large, complex organizations and their interactions with society on different levels. Shows that interactions on any level affect the nature of the state on other levels as well. Offered: jointly with JSIS B 542.

POL S 543 Latin American Politics (5) Theories of authoritarianism, corporatism, democratization, and revolution in Latin America. Explores role of international and domestic economic factors shaping politics and the effect of politics on economic development. Examines elite behavior and grassroots social movements.

POL S 544 Problems in Comparative Government (5, max. 15) Selected problems in the comparative analysis of political institutions, organizations, and systems.

POL S 547 Politics of Reform (5) Examines cases of reform in democratic political systems, e.g., Roosevelt's New Deal, Allende's Chilean "revolution," Mitterand's socialist experiment in France, and the Thatcher government in Britain.

POL S 548 Comparative Political Parties (5) Role of political parties in the modern state. Similarities and differences in origins and development of political parties and functions they perform, both in established democracies and in developing countries.

POL S 549 Problems of Political Development (5) Concepts of development and modernization, with particular attention to their political dimensions and their application to various historical and contemporary cases.

POL S 550 American Politics Core (5) Systematic survey of the American government and politics literature; focuses on national politics.

POL S 551 Political Communication (5) Surveys classic works and new directions in political communication, including functionalist, structuralist, constructivist, network, and comparative approaches, reflecting a range of methods. Examines political organizing, electoral and legislative processes, civic (dis)engagement, media and politics, public deliberation and opinion formation, political identity and discourse. Offered: jointly with COM 551.

POL S 552 Special Topics in Political Communication (5, max. 10) Examination of current topics in the theory and practice of political communication.

POL S 553 Public Opinion (5) *C. PARKER* Selected problems in opinion formation, characteristics, and role of public opinion in policy-making process.

POL S 554 Legislative Politics (5) Selected problems in legislative processes and leadership, state and national.

POL S 555 American Politics Topics (5, max. 10) Examination of current topics in the theory and practice of American politics. Content varies according to recent developments in the field and research interests of the instructor.

POL S 556 American Political Development (5) Examination of leading works in, and theories of, American political development. Topics include the development approach itself; critical junctures in U.S. political history; key changes in institutions, the American state, the representation of interests and party politics; and the relevance of development studies to current politics.

POL S 557 United States Party System (5) Examines the institutional and behavioral foundations of party politics in the United States, emphasizing key historical patterns of party system development and the major scholarly approaches to the study of the American parties and party politics.

POL S 558 Political Deliberation (5) *Gastil* Exploration of deliberative theories of democracy and research on political discussion in campaigns, face-to-face meetings, on-line forums, and informal conversations. Presents different uses and understandings of deliberation and its role in democratic governance. Recommended: COM 577; POL S 551/COM 551. Offered: jointly with COM 555.

POL S 559 Special Topics in Political Methodology (5, max. 10) Examination of current topics on the theory and practice of political methodology. Course content varies according to recent developments in the field and the research interests of the instructor.

POL S 560 Industrialization and International Relations (5) *Ha* Examines internal-external linkage with a focus on industrialization and international relations. Comparative perspective on the question of how industrialization shapes distinctive international perspectives in terms of perception, strategies, and foreign policy behaviors. Countries covered: South Korea, Japan, Prussia, the Soviet Union, and China. Offered: jointly with JSIS A 552.

POL S 561 Law and Politics (5) *McCann, Lovell.* Points and levels at which law and politics intersect. What is distinctive about legal forms; how these legal forms influence, and are influenced by, politics. Conceptions of law, courts and public policy, law and bureaucracy, civil and criminal justice, and the legal profession.

POL S 562 Law, Politics, and Social Control (5) Explores works of social scientists and lawyers regarding these competing conceptions of social control: as the seamy side of law - reinforcing equitable patterns of domination and disciplining deviants; as law embodying society's basic values, articulating minimum rules for harmonious social interaction.

POL S 563 Supreme Court in American Politics (5) Explores the tendency in the United States to turn to the Supreme Court to provide constitutional solutions for some of our biggest social, economic, and political problems. Focuses on the controversies concerning the legitimacy and capacity of the Supreme Court to intervene in American politics and public policy.

POL S 564 Law and the Politics of Social Change (5) Explores the many ways that law figures into the politics of social struggle and reform activity. Analyzes law in terms of particular state institutions (courts, agencies), professional elites (lawyers, judges), and especially cultural norms ("rights" discourses) that are routinely mobilized by reform-movement activists.

POL S 565 Special Topics in Public Law (5, max. 10) Examination of current topics on the theory and practice of public law. Content varies according to recent developments in the field and the research interests of the instructor.

POL S 566 Comparative Law and Politics (5) *R. CICHOWSKI* Study of the interaction between law and politics, at both the macro and micro levels of politics, and discussion of research drawing from a wide array of geographical settings. Examination in comparative context of whether macro-structures are autonomous from underlying social structures of power and interest in the micro-level.

POL S 567 Discourse and the Politics of Resistance (5) Examines how disciplines theorize and empirically study discourse in the politics of resistance. Examines the discursive turn in U.S. and European "new" social movement theory. Ranges across disciplines, such as political sociology, cultural anthropology and human geography, to discover ways in which discourse is conceptualized and studied for its role in seeding social change. Offered: jointly with COM 554.

POL S 569 Law and Rights in Authoritative Regimes (5)

Explores role of law and courts and the nature of rights in authoritarian regimes. Questions addressed include why authoritarian regimes promote “rule-of-law”, who is empowered by law, and the political consequences of “rule-of-law promotion. Offered: jointly with JSIS B 569.

POL S 570 The American Racial State (5)

Explores the mutually constitutive relationship between race and American political institutions, beginning with theories of race and racial constructions, race-making and nation-making, racial triangulation, and intersectionality. Examines various institutions and public policies as manifestations of the American racial state, focusing on the epistemological challenges of identifying race, racism, and racialization.

POL S 571 American National Institutions (5)

Answers the question, “Do institutions matter?” Surveys American national institutions from theoretical perspectives, focusing on how they affect the manner in which decisions are made. Employs cross-institutional perspective of American institutions.

POL S 572 Electoral Systems (5)

R. Pekkanen Explores a fundamental link between citizens and political representation: how electoral systems shape party systems, what kinds of people become candidates, how parties work, representation, and policy. Covers effects and mechanics of the various voting systems. Offered: jointly with JSIS B 572.

POL S 573 Topics in Public Policy (5, max. 10)

Specialized research topics with a policy process or related theoretical content.

POL S 574 Environmental Regulation Policy (5)

Scholarly and practical aspects of environmental regulation. Examines literature concerning regulatory policy design, policy instruments, federalism, compliance, and enforcement. Studies selected federal, state, and other nations’ environmental policies. Participants are expected to have a good understanding of American policy processes.

POL S 575 Public Policy Processes (5)

Covers political science research about policy processes. Research seminar addressing frameworks and perspectives on policy processes as they concern issue emergence, agenda dynamics, policy subsystems, policy learning, and implementation.

POL S 576 Political Culture (5)

Values, beliefs, and rituals that guide political action in society. Some approaches emphasize symbolic sphere of value and belief over material conditions of power and economic production. Other approaches emphasize material relations. Reconciliation of symbolic and materialist approaches that explain intervention of the modern state in cultural processes.

POL S 577 The Politics of Social Movements (5)

Theoretical inquiry directed to questions of collective action and political tactics by social movement groups. Case studies include labor, civil rights, women’s, environmental, and other movements in twentieth-century United States.

POL S 578 Health Politics and Policy (5)

Introduces central themes of health-policy research: health is not healthcare and politics has much to do with why our healthcare system works as it does. Investigates how social science helps us understand health issues.

POL S 579 Contemporary Central Asian Politics (5)

Radnitz Examines the politics of contemporary post-Soviet Central Asia. Analyzes issues relevant to the region in comparative perspective, including democratization, religion, terrorism, civil society, economic reform, ethnic identity, and international influences. Uses theory to shed light on current policy debates. Offered: jointly with JSIS A 579.

POL S 580 Comparative Politics and Korea Studies (5)

Ha Approaches Korean politics, political economy, and society from a comparative perspective. Examples of major comparative questions based on Korean case include democratization, strong state dynamics, civil society, and impact of globalization. Offered: jointly with JSIS A 566.

POL S 582 Institutional Analysis (3/5)

Social change and property rights theory. Exploration of long-term secular change through works whose approaches derive from neo-classical economics and analytical Marxism. Evolution and transformation of property rights over land, labor, and capital and the consequences of the property rights structure for political and economic institutions.

POL S 583 Economic Theories of Politics (5)

Problems of public goods provision and collective action. Collective action theories and applications as well as critical review of the concept of rationality.

POL S 584 Comparative Political Economy (5)

Overview of current developments in comparative political economy. Topics may include globalization, the welfare state, partisan models of economic policymaking, economic development, and trade.

POL S 586 Topics in International Political Economy (5, max. 10)

Examination of current topics in the theory and practice of international political economy. Content varies according to recent developments in the field and research interests of the instructor.

POL S 587 Politics of Urban Reform (5)

Interpretations of urban reformers at turn of this century and during 1960s and 1970s. Historical and political science literature on the subject. Prerequisite: permission of instructor.

POL S 588 Special Topics in Comparative Political Economy (5, max. 10)

Examination of current topics in the theory and practice of comparative political economy. Content varies according to recent developments in the field and research interests of the instructor.

POL S 589 Special Topics in Political Economy (3-5, max. 10)

Evaluating research in political economy as well as developing research problems. Topics vary with instructor and with current problems in the literature.

POL S 590 Seminar in Political Behavior (5, max. 10)

Analysis of behavioral research in selected fields of political science.

POL S 593 Theories of Decision Making (5)

Explanation of political decisions using models of such theoretical processes as preference formation, learning, heuristics, noncooperative games, collective action, agenda manipulation, and coalition formation. Examination of competing notions of political rationality and irrationality and criteria for their evaluation. Strategies for design of decision research.

POL S 594 Political Communication Research Practicum: Community, Communication, and Civic Engagement (5)

Overview of the research process, including literature review, hypothesis generation, data gathering, empirical analysis, and writing for publication. Topics vary with instructor, but generally address questions of how communication affects democracy and citizen engagement in national or international contests. Offered: jointly with COM 556.

POL S 595 College Teaching of Political Science (1)

POL S 597 Directed Readings (1-10, max. 10) Intensive reading in the literatures of political science, directed by the chair of the doctoral Supervisory Committee. Credit/no-credit only.

POL S 598 Independent Writing I (1-5, max. 5)

Supervised research and writing for graduate students completing the MA essay of distinction.

POL S 600 Independent Study or Research (*-)**POL S 800 Doctoral Dissertation (*-)**

Psychology

119 Guthrie

Psychology involves the scientific study of behavior and its causes and the understanding of human and animal behavior in a variety of settings. Psychology is studied both as a natural science, which stresses physical and biological causes of behavior, and as a social science, which stresses the effects of the social setting on human and animal behavior. Major areas of emphasis are human cognition and perception, animal behavior, behavioral neuroscience, developmental, social and personality, and clinical psychology.

UNDERGRADUATE PROGRAM

Adviser

119 Guthrie, Box 351525

(206) 543-2698

psyadvis@uw.edu

The Department of Psychology offers the following programs of study:

- The Bachelor of Science degree with a major in psychology
- The Bachelor of Arts degree with a major in psychology

The Bachelor of Science program prepares students for doctoral programs in psychology, leading to careers in teaching, research, or clinical psychology. The program emphasizes laboratory/research experience and statistics.

The Bachelor of Arts program provides a general background in psychology for students preparing for master’s-level graduate programs or professional schools, seeking employment at the baccalaureate level, or wanting to apply the principles of psychology in other disciplines.

The department does not have formal programs in educational, school, or counseling psychology; engineering psychology; or industrial psychology.

Bachelor of Science

Suggested First-Year College Courses: MATH 120 and MATH 124. PSYCH 101. Any sociology or anthropology course. Students are encouraged to begin completion of general education requirements.

Suggested Second-Year College Courses: PSYCH 202 and PSYCH 209 should be completed as soon as possible during this year; BIOL 118, BIOL 161-BIOL 162, BIOL 180, BIOL 200, or BIOL 220. Students intending to take animal behavior courses in the Psychology Department should plan to fulfill the biology requirement with either BIOL 161-BIOL 162, BIOL 180, or BIOL 200. Continue working toward completion of general education requirements, including foreign language. The foreign language requirement should, ideally, be completed within the first two years of college.

Department Admission Requirements

Students apply to the Department of Psychology under the same admission requirements, regardless of the degree they wish to pursue.

1. Minimum 2.00 cumulative UW GPA
2. Completion of one of the following math courses with a minimum 2.0 grade: MATH 111, MATH 112, MATH 120, or MATH 124. (Students may fulfill this requirement with test scores that place them in MATH 112 or MATH 124 or higher.)
3. Completion of the following psychology courses with a minimum 2.0 grade in each course and a cumulative

2.50 GPA in the three courses: PSYCH 101, PSYCH 202, and PSYCH 209.

4. Admission is competitive based on the following criteria:

- Preparation for a major in psychology as indicated by the grades earned in courses required for admission
- GPA, with an emphasis on grades earned in psychology courses
- Other evidence of a commitment to becoming a psychology major
- Personal statement reflecting an interest in and commitment to becoming a psychology major
- Copies of unofficial transcripts from all schools attended (UW and transfer).

Meeting the above criteria does not guarantee admission to the department.

5. The application deadline is the first Friday of autumn, winter, and spring quarters; no applications are accepted summer quarter. Applications and additional information are available in 119A Guthrie.

Major Requirements

84-86 credits as follows:

- PSYCH 101, PSYCH 202, PSYCH 209 (with a grade of 2.5 or higher), PSYCH 317 and PSYCH 318
- One lab course from PSYCH 330, PSYCH 331, PSYCH 332, PSYCH 361, PSYCH 417, PSYCH 418, or PSYCH 419
- One course from PSYCH 300, PSYCH 333, or PSYCH 355
- One course from PSYCH 303, PSYCH 305, PSYCH 306, or PSYCH 345
- One additional course from PSYCH 300, PSYCH 303, PSYCH 305, PSYCH 306, PSYCH 333, PSYCH 345, or PSYCH 355
- Three additional graded upper-division classes with at least one at the 400 level (cannot include PSYCH 491 through PSYCH 499)
- PSYCH 499 (3 credits)
- PSYCH 496, PSYCH 497, or PSYCH 498 (3 credits) or 3 additional credits of PSYCH 499
- Up to 6 credits in 200- to 400-level electives to make a minimum total of 66 psychology credits
- (Students may not use PSYCH 200 as an elective if PSYCH 300 is used to fulfill major requirements; or use PSYCH 203 as an elective if PSYCH 303 is used to fulfill major requirements; or use PSYCH 206 as an elective if PSYCH 306 is used to fulfill major requirements; or use PSYCH 245 as an elective if PSYCH 345 is used to fulfill major requirements.)
- Courses in related fields:*
 - MATH 120 and MATH 124. Students may satisfy this requirement by testing out of MATH 124 or MATH 144
 - One biological science course from BIOL 118, BIOL 161-BIOL 162, BIOL 180, BIOL 200, or BIOL 220
 - One of the following philosophy courses: PHIL 120, PHIL 160
 - One social science course (3 to 5 credits) from anthropology or sociology
- Cumulative minimum 2.50 GPA in all PSYCH courses applied toward the degree (UW and transfer), with a minimum 2.0 grade in each course presented for the major. Note that a grade of 2.5 or higher is required in PSYCH 209 in order for students to progress to the PSYCH 317/PSYCH 318 statistics series.
- Transfer students must meet all of the above requirements and are required to complete at least 15 grad-

ed credits in psychology at the 300 and 400 level at the UW.

Bachelor of Arts

Suggested First-Year College Courses: MATH 111, MATH 112, MATH 120, or MATH 124. PSYCH 101. Any sociology or anthropology course. Students are encouraged to begin completion of general education requirements.

Suggested Second-Year College Courses: PSYCH 202 and 209 should be completed as soon as possible during this year. BIOL 118, BIOL 161-BIOL 162, BIOL 180, BIOL 200, or BIOL 220. Students intending to take animal behavior courses in the Psychology Department should plan to fulfill the biology requirement with either BIOL 161-BIOL 162, BIOL 180, or BIOL 200 Continue working toward completion of general education requirements, including foreign language. The foreign language requirement should, ideally, be completed within the first two years of college.

Major Requirements

66 to 68 credits as follows:

- PSYCH 101, PSYCH 202, PSYCH 209, PSYCH 315 (or PSYCH 317 and PSYCH 318)
- One lab course from PSYCH 330, PSYCH 331, PSYCH 332, PSYCH 361, PSYCH 417, PSYCH 418, or PSYCH 419
- One course from PSYCH 300, PSYCH 333, or PSYCH 355
- One course from PSYCH 303, PSYCH 305, PSYCH 306, or PSYCH 345
- One additional course from PSYCH 300, PSYCH 303, PSYCH 305, PSYCH 306, PSYCH 333, PSYCH 345, or PSYCH 355
- Two additional graded upper division classes with at least one at the 400 level (cannot include PSYCH 491 through PSYCH 499)
- 3 credits from the following list: PSYCH 494, PSYCH 496, PSYCH 497, PSYCH 498, PSYCH 499; or credit from an approved study abroad program
- Up to 4 credits of PSYCH 200- to 400-level electives to make a minimum total of 53 psychology credits
- (Students may not use PSYCH 200 as an elective if PSYCH 300 is used to fulfill major requirements; or use PSYCH 203 as an elective if PSYCH 303 is used to fulfill major requirements; or use PSYCH 206 as an elective if PSYCH 306 is used to fulfill major requirements; or use PSYCH 245 as an elective if PSYCH 345 is used to fulfill major requirements.)
- Courses in related fields:*
 - One MATH course from MATH 111, MATH 112, MATH 120, MATH 124, or MATH 144. Students may satisfy this requirement by testing out of any of the specified classes.
 - One biological science course from BIOL 118, BIOL 161-BIOL 162, BIOL 180, BIOL 200, or BIOL 220
 - One social science course (3 to 5 credits) from anthropology or sociology
- Minimum 2.50 cumulative GPA in all psychology courses applied toward the degree (UW and transfer), with a minimum 2.0 grade in each course presented for the major
- Transfer students must meet all the above requirements and must to complete at least 15 graded credits in psychology at the 300 and 400 level at the UW.

Student Outcomes and Opportunities

- Learning Objectives and Expected Outcomes:* Students understand and apply scientific methods and principles, receive an excellent preparation in the theoretical explanations of human and animal behavior, and understand

the introductory concepts underlying the biological basis of behavior.

- Instructional and Research Facilities:* The psychology faculty have extensive research facilities and research laboratories on the UW campus and nearby buildings.
- Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- Research, Internships, and Service Learning:* The Department of Psychology offers academic credit for approved fieldwork experience. The advising office maintains internship listings which are updated regularly.
- Department Scholarships:* None offered.
- Student Organizations/Associations:* Psi Chi (national honors society for undergraduate psychology students).
- Of Special Note:* A student may earn either a Bachelor of Science or a Bachelor of Arts degree in psychology, but not both.

GRADUATE PROGRAM

Graduate Program Coordinator

306 Guthrie, Box 351525

(206) 543-2563

psygrad@uw.edu

Graduate work in psychology is organized primarily as preparation for the Doctor of Philosophy degree. The optional Master of Science degree is taken by some doctoral students in the course of their work toward the doctorate.

For graduate instruction, the department is organized into six major areas of study: animal behavior, adult and child clinical, cognition and perception, developmental, physiological, and social psychology and personality. Specialization groups also exist in the sub-areas of diversity and self-regulation, and in community, sport, and quantitative psychology.

The program in clinical psychology is accredited by the American Psychological Association and provides scientific and professional training.

Master of Science (Optional)

A master's-degree-only program is not available. Doctoral students have the option of obtaining a master's degree while working toward the PhD.

Graduation Requirements: Completion of first-year graduate program (see Doctor of Philosophy degree requirements below) and an appropriate research program, including a research thesis.

Doctor of Philosophy

Admission Requirements

An undergraduate degree in psychology is desirable, but not required. Some preparation in biological, social, or quantitative sciences is strongly advised. Applicants are judged on a number of criteria, including academic and research backgrounds, Graduate Record Examination scores, and written evaluations submitted by former professors or supervisors. Admission of new students occurs in autumn quarter. The deadline for receipt of admission material is December 15.

Degree Requirements

Minimum 90 credits, as follows:

- Coursework:*
 - Orientation Week:* PSYCH 500 (1)
 - Psychology Colloquium:* PSYCH 500 (1)

- c. *Statistics and General Methodology*: During the first year, students must complete each of the following with a minimum 2.7 grade: PSYCH 522, PSYCH 523, PSYCH 524, PSYCH 525.
 - d. *Area Course Requirements*: All students are required to take a set of six or more courses as required by the individual areas (see below)
 - e. *Seminars and Advanced Seminars*: All students are strongly encouraged to attend a seminar as specified by their area (see below), and to attend the departmental colloquium (PSYCH 550).
 - f. *Substitutions*: Potential substitutions should be discussed with the student's adviser and Area Head or Area Representative.
2. *Area Requirements*:
- a. *Animal Behavior*:
 - i. *Core Courses*: PSYCH 502, PSYCH 503, PSYCH 562
 - ii. Three additional courses chosen in consultation with adviser. The following courses may be particularly appropriate for animal behavior students: PSYCH 504, PSYCH 505, PSYCH 513
 - iii. All animal behavior students are strongly encouraged to participate in additional seminars and advanced seminars, both within and outside their area, throughout their graduate careers.
 - b. *Adult Clinical Area*:
 - i. *Core Courses*: PSYCH 517, PSYCH 518, PSYCH 519, PSYCH 511 [PSYCH 594 may be substituted], PSYCH 515 [PSYCH 571 or PSYCH 572 may be substituted]
 - ii. Six additional out-of-area courses. These six courses must meet the APA curriculum guidelines for "breadth of scientific psychology," covering biological, affective-cognitive, and social aspects of behavior as determined by mutual agreement between the student and adviser. Courses should be selected toward developing cohesive themes of subspecialty expertise pertinent to the student's future research and clinical endeavors. Core concepts courses that can be used to meet the APA breadth requirements are as follows: Affective-Cognitive Breadth: PSYCH 507 ; Social Breadth: PSYCH 510 (4); Biological Breadth: PSYCH 502 , PSYCH 503 (4), PSYCH 504 , PSYCH 506 . Note: PSYCH 594, PSYCH 571, and PSYCH 572 cannot be used as out-of-area courses.
 - iii. One course in community psychology of minority mental health: PSYCH 574, PSYCH 580, or other approved courses.
 - iv. Three courses in clinical issues and methods: PSYCH 591, PSYCH 587, PSYCH 588
 - v. Two courses in assessment: PSYCH 586; one of the following three courses: PSYCH 576 with PSYCH 590 practicum), PSYCH 578 with PSYCH 590, PSYCH 579
 - vi. Clinical practica on a continuing basis: PSYCH 589, PSYCH 593, PSYCH 597
 - vii. Seminars and advanced seminars: PSYCH 550
 - viii. All clinical students are strongly encouraged to participate in additional seminars and advanced seminars, both within and outside their area, throughout their graduate careers.
 - ix. Other requirements for clinical students: A one-year predoctoral internship
 - c. *Behavioral Neuroscience*:
 - i. *Core Courses*: PSYCH 421, PSYCH 504, NEUBEH 502; two of the following three courses: NEUBEH 501, NEUBEH 503, CONJ 531/CONJ 532
 - ii. Three additional psychology courses: PSYCH 565; not more than one of the following: PSYCH 423, PSYCH 424, PSYCH 426, PSYCH 427, PSYCH 430; one or more of the following: PSYCH 502, PSYCH 503, PSYCH 506, PSYCH 513
 - iii. Seminars and advanced seminars: All BNS students are required to take at least three quarters of PSYCH 522. In addition, all BNS students are required to take at least one advanced seminar (usually PSYCH 542), chosen in consultation with the student's adviser.
 - iv. All behavioral neuroscience students are strongly encouraged to participate in additional seminars and advanced seminars, both within and outside their area, throughout their graduate careers.
 - d. *Child Clinical Area*:
 - i. *Research Methods*: PSYCH 529, PSYCH 531
 - ii. Four courses in child clinical psychology: PSYCH 571, PSYCH 572, PSYCH 576 with PSYCH 590 practicum, PSYCH 573
 - iii. Four core concepts courses: PSYCH 513, PSYCH 514, PSYCH 515, PSYCH 517
 - iv. One course in minority mental health: PSYCH 580
 - v. Three courses in clinical issues and methods: PSYCH 591, PSYCH 587, PSYCH 588
 - vi. Clinical practica on a continuing basis: PSYCH 589, PSYCH 593, PSYCH 597
 - vii. One treatment seminar: PSYCH 543, PSYCH 553, PSYCH 550
 - viii. All child clinical students are strongly encouraged to participate in additional seminars and advanced seminars, both within and outside their area, throughout their graduate careers.
 - ix. Other requirements for child clinical students: A one-year predoctoral internship
 - e. *Cognition and Perception*:
 - i. *Core Courses*: PSYCH 506, PSYCH 507, PSYCH 508
 - ii. Three additional courses, selected to broaden and deepen the student's understanding of his/her research specialty. These courses should be chosen in consultation with the adviser. They can be additional core concepts courses in any area, or other courses chosen from anywhere on campus, within or outside the Psychology Department.
 - iii. The following out-of-area core concepts courses may be particularly appropriate for cognition: PSYCH 504 , PSYCH 510 (4), PSYCH 514 (4), PSYCH 515 (4)
 - iv. Seminars and advanced seminars: PSYCH 555
 - v. All Cognition/Perception students are strongly encouraged to participate in additional seminars and advanced seminars, both within and outside their Area, throughout their graduate careers.
 - f. *Developmental Psychology*:
 - i. *Research Methods*: PSYCH 529
 - ii. *Area Course Requirements*. PSYCH 513, PSYCH 514, PSYCH 515
 - iii. Three additional courses, selected to broaden and deepen the student's understanding of his/her research specialty. These courses should be chosen in consultation with the adviser. They can be additional core concepts courses in any area, or other courses chosen from anywhere on campus, within or outside the Psychology Department.

The following out-of-area core concepts courses may be particularly appropriate for Developmental students, depending on the student's research specialty: PSYCH 503, PSYCH 504, PSYCH 507, PSYCH 510, PSYCH 511

- iv. In lieu of a core concepts course in child clinical psychology, PSYCH 553 is also recommended for Developmental graduate students.
- v. Seminars and advanced seminars: PSYCH 556
- vi. All developmental students are strongly encouraged to participate in additional seminars and advanced seminars, both within and outside their area, throughout their graduate careers.

g. *Social Psychology and Personality*:

- i. In addition to the four statistical courses required by the department, social/personality students are required to take one additional quantitative course, within or outside the department.
- ii. *Core Courses*: PSYCH 510, PSYCH 511
- iii. Four additional courses, selected to broaden and deepen the student's understanding of his/her research specialty. These courses should be chosen in consultation with the adviser. They can be additional core concepts courses in any area, or other courses chosen from anywhere on campus, within or outside the Psychology Department.
- iv. *Seminars and Advanced Seminars*: PSYCH 557, one additional departmental seminar (PSYCH 550 through PSYCH 558) every quarter throughout the student's graduate career
- v. All social/personality students are strongly encouraged to participate in additional seminars and advanced seminars, both within and outside their area, throughout their graduate careers.

Assistantships, Fellowships, or Traineeship Opportunities

Research and teaching assistantships are generally available. Traineeships and fellowships are also available.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

PSYCH 101 Introduction to Psychology (5) I&S King, McDermott, Osterhout, Passer Surveys major areas of psychological science. Core topics include human social behavior, personality, psychological disorders and treatment, learning, memory, human development, biological influences, and research methods. Related topics may include sensation, perception, states of consciousness, thinking, intelligence, language, motivation, emotion, stress and health, cross-cultural psychology, and applied psychology. Offered: AWSpS.

PSYCH 200 Comparative Animal Behavior (5) NW Barash, Beecher Research methods and findings of comparative animal behavior, their importance to an understanding of human behavior; rationale for study of behavioral differences/similarities between animal species, behavior viewed as part of adaptation of each species to its natural habitat. Not open for credit to students who have taken PSYCH 300.

PSYCH 201 Psychology of Performance Enhancement (4) I&S Smith, Smoll Applications of psychological theories, research, and intervention strategies to performance enhancement in variety of life settings. Self-regulation models and techniques; stress and emotional control; attention control and concentration; mental rehearsal; time management; goal-setting; memory enhancement; communication and interpersonal conflict resolution. Participation in

various psychological training procedures. Prerequisite: PSYCH 101.

PSYCH 202 Biopsychology (5) NW Kim, Olavarria Examines the biological basis of behavior, the nervous system, how it works to control behavior and sense the world, and what happens when it malfunctions. Topics include learning and memory, development, sex, drugs, sleep, the senses, emotions, and mental disorders. Prerequisite: PSYCH 101. Offered: AWSpS.

PSYCH 203 Introduction to Personality and Individual Differences (4) I&S Smith Overview of the major theories, research findings, and applications in the scientific study of personality. Covers research methods and approaches to measuring personality variables. Not open for credit to students who have taken PSYCH 303. Prerequisite: PSYCH 101.

PSYCH 205 Behavior Disorders (5) I&S Examines the bio-psycho-social origins of behavioral disorders. Topics include theories of etiology, developmental perspectives of behavior disorders, and assessment and diagnosis of the most common behavioral disorders. Note: not open for credit for students who have taken PSYCH 305. Prerequisite: minimum 2.0 grade in PSYCH 101.

PSYCH 206 Human Development (5) I&S Theoretical perspectives and research methods in child development with an overview of historical and current works. Includes prenatal and biological development, the development of cognitive, linguistic, and social and emotional abilities. Not open for credit to students who have taken PSYCH 306. Prerequisite: PSYCH 101.

PSYCH 209 Fundamentals of Psychological Research (5) Little, Passer Psychological research methodology and techniques. Topics include the logic of hypothesis testing, experimental design, research strategies and techniques, fundamentals of scientific writing, search and evaluation of research literature in psychology, and ethical issues in psychological research. Required for all psychology majors. Prerequisite: minimum 2.0 grade in PSYCH 101. Offered: AWSpS.

PSYCH 210 The Diversity of Human Sexuality (5) I&S, DIV McDermott Considers biological, psychological, and socio-cultural determinants of human sexuality and sexual behavior, and how their interaction leads to diverse expressions of sexuality, sexual bonding, gender orientation, reproductive strategies, and physical and psychological sexual development. Topics include cultural appraisal of sexuality, sexual health and reproduction (pregnancy, contraception, abortion), and sexual abuse and assault.

PSYCH 245 Introduction to Social Psychology (5) I&S Brown Overview of major findings of social psychology, emphasizing the relevance for understanding the social behaviors of individuals and groups of individuals and their relationship to social context. Not open for credit to students who have taken PSYCH 345. Prerequisite: PSYCH 101.

PSYCH 250 Racism and Minority Groups (5) I&S, DIV Overview of the causes, contexts, and consequences of racism and its effects upon minority groups and society. Emphasis on cultural history, political and socioeconomic structures that contribute to racism. Examination of current issues in race relations and cultural pluralism in the United States and selected international topics.

PSYCH 257 Psychology of Gender (5) I&S, DIV Kenney Major psychological theories of gender-role development; biological and environmental influences that determine and maintain gender differences in behavior; roles in children and adults; topics include aggression, cognitive abilities, achievement motivation, affiliation. Recommended: either PSYCH 101 or GWSS 200. Offered: jointly with GWSS 257.

PSYCH 260 Psychosocial Aspects of Nuclear War (3) I&S Barash Introduction to basic issues of nuclear war, including its effects, weaponry, and history of the arms race. Primary focus on the psychologic underpinnings of deter-

rence, relations between nations, and the personal and social forces operative in the arms race and peace movements.

PSYCH 291 Principles of Applied Animal Behavior (3-5) NW Further explores the basic principles of animal behavior, and related disciplines, with particular emphasis on application to human-animal interaction and issues. Introduces the primary literature in applied animal behavior.

PSYCH 292 Applied Animal Behavior in Practice (3-5) NW Integrates animal behavior theory with real-world practice to resolve practical problem in human-animal interactions, including companion animals, captive animals, and livestock. Introduces the primary clinical literature in applied animal behavior.

PSYCH 299 Psychology Transfer Academic Community (2) Provides opportunity for transfer students new to or contemplating the psychology major to experience an in-depth orientation to the department, curriculum, and resources available to undergraduates. Students meet weekly to explore ways to effectively engage in the major and expand their understanding of the academic discipline. Credit/no-credit only.

PSYCH 300 Animal Behavior (5) NW Beecher, Sisneros Introduces important concepts and empirical findings in animal behavior. Emphasizes evolutionary and mechanistic approaches to understanding diversity and complexity of behavior. Topics include communication, mating, migration, and sociality. Prerequisite: either BIOL 118, BIOL 161, or BIOL 180.

PSYCH 303 Personality (5) I&S Brown Overview of major perspectives, scientific issues, applications, and research findings in the area of personality. Direct exposure to scientific literature, writing assignments, and research-based class experiences prepare students for advanced work in personality, social, abnormal, and developmental psychology. Prerequisite: minimum 2.0 grade in each of PSYCH 101; PSYCH 202; and PSYCH 209.

PSYCH 305 Abnormal Psychology (5) I&S An overview of major categories of psychopathology, including description and classification, theoretical models, and recent research on etiology and treatment. Prerequisite: minimum 2.0 grade in PSYCH 202; 2.0 in PSYCH 209.

PSYCH 306 Developmental Psychology (5) I&S Repacholi, Sommerville Overview of past and present theoretical and research-based approaches to biological, cognitive, and social development from the prenatal period to early adolescence. Prerequisite: minimum 2.0 grade in PSYCH 202; 2.0 in PSYCH 209.

PSYCH 315 Understanding Statistics in Psychology (5) QSR Boynton, Flaherty, Little Statistics for psychological research. Elementary probability theory, hypothesis testing, and estimation. Satisfies the statistics requirement for majors registered in the psychology Bachelor of Arts degree program. Prerequisite: minimum 2.0 grade in PSYCH 209; 2.0 in either MATH 111, MATH 112, MATH 120, MATH 124, or MATH 144. Offered: AWSpS.

PSYCH 317 Introduction to Probability and Statistics for Psychology (5) QSR Little, Loftus Probability theory as a model for scientific inference. Probabilistic variables and experimental outcomes, conditional probability, binomial and related distributions, experiments as samples, statistics and sampling distributions, the normal distribution, confidence intervals, problems of estimation from experiments. Prerequisite: minimum 2.5 grade in PSYCH 209; 2.0 in either MATH 124, MATH 134, or MATH 144. Offered: AW.

PSYCH 318 Statistical Inference in Psychological Research (5) QSR Little, Loftus Hypothesis testing: probabilistic and statistical basis. Development and application of statistical inference techniques employed in psychological research: confidence intervals, t-test, ANOVA, and correlation and regression. Nature and control of experimental and inferential error in research. Required for majors for

psychology BS degree. Prerequisite: minimum 2.0 grade in PSYCH 317. Offered: WSp.

PSYCH 322 Introduction to Drugs and Behavior (3) NW Diaz Basic concepts of drug action emphasizing the behavioral consequences of the intake of a variety of drugs. Prerequisite: PSYCH 202.

PSYCH 330 Laboratory in Animal Behavior (5) NW Brenowitz Experience with a variety of animal species and experimental procedures and instrumentation. Prerequisite: either minimum 2.0 grade in PSYCH 315, or 2.0 in PSYCH 317; 2.0 in PSYCH 209.

PSYCH 331 Laboratory in Human Performance (5) I&S Joslyn Selected aspects of human cognition, perception, and performance. Prerequisite: minimum 2.0 grade in PSYCH 209; either 2.0 in PSYCH 315, or 2.0 in PSYCH 317.

PSYCH 332 Neurobehavioral Lab (5) NW Diaz Explores the neural mechanisms of behavior via neuropharmacological and neuroanatomical approaches. Includes the ethics and regulation of animal experimentation. Prerequisite: either minimum 2.0 grade in PSYCH 315, or 2.0 in PSYCH 317.

PSYCH 333 Sensory and Perceptual Processes (5) NW Boynton, Buck, Covey, Fine An overview of each of the major senses with emphasis on the structure and function of sensory systems and the relation of the underlying biology to perceptual processes and behavior. Prerequisite: minimum 2.0 grade in PSYCH 202; 2.0 in PSYCH 209.

PSYCH 334 Laboratory in Social Psychology (5) I&S Cheryan Methodology of laboratory and field research on social behavior; data analysis and report writing; research projects. Prerequisite: minimum 2.0 grade in PSYCH 209; minimum 2.0 grade in either PSYCH 315 or PSYCH 317; minimum 2.0 grade in either PSYCH 245 or PSYCH 345.

PSYCH 345 Social Psychology (5) I&S Brown, Kaiser The scientific study of how people's thoughts, feelings, and actions influence, and are influenced by, other people. Prerequisite: minimum 2.0 grade in PSYCH 202; 2.0 in PSYCH 209.

PSYCH 350 Honors Research Seminar in Psychology (2-, max. 4) Bassok Presentations by professors and advanced students concerning the rationale, methodology, and progress of their research projects; assistance with research projects; preparation of junior paper. Four credits of PSYCH 350 required for all junior Honors candidates in conjunction with PSYCH 498 and PSYCH 499. Offered: AWSp.

PSYCH 355 Cognitive Psychology (5) I&S Joslyn, Miyamoto Current theory and research in perception, attention, memory and learning, attitudes, thinking and decision making, and language. For the student who wishes a survey or who intends additional work in any of the above content areas. Prerequisite: minimum 2.0 grade in PSYCH 202; 2.0 in PSYCH 209.

PSYCH 357 Psychobiology of Women (5) NW Kenney Physiological and psychological aspects of women's lives; determinants of biological sex; physiological and psychological events of puberty; menopause; sexuality; contraception, pregnancy, childbirth, and lactation; role of culture in determining psychological response to physiological events. Offered: jointly with GWSS 357.

PSYCH 380 Cross-Cultural Competence (4) I&S Facilitates development of multicultural competence; focuses on mental health/social service needs of ethnic and linguistic minorities, and developing personal/interpersonal skills to reduce barriers, enhance effective service provision to cross cultural groups, sexual minorities, and disabled people. Prerequisite: PSYCH 250; either PSYCH 305 or PSYCH 306.

PSYCH 399 Foreign Study (3-5, max. 10) Upper division psychology courses for which there are no direct University of Washington equivalents taken through the UW Study Abroad program.

PSYCH 400 Learning (5) I&S/NW Experimental research and basic theories primarily in animal learning. Prerequisite: minimum 2.0 grade in PSYCH 202.

PSYCH 402 Infant Behavior and Development (3/5) I&S *Meltzoff* Psychological development in the first two years of life. Basic and advanced techniques for assessing psychological development in infancy. Classic theories of human infancy and examination of a wide range of new experiments about infant behavior and development. Prerequisite: minimum 2.0 grade in either PSYCH 206, PSYCH 306 or PSYCH 414.

PSYCH 403 Motivation (5) I&S/NW Theory and research on reinforcement, punishment, frustration, preference, instinctual mechanisms, and other factors controlling animal behavior. Prerequisite: minimum 2.0 grade in PSYCH 202.

PSYCH 405 Advanced Personality: Theory and Research (5) I&S Intensive survey of theoretical concepts and detailed review of experimental methods and experiments in the field of personality. Prerequisite: PSYCH 303.

PSYCH 407 History of Psychology (5) I&S Historical and theoretical background of the basic assumptions of modern psychology, including such doctrines as behaviorism, determinism, and associationism and the scientists who developed them. Prerequisite: minimum 2.0 grade in PSYCH 209.

PSYCH 408 Mechanisms of Animal Behavior (4) NW *Beecher, Brenowitz, Sisneros* Comparative exploration of physiological and perceptual mechanisms that control behaviors necessary for survival and reproduction in animals. Model systems discussed include animal communication, mate choice, escape behavior, learning and memory, orientation, biological rhythms, foraging behavior. Prerequisite: either minimum 2.0 grade in BIOL 180, or 3.5 in PSYCH 200, or 2.0 in PSYCH 300. Offered: jointly with BIOL 408.

PSYCH 409 Sociobiology (5) NW Biological bases of social behavior, emphasizing evolution as a paradigm. Emphasizes how to think like an evolutionary biologist, especially with regard to interest conflict. Topics are individual versus group selection, kin selection, altruism, mating systems, sexual conflict, alternate reproductive strategies, and parent/offspring conflict. Prerequisite: either minimum grade of 2.0 in BIOL 180, 2.0 in B BIO 180, 2.0 in TESC 120, 3.5 in PSYCH 200, or 2.0 in PSYCH 300. Offered: jointly with BIOL 409.

PSYCH 410 Child and Adolescent Behavior Disorders (5) I&S Introduction to psychopathology in children and adolescents, and an overview of principal modes of intervention. Particularly for students interested in advanced work in clinical psychology, social work, or special education. Prerequisite: minimum 2.0 grade in PSYCH 305; either 2.0 in PSYCH 306 or 2.0 in PSYCH 202, 2.0 in PSYCH 206, and 2.0 in PSYCH 209.

PSYCH 411 Perceptual Development (5) I&S/NW *Meltzoff* Origins and development of perception in human infancy. Object, face, and speech perception; cross-modal relations between touch, vision, audition. Prerequisite: minimum 2.0 grade in either PSYCH 206, PSYCH 306, or PSYCH 414. Offered: jointly with SPHSC 411.

PSYCH 413 Adolescent Development (5) I&S Provides an overview of physical, cognitive, psychosocial, and emotional development of adolescents with an emphasis on understanding the context in which young people grow up. Explores cultural, environmental, and social influences on development. Prerequisite: minimum 2.0 grade in PSYCH 209; 2.0 in either PSYCH 315 or PSYCH 317.

PSYCH 414 Cognitive Development (5) I&S *Sommerville* Key theoretical and research approaches to cognitive development from infancy through adolescence. Sensorimotor development, language development, imitation, number concepts, logical reasoning, memory, cognition in adolescents, intelligence, and the role of biology, environment, and experience. Prerequisite: either minimum 2.0

grade in PSYCH 306, or 2.0 in both PSYCH 206 and PSYCH 209.

PSYCH 415 Personality Development of the Child (5) I&S *Repacholi* Socialization theory and research, infant attachment and social relationships, development of aggressive and altruistic behaviors, sex-role development, moral development, parent and adult influences. Applied issues in social development and policy. Prerequisite: minimum 2.0 grade in either PSYCH 206 or PSYCH 306.

PSYCH 416 Animal Communication (5) NW *Beecher, Brenowitz, Sisneros* Evolution and mechanisms of animal communication and related processes of perception, thinking, and social behavior. Prerequisite: either minimum 2.0 grade in BIOL 180, 3.5 in PSYCH 200, or 2.0 in PSYCH 300.

PSYCH 417 Human Behavior as a Natural Science (5) I&S/NW Evolution of human social behavior and the adaptive significance of communication systems from a sociobiological and anthropological perspective. Prerequisite: either PSYCH 200, PSYCH 300, BIO A 201, or BIOL 180.

PSYCH 418 Primate Social Behavior (5) NW Social behavior, ecology, and group structure of monkeys and apes from an evolutionary, sociobiological, and anthropological perspective. Prerequisite: either minimum 3.5 grade in PSYCH 200, 2.0 in PSYCH 300, 2.0 in BIO A 201, or 2.0 in BIOL 180.

PSYCH 419 Behavioral Studies of Zoo Animals (5, max. 10) NW Observational studies of behavior of zoo animals to expand basic knowledge of animal behavior, conservation of endangered species, and research methodology with discussions and tours focusing on zoo philosophy and operations. Offered in cooperation with Woodland Park Zoo. Prerequisite: either minimum 2.0 grade in BIOL 180, 3.5 in PSYCH 200, or 2.0 in PSYCH 300.

PSYCH 420 Drugs and Behavior (3) NW *Diaz* Animal and clinical research on the behavioral consequences of drug intake. Prerequisite: PSYCH 322.

PSYCH 421 Neural Basis of Behavior (5) NW *Diaz* Anatomical and physiological principles and resultant behavior involved in the integrative action of the nervous system. Prerequisite: minimum 2.0 grade in PSYCH 202.

PSYCH 423 Sensory Basis of Behavior (5) NW *Olavarria* Study of sensory mechanisms as a way to understand behavior. Basic properties of neurons, anatomy, and physiology of sensory systems, with some emphasis on the visual system. Prerequisite: minimum 2.0 grade in either PSYCH 202 or PSYCH 333.

PSYCH 425 Surgical and Histological Techniques (5) NW Practicum in basic and advanced surgical and histological techniques used in psychophysiological experimentation. Prerequisite: PSYCH 421.

PSYCH 426 Neurobiology of Learning and Memory (4) NW *Mizumori* Theory and research on how animals learn and remember, including basic concepts of brain plasticity, how brain areas and neurons adapt to changes in experiences throughout the lifespan, and cellular and structural substrates of a "memory." Prerequisite: minimum 2.0 grade in either PSYCH 202, PSYCH 322, PSYCH 333, PSYCH 421, PSYCH 422, or PSYCH 423.

PSYCH 427 Behavioral Endocrinology (5) NW The endocrine system and how its secretions influence and are influenced by behavior; relationships between the nervous and endocrine systems. Prerequisite: PSYCH 421.

PSYCH 428 Human Motor Control and Learning (5) I&S/NW Current theory and research in human motor performance and skill acquisition. Prerequisite: minimum 2.0 grade in PSYCH 209; 2.0 in PSYCH 202.

PSYCH 429 Brain Anatomy for the Behavioral Scientist (1) NW *Diaz* Detailed review of the neuroanatomical features of the sheep brain with laboratory demonstrations. Prerequisite: PSYCH 421 which may be taken concurrently.

PSYCH 430 Development of Brain Connections (4) NW *Olavarria* Analysis of innate and environmental factors that

play a role in the development of brain connections. Critical review of current literature on the various strategies used by neurons to find their appropriate targets. Prerequisite: minimum 2.0 grade in either PSYCH 202, PSYCH 333, PSYCH 421, PSYCH 422, or PSYCH 423.

PSYCH 432 Visual Neuroscience (4) I&S/NW Surveys current facts/theories about how our brains interpret the images formed by our eyes to create a presentation of the visual environment. Topics include retinal processing, 3-D vision; color, form, motion, and object perception; and visual illusions. Prerequisite: minimum 2.0 grade in either PSYCH 333 or PSYCH 355.

PSYCH 433 Regulatory Behavior (4) NW *Kenney* Neural and endocrine mechanisms in the control of food and water intake and the regulation of body weight and fluid balance. Prerequisite: either PSYCH 421 or PSYCH 427.

PSYCH 435 Human Color Vision (5) I&S/NW *Buck* Discusses how color does not exist in the physical environment but is instead a creation of our brains. Explores perceptual, physiological, developmental, evolutionary, genetic, and cultural aspects of human color vision, including its role in language, culture, and art. Prerequisite: PSYCH 202; PSYCH 209.

PSYCH 436 Developmental Aspects of Sport Competition (4) I&S *Smoll* Biophysical and psychosocial influences of sport participation on growth and development of children and youth. Competition readiness, injuries, stress, aggression, roles and responsibilities of parents and coaches. Prerequisite: minimum 2.0 grade in PSYCH 209.

PSYCH 437 Motor Development (4) NW *Smoll* Analysis of motor development from prenatal origins through adolescence with emphasis on relations between biophysical and psychosocial development of children and youth. Prerequisite: minimum 2.0 grade in PSYCH 209.

PSYCH 438 Social Psychology of Sport (4) I&S *Smith, Smoll* Reciprocal effects of interpersonal and group influence processes, e.g., social facilitation, behavior modification, observational learning, individual versus group performance, group cohesion, leadership, aggression. Prerequisite: minimum 2.0 grade in PSYCH 101; 2.0 in PSYCH 202; 2.0 in PSYCH 209.

PSYCH 441 Perceptual Processes (5) I&S/NW Theory and findings in perception with a focus on visual perception in humans. Discrimination and constancy for simple judgments, segregation and identification of visual objects, and specific areas of investigation such as reading and computer vision. Prerequisite: minimum 2.0 grade in PSYCH 333.

PSYCH 443 Motivational Theories in Social Psychology (5) I&S Theories of motivation in social psychology. Emphasis on how motivation and cognition mutually influence each other to produce behavior. Explores such topics as persuasion, goal pursuit, self-regulation, achievement, and social comparison. Prerequisite: minimum 2.0 grade in PSYCH 345.

PSYCH 445 Theories of Social Psychology (5) I&S *Brown* Evaluation of the major theories of human social behavior supported by the empirical literature; theories of social cognition and thought; major theories of social interaction, group processes, and social learning. Prerequisite: PSYCH 345.

PSYCH 446 Personality Assessment (3) I&S *Smith* Measurement of personality variables in personality research, social psychology, and clinical psychology. Theoretical conceptions underlying various clinical and experimental scales and an assessment of their construct validity and behavioral correlates. Prerequisite: minimum 2.0 grade in PSYCH 303; 2.0 in PSYCH 315; 2.0 in PSYCH 317.

PSYCH 447 Psychology of Language (4) VLPA/I&S *Osterhout* Introduction to the study of language, including language structure, speech perception, language acquisition, psychological processes underlying comprehension and production of language, the relation between brain and language, and the question of the species-specificity of hu-

man language. Prerequisite: either minimum 2.0 grade in PSYCH 209, minimum 2.0 grade in LING 200, or LING 201. Offered: jointly with LING 447.

PSYCH 448 Seminar in Psychology (1-15, max. 15) Selected research topics of contemporary interest. Quarterly listings of specific offerings are available at departmental advising office.

PSYCH 450 Honors Research Seminar in Psychology (2-, max. 4) Bassok Senior thesis research; preparation of senior thesis; oral presentation of research. Four credits of PSYCH 450 required for all senior Honors candidates in conjunction with PSYCH 498 and PSYCH 499. Offered: AWSp.

PSYCH 451 Health Psychology (5) I&S/NW Overview of the psychological and behavioral factors in health and disease. Includes research on both psychological causes and treatments. Topics include stress, risky behaviors, patient-provider interactions, pain, behavioral/medical treatments, and lifestyle interventions. Prerequisite: minimum 2.0 grade in PSYCH 202; 2.0 in PSYCH 209; 2.0 in either PSYCH 303, or PSYCH 345.

PSYCH 452 Psychology of the Self-Concept (4) I&S Brown Examines psychological theory and research on the role of the self-concept in regulating behavior. Topics include the development of the self-concept; self-awareness; and self-esteem maintenance. Prerequisite: minimum 2.0 grade in either PSYCH 245 or PSYCH 345.

PSYCH 454 Personality and Social Influence (4) I&S Shoda Survey of various theories and research for analyzing person-situation interactions - how the qualities of persons and situations combine to generate thoughts, feelings, and behaviors of a person in a given social situation. Prerequisite: PSYCH 209; either PSYCH 203, PSYCH 245, PSYCH 303, or PSYCH 345.

PSYCH 456 Social and Moral Development (5) I&S Kahn Theoretical approaches toward explaining children's social and moral development, including those that are nativistic, sociobiological, behavioristic, psychoanalytic, and constructivist. Use of theory to investigate applied problems related to parenting, education, peer relationships, authority, sexuality, culture, ecology, and technology. Prerequisite: either PSYCH 206 or PSYCH 306.

PSYCH 457 Language Development (5) VLPA/I&S First-language acquisition and use by children. Emphasis on theoretical issues and research techniques. Prerequisite: minimum 2.0 grade in either PSYCH 206, PSYCH 306, LING 200, or LING 400. Offered: jointly with LING 457.

PSYCH 458 Behavioral Genetics (4) NW Role of genetics in determining variation in human and animal behavior and in regulating behavioral development. Techniques for quantifying genetic variation, behavioral effects, and gene expression. Prerequisite: either minimum 3.5 grade in PSYCH 200, 2.0 in PSYCH 300, or 2.0 in BIOL 180. Offered: jointly with BIOL 458.

PSYCH 459 Evolutionary Psychology (4) I&S/NW Barash, Beecher Explores human behavior from the perspective of biological evolution. Covers core issues such as cooperation, communication, aggression, mating, reproduction, and parental and family interactions, as well as specialized applications within psychology such as psychopathology. Encourages a critical, skeptical examination of this new field. Prerequisite: either minimum 3.5 grade in PSYCH 200 or minimum 2.0 grade in PSYCH 300.

PSYCH 460 Cognitive Neuroscience (4) NW Murray, Osterhout Discussion of neural systems underlying cognitive behavior with particular focus on breakdown of cognition following brain damage. Topics include object and space perception, language, voluntary movement, attention, and memory. Examination of contributions from related areas of neuroimaging, visual perception, linguistics, physiology, and neuroscience. Prerequisite: minimum 2.0 grade in either PSYCH 333, PSYCH 355, or PSYCH 421.

PSYCH 461 Asian American Psychology (5) I&S Cheryan Psychological research on Asian American individuals and the community, with emphasis on social psychological research. Topics include the model minority myth, stereotypes of unassimilation, gender and sexuality, and relationships with other groups. Prerequisite: minimum 2.0 grade in either PSYCH 303, PSYCH 305, PSYCH 306, PSYCH 345, or PSYCH 355.

PSYCH 462 Human Memory (5) I&S Joslyn Research and theory in key areas of memory. Issues covered include information processing theory, the link between memory processes and their biological underpinnings, autobiographical memory, implicit memory, and the effect of emotion on memory. Prerequisite: minimum 2.0 grade in PSYCH 209; recommended: PSYCH 355.

PSYCH 463 Implicit and Unconscious Cognition (3) I&S/NW Greenwald Overview of method, theory, and findings concerning cognitive processes operating outside attentional focus or without introspective awareness. Considers relevance to basic phenomena of social, cognitive, and clinical psychology. Prerequisite: minimum 2.0 grade in either PSYCH 315 or PSYCH 317; minimum 2.0 grade in either PSYCH 303, PSYCH 305, PSYCH 333, PSYCH 345, or PSYCH 355.

PSYCH 465 Intelligence (5) I&S Analysis of individual differences in cognition. Includes description/use of psychometric ("intelligence test") models, test scores' relationship to academic and non-academic performance, information processing and biological models of intelligence (including genetic models). Discussion of male-female and demographic group differences in cognition. Prerequisite: either PSYCH 315 or PSYCH 317; PSYCH 355.

PSYCH 466 Psychology of Judgment and Decision Making (5) I&S Miyamoto Human information processing in judgment and decision making, especially the interface between cognitive theories and normative and prescriptive theories of decision making. Prerequisite: minimum 2.0 grade in either PSYCH 315 or PSYCH 317; either PSYCH 331, PSYCH 355, or PSYCH 361.

PSYCH 469 Psychology of Reasoning (4) I&S Bassok Cognitive processes in human learning, problem solving, deductive and inductive reasoning. Prerequisite: minimum 2.0 grade in PSYCH 209.

PSYCH 470 Psychology and Music (5) VLPA/I&S Covey Introduction to the scientific study of musical behavior. An overview of current topics in the psychology of music from the areas of musical perception and cognition, musical development, music therapy, musical performance, and composition. Includes psychoacoustical and neuropsychological foundations, research methods, and some basic material in music theory. Prerequisite: minimum 2.0 grade in either PSYCH 202 or NBIO 302.

PSYCH 471 Cognition in the Real World (4-5, max. 10) I&S Joslyn Examines cognitive issues in applied settings, such as the workplace and education. Topics include such issues as attention, expertise, problem solving, decision-making, human error, automation, navigation, and individual differences. Prerequisite: minimum 2.0 grade in PSYCH 209.

PSYCH 472 Human Factors Psychology (4) I&S Considers human performance factors in the design of tools/equipment, tasks/jobs, and work and living environments. Emphasizes the importance of human perception, memory, attention, motor control, and social context for understanding ways to optimize the relationship between people and technology. Prerequisite: minimum 2.0 grade in PSYCH 202; minimum 2.0 grade in PSYCH 209.

PSYCH 477 Psychology of Peace (5) I&S Barash Examination of the psychological aspects of peace in the modern world. Topics include theories of individual aggressiveness and violence, leadership personalities, crisis decision making, nuclear psychology, images of the enemy, and psycho-

logical opportunities and obstacles to the establishment of a peaceful society.

PSYCH 478 Cultural Psychology (4) I&S Surveys cultural influences on cognitive, emotion, morality, self-concept, and mental health, from a multicultural perspective. Prerequisite: minimum 2.0 grade in PSYCH 202; minimum 2.0 grade in PSYCH 209. Offered: A.

PSYCH 479 Advanced Human Sexuality (5) I&S McDermott Intensive reading on current issues relevant to the physiological, psychological, cultural aspects of human sexuality. Prerequisite: minimum 2.0 grade in PSYCH 210.

PSYCH 480 Ideas of Human Nature (5) I&S Barash Reviews various approaches to the nature of human nature, including ideas from ancient philosophy, theories of the soul, empiricism, idealism, conditioning, social constructions, concepts of Freud, Marx, the existentialists, and neo-Darwinism. Prerequisite: PSYCH 101.

PSYCH 481 Seminar in Advanced Quantitative Methods (3) Little Examines the role of statistical methods in psychological research. Issues and controversies surrounding null hypothesis significance testing. Review of selected alternative statistical methods in psychology. Prerequisite: minimum 2.0 grade in either PSYCH 315 or PSYCH 318.

PSYCH 482 Advanced Research Methods for Behavioral Psychology (4) QSR Greenwald, Shoda Develops skills of collecting and analyzing behavioral research data, communicating the results orally and in writing, and expressing perspectives on issues of scientific method and practice. Prerequisite: either PSYCH 315 or PSYCH 317; either PSYCH 330, PSYCH 331, PSYCH 332, or PSYCH 350. Offered: Sp.

PSYCH 483 Writing in Psychology (5) Covey, Joslyn Helps students refine scientific writing skills. Students practice conducting focused literature searches and writing literature reviews, preparing empirical data for presentations, organizing and writing research reports, and writing about psychology for a lay audience. Prerequisite: minimum 2.0 grade in PSYCH 202; minimum 2.0 grade in PSYCH 209; minimum 2.0 grade in either PSYCH 300, PSYCH 303, PSYCH 305, PSYCH 306, PSYCH 333, PSYCH 345, or PSYCH 355.

PSYCH 485 Primate Conservation Biology and Behavior (5) NW Kyes Examines the principles and concepts of conservation biology as they apply to the nonhuman primates with special attention to theoretical advances, conservation strategies, and management practices central to primate conservation. Prerequisite: either minimum 3.5 grade in PSYCH 200 or 2.0 in PSYCH 300 or 2.0 in BIO A 201.

PSYCH 486 Animal Mind (4) NW Beecher Explores the cognitive capacities of animals. Focuses on the classical question, first clearly posed by Darwin, of how similar are the cognitive processes underlying behavior in humans and animals. Encourages a critical, skeptical examination of this new field. Prerequisite: minimum 3.5 grade in PSYCH 200 or 2.0 in PSYCH 300.

PSYCH 487 Advanced Psychobiology of Women (5) I&S/NW Kenney Intensive reading on current issues relevant to women's psychology and physiology. Prerequisite: minimum 2.0 grade in PSYCH 357/ GWSS 357. Offered: jointly with GWSS 487; W.

PSYCH 488 Stress and Coping (4) I&S/NW Reviews theories and research concerning stress and its roles in behavior, personality, development, health, and interpersonal relationships. Coping analyzed as a factor in the way people respond to stressful circumstances. Prerequisite: minimum 2.0 grade in PSYCH 202; 2.0 in PSYCH 209.

PSYCH 489 Clinical Psychology (3) I&S Basic issues, methods, and research: professional issues, psychological assessment, and approaches to psychotherapy and behavioral change. Prerequisite: minimum 2.0 grade in PSYCH 305.

PSYCH 490 Stress Management (3) I&S/NW Nature of stress. Physiological responses to stress and relaxation. Techniques of stress management with training in relaxation, biofeedback, meditation, cognitive restructuring, exercise, nutrition, interpersonal communication skills, and time management. Prerequisite: PSYCH 101.

PSYCH 491 Special Topics in Child Development, Learning, and Mental Health (1-5, max. 30) I&S Selected topics of contemporary interest in child development, learning, and mental health.

PSYCH 494 Field Study in Animal Behavior (2-3, max. 9) Kyes Field experience in areas relating to animal behavior through participation in seminar discussion and field exercises and training at foreign and domestic field study sites.

PSYCH 496 Undergraduate Teaching Experience in Psychology (2-3, max. 6) Students are trained as assistants in quiz sections or as supplemental tutors for undergraduate psychology courses. Designed especially for students planning graduate work or education certification. An overall maximum of 18 credits in PSYCH 496, PSYCH 497, PSYCH 498, and PSYCH 499 may apply toward a baccalaureate degree. Credit/no-credit only.

PSYCH 497 Undergraduate Fieldwork (2-5, max. 10) Individual consultation with faculty member and supervised practicum experience in a broad range of community settings and agencies dealing with psychological problems. An overall maximum of 18 credits in PSYCH 496, PSYCH 497, PSYCH 498, and PSYCH 499 may apply toward a baccalaureate degree.

PSYCH 498 Directed Reading in Psychology (1-3, max. 18) Readings in special interest areas under supervision of departmental faculty. Discussion of reading in conference with the instructor. An overall maximum of 18 credits in PSYCH 496, PSYCH 497, PSYCH 498, and PSYCH 499 may apply toward a baccalaureate degree.

PSYCH 499 Undergraduate Research (1-3, max. 18) Design and completion of individual research projects. An overall maximum of 18 credits in PSYCH 496, PSYCH 497, PSYCH 498, and PSYCH 499 may apply toward a baccalaureate degree.

PSYCH 500 Proseminar in Psychology (1, max. 10) Greenwald Presentations on professionally and practically useful topics by guest faculty presenters designed for first-year and second-year graduate students. Prerequisite: graduate standing in psychology, or permission of instructor. Credit/no-credit only.

PSYCH 502 Core Concepts in Animal Behavior (3) Barash, Beecher, Sisneros Reading, reports, and discussion on animal behavior, with a focus on topics that lie at the interface of animal behavior, evolutionary science, neurobiology, and psychology. Includes social organization, mating systems, foraging, learning, communication, and agonistic behavior. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 503 Core Concepts in Behavior Genetics (4) Shoda Overview of current approaches to genetic analysis in psychology. Role of genetics in behavioral variation, and in regulating behavioral development. Techniques for quantifying genetic variation, behavioral effects of genes, and patterns of gene expression. Genetic effects on major behavioral differences. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 504 Core Concepts in Behavioral Neuroscience (3) Buck, Covey, Diaz, Kim, Mizumori, Olavarria Historical and contemporary perspectives in behavioral neuroscience. Current methodologies and research strategies. May include sensory processing, genetics, behavioral neuroendocrinology, developmental neural plasticity, neurobiology of learning and memory, lifespan perspectives on behavioral neurobiology, and psychopharmacology. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 505 Core Concepts in Neuroethology (3) Sisneros Reviews the current topics and approaches to the study of the neurobiological basis of natural behaviors or "neuroethology." Explores core concepts in the field of neuroethology and examines the role of the nervous system and the underlying neural circuits adapted for species-typical behaviors. Offered: A/WSp.

PSYCH 506 Core Concepts in Cognitive Neuroscience (3) Murray, Osterhout Combines psychological models of information processing with research techniques in the biomedical sciences. Topics in vision, attention, memory, motor behavior, and language illustrate this integrative approach. Research methods include behavioral, single unit, lesion, and neuro-imaging techniques. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 507 Core Concepts in Cognitive Psychology (3) Bassok, Miyamoto Survey of the major topics in human cognition. Discussion of memory, concepts and categories, language, decision-making, and problem solving. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 508 Core Concepts in Perception (3) Loftus Current topics in perception, psychophysics, sensory memory, pattern recognition, letter and word perception, and visual masking. Prerequisite: graduate standing in psychology, or permission of instructor. Offered: Sp.

PSYCH 510 Core Concepts in Social Psychology (4) Cheryan, Kaiser, Shoda An overview of contemporary theories and research in social psychology, focusing on introducing graduate students to the field as practitioners of social psychological research. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 511 Core Concepts in Personality (3) Shoda, Smith Review of personality research. Roles of cognitive, affective, motivational, and psychodynamic processes. Critical evaluation of current personality, its antecedents, and its influences over behavior. Attention to role of personality variables in social relationships. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 513 Core Concepts in Biological Basis of Development (4) Embryological, genetic, physiological, and evolutionary perspectives of human development; biological development in infancy; sensory development and its influence on the development of perception; primate models for human development. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 514 Core Concepts in Early Cognitive and Linguistic Development (4) Meltzoff, Sommerville Origins and early development of thought and language. Piagetian theory and modern-day revisions. In-depth examination of historical and philosophical bases for current empirical research. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 515 Core Concepts in Personality and Social Development (4) Theories and empirical literature in personality and social development throughout infancy, childhood. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 517 Core Concepts in Systems of Psychotherapy (3) George Theory and research of major systems of psychotherapy, including the psychodynamic, behavioral, cognitive, and family systems approaches as an introduction to subsequent practice in clinical psychology. Required for all graduate students majoring in clinical psychology. Prerequisite: graduate standing in psychology, or permission of instructor. Offered: A.

PSYCH 518 Core Concepts in Behavior Disorders (5) Zoellner Major types of behavior disorders, with emphasis on clinical manifestations, relevant research, and theoretical perspectives. Required for all graduate students majoring in clinical psychology. Prerequisite: graduate standing in psychology, or permission of instructor. Offered: W.

PSYCH 519 Core Concepts in Behavior Change (5) Kohlenberg Behavioral theory and behavioral approaches to treatment. Prerequisite: PSYCH 518 and permission of instructor. Offered: Sp.

PSYCH 522 Laboratory in Statistical Computation I (2) Techniques of computation using statistical software on personal computers. Organization of data files, transformations of variables, graphical representations of data, descriptive statistics, elementary inferential statistical analyses. Prerequisite: concurrent enrollment in PSYCH 524, or permission of instructor. Offered: A.

PSYCH 523 Laboratory in Statistical Computation II (2) Techniques of statistical computation using statistical software on personal computers and mainframe computers. Multiple regression, analysis of variance and covariance. Planned and post hoc comparisons and confidence intervals. Data analytic diagnostics for violations of regression assumptions. Prerequisite: PSYCH 522 and PSYCH 524, concurrent enrollment in PSYCH 525, or permission of instructor. Offered: W.

PSYCH 524 Introduction to Statistics and Data Analysis (4) Basic concepts of statistical theory and methods of data analysis. Emphasis on the integration of statistical theory, statistical computation, and psychological research methods. Required of all first-year graduate students in psychology. Prerequisite: concurrent enrollment in PSYCH 522, or permission of instructor. Offered: A.

PSYCH 525 Linear Models and Data Analysis (4) Analysis of data in the behavioral sciences. Required of all first-year graduate majors. Prerequisite: PSYCH 522, PSYCH 524; concurrent registration in PSYCH 523, or permission of instructor. Offered: W.

PSYCH 526 Multivariate Statistics (4) An introduction to statistical modeling; interactive data analyses; use of regression, ANOVA, logistic regression, and log-linear models in explanatory studies. Prerequisite: PSYCH 525.

PSYCH 527 Mathematical Modeling for Psychology and the Neurosciences (3) Introduces a collection of mathematical models increasingly important to research in psychology and neuroscience, including random walks, differential equations, linear systems theory, Fourier analysis, nonlinear systems, and neural modeling. Topics illustrated by examples from recent literature. Prerequisite: undergraduate statistics.

PSYCH 528 Practical Methods for Behavioral Research (4, max. 8) Greenwald, Shoda Examination of methodological, practical, and communication problems associated with research on human behavior. Topics include: selecting research problems, use of theory, types of validity, common sense about statistics, when to replicate, dealing with unpredicted results, strategies for presentation and publication. Offered: Sp.

PSYCH 529 Advanced Research Methods (5) Surveys advanced clinical research methods not covered in the required statistics sequence. Examples include structural equation modeling, hierarchical linear modeling, growth curve modeling, and taxometric analyses. Hands-on experience gained through weekly assignments using each method. Prerequisite: PSYCH 525.

PSYCH 530 Introduction to Latent Variables (4) Greenwald Analyses techniques to assess effects of latent variables in presence of error in observed data. Provides experience with statistical tools for confirmatory structural equation modeling and testing of hypotheses concerning causal and other relations among latent variable. Prerequisite: PSYCH 525, or permission of instructor.

PSYCH 531 Research Methods in Clinical and Community Psychology (4) Lengua Addresses issues concerning the design and implementation of research in clinical and community psychology. Topics include validity; reliability; experimental, quasi-, and non-experimental designs; causal inference; interpretation of data; and research ethics. Provides students with tools to evaluate research, de-

velop hypotheses, and design rigorous empirical studies. Offered: A.

PSYCH 532 Single Subject Design and Research (3) *Kohlenberg* Single subject designs (reversal, multiple baseline, changing criterion) and their application to clinical cases. Prerequisite: graduate major standing in clinical psychology, or permission of instructor. Offered: W.

PSYCH 535 Scientific Writing in Psychology (5, max. 10) Addresses issues in scientific writing and publishing; laboratories assist with writing, and provide feedback on drafts of articles throughout the writing process. Students write a journal article to submit for publication. Other writing projects are also possible with instructor's permission. Credit/no-credit only.

PSYCH 536 Grant Preparation in Psychology (3, max. 6) *Mizumori* Prepare and submit an application for a major national fellowship. Joint registration in PSYCH 598 with faculty adviser is required. Prerequisite: graduate standing in psychology and permission of instructor. Credit/no-credit only.

PSYCH 537 Teaching of Psychology (3) *Passer* Examines issues concerning the teaching of psychology, including educational goals, course development, instructional methods, TA-student and TA-faculty relations, grading, student diversity, and problem situations. Assignments designed to enhance students' organizational, presentational, and problem-solving skills. Prerequisite: graduate standing in the Department of Psychology. Credit/no-credit only.

PSYCH 538 Interactive Software for Psychological Research (4) *Boynton, Fine, Loftus* Introduction to a variety of computing and programming skills with the goal of teaching how to design, program, and analyze experiments. Topics include principles of programming, the programming environment, presentation software, and data collection, management, and analysis. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 540 Advances in Psychology (3-5, max. 30) Intensive readings from the current literature on an emerging topic or theoretical perspective in psychology. Student presentations and discussion. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 541 Advances in Animal Behavior (3-5, max. 30) *Barash, Beecher, Brenowitz, Kyes, Sisneros* Intensive readings from the current literature on an emerging topic or theoretical perspective in animal behavior. Student presentations and discussion. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 542 Advances in Behavioral Neuroscience (3-5, max. 30) *Buck, Covey, Diaz, Kim, Mizumori, Olavarria* Intensive readings from the current literature on an emerging topic or theoretical perspective in behavioral neuroscience. Student presentations and discussion. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 543 Advances in Child Clinical Psychology (3-5, max. 30) *King, Lengua* Intensive readings from the current literature on an emerging topic or theoretical perspective in child clinical psychology. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 544 Advances in Clinical Psychology (3-5, max. 30) *George, Kohlenberg, Linehan, Smith, Zoellner* Intensive readings from the current literature on an emerging topic or theoretical perspective in clinical psychology. Student presentations and discussion. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 545 Advances in Cognition/Perception (3-5, max. 30) *Loftus* Intensive readings from the current literature on an emerging topic or theoretical perspective in cognition/perception. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 546 Advances in Developmental Psychology (1-5, max. 30) *Kahn, Meltzoff, Repacholi, Smoll, Sommerville* Intensive readings from the current literature on an emerging

topic or theoretical perspective in developmental psychology. Student presentations and discussion. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 547 Advances in Social/Personality (3-5, max. 30) *Cheryan, Greenwald, Kaiser, Shoda* Intensive readings from the current literature on an emerging topic or theoretical perspective in social psychology/personality. Student presentations and discussion. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 548 Advances in Quantitative Psychology (3-5, max. 30) *Flaherty* Intensive readings from the current literature on an emerging topic or theoretical perspective in quantitative psychology. Student presentations and discussion. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 549 Seminar in Physiological Psychology (2) *Diaz* Prerequisite: permission of instructor.

PSYCH 550 Seminar in Psychology (1-2, max. 30) Weekly meetings for discussion of current topics. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 551 Seminar in Animal Behavior (1-2, max. 30) *Barash, Beecher, Brenowitz, Sisneros* Weekly meetings for discussion of current topics. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 552 Seminar in Behavioral Neuroscience (1-2, max. 30) *Buck, Covey, Diaz, Kenney, Mizumori, Olavarria* Weekly meetings for discussion of current topics. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 553 Seminar in Child Clinical Psychology (1-2, max. 30) *King, Lengua* Weekly meetings for discussion of current topics. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 554 Seminar in Clinical Psychology (1-2, max. 30) *George, Kohlenberg, Linehan, Simoni, Smith, Zoellner* Weekly meetings for discussion of current topics. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 555 Seminar in Cognition/Perception (1-2, max. 30) *Bassok, Boynton, Buck, Fine, Kerr, Loftus, Murray* Weekly meetings for discussion of current topics. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 556 Seminar in Developmental Psychology (1-2, max. 30) *Meltzoff, Repacholi, Smoll* Weekly meetings for discussion of current topics. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 557 Seminar in Social/Personality (1-2, max. 30) *Brown, Cheryan, Greenwald, Kaiser, Leu, Shoda* Weekly meetings for discussion of current topics. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 558 Seminar in Quantitative Psychology (1-2, max. 30) *Flaherty, Little, Miyamoto* Weekly meetings for discussion of current topics. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 560 Research Strategies (1-2, max. 30) Group discussions of problems and continuing strategies for ongoing and future research projects. Prerequisite: graduate standing in psychology; others by permission of department.

PSYCH 561 Current Trends in Psychology (*, max. 30) Prerequisite: permission of instructor. Offered: AWSpS.

PSYCH 562 Evolutionary Psychology of Gender, Mating, and Reproduction (3) *Barash, Beecher, Sisneros* Reviews evidence for biological factors influencing human mating and reproductive behavior, through application of concepts and theory from animal behavior, behavioral genetics, and evolutionary biology. Offered: W.

PSYCH 563 Developmental Psychology and the Human Relationship with Nature (4) *Kahn* Theories of development used to investigate the ontogenesis of the human relationship with nature. An emphasis on social cognition, children's environmental moral reasoning, the effects of technology in children's lives, and evolutionary theory. Offered: W.

PSYCH 564 Advanced Attitude Theory (5) *Greenwald* Theoretical, methodological, and empirical work on the concept of attitude and its practical applications. Topics include: definition of attitude, measurement of attitudes, information-processing theories, functional theories, cognitive structure theories, the self as attitude object, unconscious attitudinal processes. Prerequisite: PSYCH 445; PSYCH 525 or equivalent; or permission of instructor.

PSYCH 565 Quantifying Brain Analysis (3) Covers concepts and applications of statistically unbiased methods for quantifying brain structure. Hands-on learning and application of concepts, sampling strategies and calculations for unbiased stereological measure of the size and number of various brain components.

PSYCH 566 Neural Correlates of Perceptual Cognition (3) *Olavarria* Contribution of sensory systems to perceptual capabilities. Critical review of literature on the neural correlates of abilities such as sensory discrimination, subjective perception, attention, imagery, object and face recognition, and spatial behavior. Some sensory disabilities reviewed. Offered: W.

PSYCH 567 Higher Order Cognition (3) *Bassok* Survey of research on higher-order cognition with an emphasis on theoretical accounts of knowledge representation. Topics include problem solving, inductive and deductive reasoning, hypothesis testing, causal inferences, similarity judgments, and categorization.

PSYCH 568 Cognitive Approaches to Human Memory (3) Examination of current topics in human memory from the perspective of cognitive psychology. Offered: Sp.

PSYCH 570 Child Clinical Psychology (4) Issues and content of child clinical psychology, promotion of student's beginning work in research. Prerequisite: graduate major or minor standing in child-clinical psychology.

PSYCH 571 Child Psychopathology (5) Broad survey of major categories of child and adolescent disorders. Emphasis on scientific, empirical approach to description, classification, and research literature on these disorders. Required for all graduate students majoring in child clinical psychology. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 572 Approaches to Child Treatment (4) Major approaches to child psychotherapy, including specific applications, issues in treatment, and research. Prerequisite: graduate major standing in child-clinical psychology, or permission of instructor. Offered: Sp.

PSYCH 573 Psychological Assessment of Children (5) Assessment techniques appropriate to children, including those for infants, special problems of preschool and school-age children; projective tests, family interviews, and target observational assessment; training in administration of selected techniques. Prerequisite: PSYCH 576 and permission of instructor.

PSYCH 574 Community Psychology (4) Overview of key issues and concepts in the field of community psychology. History of field and overview of different models used to conceptualize system-level mental health issues and delivery systems. Emphasizes theory and research rather than intervention. Prerequisite: psychology graduate student, or permission of instructor.

PSYCH 575 Anxiety Disorders (3) *Zoellner* General topics related to primary anxiety disorders (panic, OCD, GAD, posttraumatic stress disorder, and specific phobias), including diagnosis, theory, and treatment.

PSYCH 576 Assessment of Intelligence (5) *King, Lengua* Current theory and research on intelligence and intelligence testing; training in administration, scoring, and interpretation of major intelligence tests; ethical issues in assessment. Prerequisite: graduate major standing in child-clinical or clinical psychology, or graduate minor standing in child-clinical psychology. Offered: Sp.

PSYCH 577 Psychological Assessment (3) Provides a foundation in the theory underlying adult assessment as well as training in specific adult assessment techniques. Focuses on behavioral and cognitive assessment. Prerequisite: permission of instructor.

PSYCH 578 Approaches to Psychological Assessment (4) Problem-solving approach to psychological assessment; review of psychological tests and procedures and presentation of approaches to their clinical interpretation and use. Required for all graduate students majoring in clinical and child-clinical psychology. Prerequisite: graduate major standing in clinical psychology. Offered: Sp.

PSYCH 579 Dialectical Behavior Therapy Skills Group Training (3) *Linehan* In-depth learning of skills training component of dialectical behavior therapy, an empirically supported treatment approach for high risk clinical populations. Topics include skills in mindfulness, emotion regulation, interpersonal effectiveness and distress tolerance. Credit/no-credit only. Offered: A.

PSYCH 580 Minority Mental Health (3) *Barrett, George, Simoni* Surveys topics on mental health and treatment of racial and ethnic minorities. Theory emphases include: models addressing ethnic identity, cross-cultural differences, models of culturally sensitive intervention. Practice emphases include unique psychotherapy strategies for: African-, Asian-, and Latino-Americans, and American Indians. Prerequisite: graduate clinical major standing in psychology, or permission of instructor.

PSYCH 581 Cross-Cultural Competency I (2) *George* Focuses on development of multicultural competence in the provision of psychological services to meet APA guidelines for ethnic, linguistic, and culturally diverse populations. Students address personal development, increase their knowledge of diverse groups, and study effective models of intervention in working with clients of diverse backgrounds. Prerequisite: PSYCH 580.

PSYCH 582 Cross-Cultural Competency II (2) *George* Third in the graduate multicultural-competence sequence. Focuses on American ethnic minorities, multiracial children and families, social action, and organizational development. Prerequisite: PSYCH 581.

PSYCH 583 Introduction to Dialectical Behavioral Therapy (3) *Linehan* Introduces dialectical behavioral therapy, an empirically supported treatment approach for high risk clinical populations. Topics include mindfulness, dialectics, validation, behavioral therapy, and case conceptualization. Credit/no-credit only. Offered: A.

PSYCH 584 Behavioral Methods: Clinical Interventions (3) *Linehan* Provides students with basic skills required for competent practice of cognitive and behavioral therapies. Topics include behavioral skills training, cognitive restructuring, contingency management, and exposure-based procedures. Prerequisite: second year of graduate clinical psychology, social work, psychosocial nursing, or psychiatric residency.

PSYCH 585 Methods in Suicide and Crisis Intervention (3) *Linehan* Provides a foundation for risk assessment and crisis intervention with suicidal individuals. Addresses risk factors for suicide across the age range, and methods for both behavioral interventions and crisis management with suicidal individuals. Also covers ethical issues. Offered: Sp.

PSYCH 586 Clinical Personality Assessment (3) *Smith* Use of objective personality inventories in the description of normal and abnormal personality and use of such information in case conceptualization and treatment planning. Minnesota Multiphasic Personality Inventory, Millon Clinical

Multi-axial Inventory. Prerequisite: clinical psychology graduate standing. Credit/no-credit only.

PSYCH 587 Clinical Methods: Interviewing (2) *Fagan* Provides the foundation for developing good clinical skills. Enables students to conduct an initial clinical interview and generate a diagnostic formulation, problem list, and treatment plan after taking a complete history. Limited to and required of all second-year clinical psychology graduate students. Credit/no-credit only. Offered: A.

PSYCH 588 Clinical Methods: Ethics (3) *Fagan* Enables students to acquire a thorough working knowledge of the American Psychological Association's Ethical Standards for Psychologists; an awareness of Washington state law as it affects psychologists and a knowledge of how to identify and solve ethical dilemmas. Limited to and required of all second-year clinical psychology graduate students. Credit/no-credit only. Offered: W.

PSYCH 589 Clinical Supervision (4, max. 100) *George, King, Kohlenberg, Lengua, Linehan, Simoni, Smith, Zoellner* Supervised psychotherapy involving several individual clients. Separate consultations with instructor for intensive supervision of each case. Occasional meetings in small groups of instructors and students to discuss case material. Assigned readings appropriate to each case with opportunities to discuss these with instructor. Prerequisite: clinical psychology graduate standing and permission of instructor. Credit/no-credit only. Offered: AWSpS.

PSYCH 590 Practicum in Psychological Assessment (2) Demonstration and practice of selected psychological test procedures and interviewing skills. Concurrent registration in PSYCH 576 or PSYCH 578 required. Required for all first-year graduate students majoring in clinical and child-clinical psychology. Prerequisite: graduate major standing in clinical or child-clinical psychology and permission of instructor.

PSYCH 591 Issues in Clinical Psychology (1, max. 3) *Smith* Personal and professional issues in clinical psychology. Required for all first-year graduate students majoring in clinical and child-clinical psychology. Prerequisite: graduate major standing in clinical psychology. Credit/no-credit only. Offered: AW.

PSYCH 593 Clinical Practica and Colloquium (1-6, max. 99) *Fagan* Required of all clinical psychology graduate students seeing clients in the clinic. Clinical colloquium required of all second-year students, optional for others. Credit/no-credit only. Offered: AWS.

PSYCH 594 Advanced Clinical Practicum (1-6, max. 55) *Kohlenberg, Linehan, Smith, Zoellner* Advanced supervised training in specific empirically supported treatment approaches. Each practicum provides intensive training in a specific treatment, such as dialectical behavior therapy, functional analytic psychotherapy, acceptance and commitment therapy, mindfulness-based relapse prevention, and exposure treatment for anxiety disorders. Prerequisite: graduate standing in clinical psychology; PSYCH 593; permission of instructor. Credit/no-credit only. Offered: AWSpS.

PSYCH 596 Advanced Teaching Practicum (2, max. 6) Supervised participation in graduate teaching. Prerequisite: graduate student in psychology and permission of instructor. Offered: AWSpS.

PSYCH 597 Fieldwork in Clinical Psychology (1-5, max. 36) *George, King, Kohlenberg, Lengua, Linehan, Simoni, Smith, Zoellner* Prerequisite: second-year graduate major standing and permission of departmental faculty.

PSYCH 598 Directed Reading in Psychology (*, max. 30) Selected topics. Prerequisite: permission of a supervising psychology faculty member.

PSYCH 599 Directed Research in Psychology (1-3, max. 24) Supervised participation in research. Prerequisite: permission of a supervising psychology faculty member.

PSYCH 600 Independent Study or Research (*-) Offered: AWSpS.

PSYCH 700 Master's Thesis (*-) Offered: AWSpS.

PSYCH 800 Doctoral Dissertation (*-) Offered: AWSpS.

Romance Languages and Literature

C104 Padelford

The department consists of two divisions: French and Italian Studies and Spanish and Portuguese Studies. The divisions offer programs designed to develop competence in the reading, speaking, and writing of the languages and in the study of the literatures and cultures.

French and Italian Studies

C254 Padelford

UNDERGRADUATE PROGRAM

Adviser

C252 Padelford

(206) 616-5366

The Division of French and Italian Studies offers the following programs of study:

- The Bachelor of Arts degree with a major in French or Italian
- Minors in French and Italian

Bachelor of Arts

Suggested First- and Second-Year College Courses: Community college students should take as many lower-division language courses as possible before transferring to the UW.

Department Admission Requirements

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

Major Requirements

French: 60 credits beyond FRENCH 203, to include FRENCH 301; FRENCH 302; FRENCH 303; three of the following four survey courses: FRENCH 304, FRENCH 305, FRENCH 306, FRENCH 307; and FRENCH 376 or FRENCH 378. 15 credits in 400-level courses and 10 additional credits above FRENCH 203, excluding FRENCH 207, FRENCH 227, FRENCH 234, FRENCH 237, FRENCH 297, FRENCH 299, FRENCH 327, and FRENCH 337. Transfer credits at the 400 level are accepted only by petition to the Faculty Studies Committee. Minimum 2.00 cumulative GPA for courses applied toward the major.

Italian: 60 credits in courses at the 300 and 400 levels, including ITAL 301, ITAL 302, ITAL 303; two from ITAL 341, ITAL 342, ITAL 343, ITAL 351, ITAL 352; ITAL 401 (or ITAL 470); ITAL 402 (or ITAL 403); and ITAL 404 (or ITAL 405); 20 additional credits in literature/culture/film courses at the 300 or 400 level, with at least 10 of these credits at the 400 level. Prerequisite for all 300-level courses is ITAL 203 or approved equivalent. Minimum 2.0 grade for course applied toward the major.

Minor

Minor Requirements

French

30 credits beyond FRENCH 203, including FRENCH 301; FRENCH 302; FRENCH 303; one of the following four survey courses: FRENCH 304, FRENCH 305, FRENCH 306, FRENCH 307; FRENCH 376 or FRENCH 378. Five elective credits above FRENCH 203, excluding FRENCH 207, FRENCH 227, FRENCH 234, FRENCH 237, FRENCH 297, FRENCH 299, FRENCH 327, and FRENCH 337. Up to 10 credits taken abroad may be counted toward the minor. Minimum 2.00 cumulative GPA for courses applied toward the minor.

Italian

30 credits as follows: ITAL 301, ITAL 302, ITAL 303, or ITAL 334 (15 credits); two-5 credit courses chosen from ITAL 341, ITAL 342, ITAL 343, ITAL 351, ITAL 352, ITAL 353; 5 elective credits beyond ITAL 203 (excluding ITAL 227, ITAL 234, ITAL 327, ITAL 334). N more than one course offered in English may be counted toward the minor. Up to 10 credits taken abroad may be applied toward the minor with adviser approval. Minimum 2.00 cumulative GPA for courses applied toward the minor.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Students achieve levels of linguistic and cultural competency that allow them to pursue professional opportunities in a wide variety of internationally oriented fields and to be effective citizens in a rapidly changing world.

Students with substantial foreign language fluency who combine language skills with a solid foundation in liberal education and adequate job preparation and internships find fulfilling occupations. . The combination of studies in foreign languages and international affairs is ideal for students seeking job opportunities in government (foreign service and diplomatic fields, intelligence agencies, immigration and customs, Department of Labor, law enforcement, armed forces, legal agencies, public aid, social and community work, and international agencies, such as the United Nations and UNICEF), business (airlines, marketing, banking/finance, multi-national corporations, shipping industry, travel and hotel industries, import/export firms, publishing houses, and consulting), and communication fields (journalism, radio and television, fashion enterprises, teaching/counseling, translation, bilingual office work, library/museum work, nursing, phone companies, art and cultural affairs, and film and theatrical industries).

Beyond the practical, the department's commitment is to impart to our students the skills and the genuine desire to learn throughout their lives, fostering the type of cultural and intellectual flexibility that lends itself to the multiple work and personal changes that most will face over the course of their lives.

- *Instructional and Research Facilities:* UW Rome Center in Rome, Italy.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* The Rome Center offers one intern position per year, providing room and board and a modest stipend. Interns work in the administrative Rome/UW office and are required to follow an independent course of language and literature study or other proposed course of study.
- *Department Scholarships:* Scholarships for departmental study abroad programs are available. Program ap-

plicants are notified of opportunities by their program director.

- *Student Organizations/Associations:* French Club, Italian Club.
- *Of Special Note:* The department sponsors study-abroad programs in France, Italy, and Martinique. See adviser for details.

GRADUATE PROGRAM

Graduate Adviser

C256 Padelford, Box 354361
(206) 616-5366

Graduate Program Coordinator
C259 Padelford

The Division of French and Italian Studies offers programs of graduate study leading to the degrees of Master of Arts in French or Italian and Doctor of Philosophy in French. Students who wish to complete their doctoral studies in Italian may apply to do so through the Department of Comparative Literature during their second year in the master's program.

Master of Arts in French Studies

Admission Requirements

Undergraduate major or its equivalent in French literature and culture. Preparation equivalent to requirements for the Bachelor of Arts degree in French at the UW. Proficiency in speaking and writing the French language.

1. Application for Graduate Admission, along with supporting documents
2. Three letters of recommendation
3. Autobiographical statement
4. Digital file of recording of the applicant reading the autobiographical statement mentioned above, together with any other informal comments the applicant wishes to make
5. Writing sample
6. Graduate Record Examination (GRE) scores
7. Applicants whose native language is not English must demonstrate English language proficiency as outlined in Memo 8: Graduate School English Language Proficiency Requirements. Such students who wish to be appointed as teaching assistants (TAs) must meet the conditions for appointment specified in Graduate School Memorandum 15, "Conditions of appointment for TAs who are not native speakers of English."

Degree Requirements

55 credits, as follows:

A total of 45 applicable credits (400-level and above) are required in coursework, and an additional 10 credits in FRENCH 600 are given for examination preparation. 15 credits must be taken at the 500 level (courses limited to graduate students). 5 credits are given for the required pedagogy methods seminar for first-time TAs. To remain in good standing the student must maintain a cumulative 3.60 GPA. The minimum acceptable grade for any course is 2.7.

Four of the department's seven period distributions, plus one class in the history of criticism/critical theory rubric.

Up to 15 credits in supporting or related fields (other than the major field of study) may be taken with approval of the Graduate Program Coordinator. Courses must be at the 400 level or above.

MA examinations (written and oral) are taken in the sixth quarter of study.

Master of Arts in Italian Studies

Admission Requirements

Undergraduate major or its equivalent in Italian literature and culture. Preparation equivalent to requirements for the Bachelor of Arts degree in Italian at the UW. Proficiency in speaking and writing the Italian language.

1. Application for Graduate Admission, along with supporting documents
2. Three letters of recommendation
3. Autobiographical statement
4. Digital file recording of the applicant reading the autobiographical statement mentioned above, together with other informal comments the applicant wishes to make.
5. Writing sample
6. Graduate Record Examination (GRE) scores.
7. Applicants whose native language is not English must demonstrate English language proficiency as outlined in Memo 8: Graduate School English Language Proficiency Requirements. Such students who wish to be appointed as teaching assistants (TAs) must meet the conditions for appointment specified in Graduate School Memorandum 15, "Conditions of appointment for TAs who are not native speakers of English."

Degree Requirements

60 credits

50 applicable credits (400-level and above) in coursework, 30 of which must be taken at the 500 level (courses limited to graduate students). An additional 10 credits in ITAL 600 required for examination preparation. To remain in good standing the student must maintain a minimum 3.60 cumulative GPA. Minimum acceptable grade for any course is 2.7.

Up to 10 credits in disciplines other than the major field may be taken. Courses must be at the 400 level or above. Students are encouraged to take up to 10 credits in disciplines other than their major field of study. Credits in such supporting or related fields are allowed only for courses numbered 400 or above.

MA candidates must pass a foreign language reading ability examination in a language other than the major or their native language. Students stipulate their choice at the time of first enrollment, after consultation with the Graduate Adviser.

The Graduate Program Coordinator, in consultation with the student and appropriate faculty members, appoints a Supervisory Committee no later than the first week of the quarter prior to the MA examinations, consisting of three Italian and Italian adjunct faculty members. The MA examinations (written and oral) are taken the final quarter of study.

Doctor of Philosophy in French Studies

Admission Requirements

MA degree in French or its equivalent. Students with a background in comparative literature or with a specialization in French within another national literature and language program are admitted on a case-by-case basis. All incoming doctoral students must have demonstrable, broad knowledge in French literature and culture as well as a general background in critical theory (i.e., coursework in critical theory and/or coursework that incorporates a strong component of critical theory).

Degree Requirements

77 credits (beyond the MA)

77 credits (beyond the 45 required for the French studies MA), of which 25 should be taken in applicable 500-level courses (graduate seminars both inside and outside the division) and 27 as dissertation credits (FRENCH 800). The other 25 credits of 400-level and above courses should be chosen in collaboration with the Graduate Program Coordinator. 10 of these credits can be 600-level independent studies. Doctoral students work closely with the Graduate Program Coordinator in the selection of graduate seminars within French studies and of courses outside French studies that correspond to the students' cross-disciplinary interests.

Financial Aid

The department awards a number of teaching assistantships. Teaching assistants normally participate in teaching three classes during the academic year. A typical class is limited to approximately 25 students and meets five hours a week for the 10 weeks of the quarter. Research assistantships are available on a limited and competitive basis.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

French

FRENCH 101 Elementary French (5) Development of speaking, listening, reading, and writing skills to a basic level of proficiency. Teaches students to communicate in French and understand the cultural context of the language. Methods and objectives are primarily oral-aural. Oral practice in the language laboratory is required. First in a sequence of three. Prerequisite: score of 0-14 on FR TL placement test if French is language of admission.

FRENCH 102 Elementary French (5) Development of speaking, listening, reading, and writing skills to a basic level of proficiency. Teaches students to communicate in French and understand the cultural context of the language. Methods and objectives are primarily oral-aural. Oral practice in the language laboratory is required. Second in a sequence of three. Prerequisite: either FRENCH 101 or score of 15-30 on FR TL placement test.

FRENCH 103 Elementary French (5) Development of speaking, listening, reading, and writing skills to a basic level of proficiency. Teaches students to communicate in French and understand the cultural context of the language. Methods and objectives are primarily oral-aural. Oral practice in the language laboratory is required. Third in a sequence of three. Prerequisite: either FRENCH 102, FRENCH 110, or score of 31-56 on FR TL placement test.

FRENCH 134 First-year Intensive French (15) Equivalent of FRENCH 101, FRENCH 102, FRENCH 103. No more than 15 credits allowed for any combination of FRENCH 101, FRENCH 102, FRENCH 103, and FRENCH 134. Offered: S.

FRENCH 199 Foreign Study - Elementary (4-16, max. 16) Elementary level instruction in approved foreign study program. Students who wish to satisfy foreign language proficiency requirement must see the departmental adviser and may be required to take additional courses through FRENCH 103.

FRENCH 201 Intermediate French (5) VLPA Designed to bring students to an intermediate level of proficiency. Emphasis on experiencing the language in context through a multi-media approach. First in a sequence of three. Prerequisite: either FRENCH 103, FRENCH 134, or score of 57-100 on FR TL placement test.

FRENCH 202 Intermediate French (5) VLPA Designed to bring students to an intermediate level of proficiency. Emphasis on experiencing the language in context through a

multi-media approach. Second in a sequence of three. Prerequisite: FRENCH 201.

FRENCH 203 Intermediate French (5) VLPA Designed to bring students to an intermediate level of proficiency. Emphasis on experiencing the language in context through a multi-media approach. Third in a sequence of three. Prerequisite: FRENCH 202.

FRENCH 207 Second-Year Reading (5) VLPA Intermediate vocabulary building and reading of literary texts. Students receiving credit for FRENCH 207 may subsequently earn credit for lower-division French courses involving other skills.

FRENCH 210 Paris (5) VLPA/I&S Taught in English. Provides an introduction to the art, architecture, politics, and literature of the City of Light.

FRENCH 211 Renaissance, Enlightenment, Revolution: Major Works in English (5) VLPA/I&S Introduction to major figures of French culture from the Middle Ages to the eighteenth century, their contributions to the intellectual life of the Western world. Readings include Montaigne, Descartes, Rousseau, Voltaire, and Moliere. In English. Offered: jointly with JSIS D 217.

FRENCH 212 French Masterworks: Modern in English (5) VLPA Introduction to major figures of French culture from the nineteenth and twentieth centuries. Readings include Balzac, Flaubert, Proust, Sartre, and Celine. In English.

FRENCH 214 The French Fairy Tale Tradition in English (5) VLPA Delcourt French fairy tales as a major trend in French literature and a continuing influence on modern fictions and films. Particular attention given to the numerous French women writers of fairy tales at the time of Charles Perrault (seventeenth century) and after. In English.

FRENCH 224 Culture and Media Forms (5) VLPA/I&S Explores French, Francophone, and European culture in history through a focus on varied and evolving media forms: manuscripts, printed books, digital media, visual forms, etc. Taught in English. Offered: jointly with JSIS A 224.

FRENCH 227 Intermediate Conversational French (2, max. 8) VLPA Practice of intermediate-level French conversational skills through class discussion and oral presentations. Topics oriented toward French culture and current events. Prerequisite: FRENCH 103

FRENCH 228 The Water Crisis in Literature and Film (5) VLPA/I&S Watts Interprets a variety of texts (literary, cinematic, etc.) that address the water crisis to understand how water's meaning has changed as people become more conscious of risks in supply (pollution and natural/man-made scarcity) and as access to it is increasingly mediated in light of things like privatization and commodification. Offered: jointly with LIT 228.

FRENCH 234 Intermediate French Immersion (15) VLPA Covers the equivalent of second-year French (FRENCH 201, FRENCH 202, FRENCH 203) through an alternative "planned immersion" method with video as the central medium of presentation. Prerequisite: either FRENCH 103, FRENCH 134, or score of 57-100 on FR TL placement test.

FRENCH 237 Foreign Study Conversational French (2-8, max. 8) VLPA For participants in foreign study programs.

FRENCH 250 History of French Cinema in English (5) VLPA History of cinema in France from the birth of film, the seventh art, to the present. Socio-historical context of French cinema explored. In English.

FRENCH 297 Foreign Study - French Civilization (3/6, max. 6) VLPA For participants in the Study Abroad Program. Literary tradition, social and cultural values as reflected in literature. Paper (in English) and higher degree of participation required to earn 6 credits. In English.

FRENCH 299 Foreign Study - Intermediate (4-16, max. 16) VLPA Intermediate instruction in approved foreign study program. Evaluation by departmental adviser required to establish proficiency. Further study at 200-level subject to departmental evaluation.

FRENCH 301 Advanced French (5) VLPA Designed to bring students to an advanced level of proficiency in grammar and composition. Emphasis on experiencing the language in context through a multi-media approach. FRENCH 303 prepares students for literature classes. First in a sequence of three. Prerequisite: either FRENCH 203 or FRENCH 234.

FRENCH 302 Advanced French (5) VLPA Designed to bring students to an advanced level of proficiency in grammar and composition. Emphasis on experiencing the language in context through a multi-media approach. FRENCH 303 prepares students for literature classes. Second in a sequence of three. Prerequisite: FRENCH 301.

FRENCH 303 Advanced French (5) VLPA Designed to bring students to an advanced level of proficiency in grammar and composition. Emphasis on experiencing the language in context through a multi-media approach. FRENCH 303 prepares students for literature classes. Third in a sequence of three. Prerequisite: FRENCH 302.

FRENCH 304 Survey of French Literature: Origins to 1600 (5) VLPA Thematic and formal developments in literature of the period with emphasis on movements and texts in relation to cultural background. Prerequisite: FRENCH 303, which may be taken concurrently.

FRENCH 305 Survey of French Literature: 1600-1789 (5) VLPA Emphasis on literary movements and texts in relation to cultural background. Prerequisite: FRENCH 303, which may be taken concurrently.

FRENCH 306 Survey of French Literature: 1789 to the Present (5) VLPA Development of modern literature through its most important writers and movements. Prerequisite: FRENCH 303, which may be taken concurrently.

FRENCH 307 Survey of Francophone Literatures and Cultures (5) VLPA Survey of contemporary Francophone (post) colonial literatures and cultures. Prerequisite: FRENCH 303, which may be taken concurrently.

FRENCH 308 Foreign Study Composition (3-5, max. 10) VLPA For participants in foreign study programs. Compositions on topical subjects of intermediate difficulty relating to the civilization of the French-speaking countries of Europe. Grammar review as needed. Prerequisite: FRENCH 203.

FRENCH 313 Business Communication in French (5) VLPA Offers students the opportunity to develop French language skills (reading, writing, speaking, and listening) within the context of the French-speaking business world. Business-specific culture emphasized. May be taken in lieu of, or in addition to FRENCH 303. Prerequisite: FRENCH 302.

FRENCH 320 French Language and Cultural Identity (5) VLPA/I&S Explores the French language as social practice. Students learn of the social aspect of the evolution of the French language, the dynamic relationship between language and identity, and the linguistic and cultural diversity in the Francophone world. Texts in English. Prerequisite: either FRENCH 103 or FRENCH 134.

FRENCH 327 Advanced Conversation (2, max. 8) VLPA Not open to students whose native language is French. Prerequisite: FRENCH 203.

FRENCH 337 Foreign Study Conversational French (2-8, max. 8) VLPA For participants in foreign study programs. Prerequisite: FRENCH 203.

FRENCH 376 Culture, Politics, and Society in France from the Religious Wars to Revolutions (5) VLPA/I&S Studies the development of intellectual, literary, and artistic cultures in the context of the profound political and social evolutions of the Renaissance through the early nineteenth century in France. Taught in English.

FRENCH 378 The Making of Contemporary France (5) VLPA/I&S Study of the historical origins and subsequent development of contemporary problems and characteris-

tics of French government and politics, economy, and society. Prerequisite: FRENCH 203.

FRENCH 390 Supervised Study (2-6, max. 20)

FRENCH 397 Foreign Study French Civilization (3/6, max. 6) VLPA For participants in the foreign study program. Literary tradition, social and cultural values as reflected in literature. Paper (in French) and higher degree of participation required to earn 6 credits. In French. Prerequisite: FRENCH 203.

FRENCH 404 Old French (5) VLPA

FRENCH 406 Advanced French Composition (5) VLPA Extensive guidance in advanced French composition, emphasizing stylistics and grammar. Prerequisite: FRENCH 303.

FRENCH 411 Topics in the Middle Ages (5) VLPA Sixteenth-century literature with emphasis on poetry and the general artistic ambiance. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 412 Topics in Sixteenth Century French Literature (5) VLPA An introduction to major French literature and culture of the sixteenth century, usually with a guiding theme such as travel and the court. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 413 Topics in Seventeenth Century Literature (5) VLPA Seventeenth-century literature, with emphasis on the development of classicism. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 414 French Literature of the Eighteenth Century: Enlightenment (5) VLPA Eighteenth-century literature, with emphasis on the development of the Enlightenment ideology. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 415 French Literature of the Eighteenth Century: Post-Enlightenment (5) VLPA Eighteenth-century literature, with emphasis on the "dark side of the Enlightenment" and nascent romanticism. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 416 French Literature of the Nineteenth Century: Romanticism (5) VLPA Nineteenth-century literature, with emphasis on romanticism and the early manifestations of realism. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306 or FRENCH 307.

FRENCH 418 French Literature of the Early Twentieth Century (5) VLPA Twentieth-century literature, with emphasis on the period 1900-1939. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 419 French Literature Since World War II (5) VLPA Twentieth-century literature, with emphasis on the period 1939 to the present. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 420 Interdisciplinary Approaches to Literature (5) VLPA Interdisciplinary studies in French literature and culture, focusing on the complex interactions of literature and other disciplines, i.e. philosophy, psychoanalysis, anthropology, architecture. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 421 Psychoanalysis and Literature (5) VLPA Borch-Jacobsen Readings from Freud and French critical writers regarding the relationship between psychoanalysis and literature. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 427 Fiction: Twentieth Century (5) VLPA Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 431 Critical Approaches to French Poetry (5) VLPA Interdisciplinary approaches to French poetry focusing on the intersection of fine art, cultural movements, and the production of literature in the Second Empire and the

Third Republic. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 432 Critical Approaches to French Fiction (5) VLPA Addresses theory and practice of fiction within the context of a given century or movement. Content varies. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 435 Topics in Non-Fiction (5) VLPA Content varies. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 441 Quebecois Literature (5) VLPA Readings of novels, plays, and occasionally, poetry. Special attention paid to how Quebecois authors represent in their works the complex socio-political reality of their culture. Conducted in French. French majors required to read and write in French; all others may read and write in English. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307. Offered: jointly with JSIS A 441.

FRENCH 445 Women Writers (5) VLPA Focuses on French women writers and writing about women. Chronological and geographic range varies. Gender issues addressed in critical fashion, considering the different historical and ideological contexts in which each of the works was produced. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 448 Cultures of Franco-America (5) VLPA/I&S, DIV Considers a broad range of literary and cultural texts emerging from the long history of the French in North America and Americans in France. Traces processes of racialization; paying particular attention to intersections between race and class, gender, and sexuality. Texts in French and English. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 450 Themes in French Literature and Culture (5) VLPA Interdisciplinary studies in French literature and culture, focusing on the construction and representation of gender roles in the French novel from the early eighteenth century. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 451 History and Literature of the French Religious Wars (5) VLPA/I&S Major political, social, and religious movements and events of, and related to, the French religious wars of 1560 to the end of the century, along with the treatment of these in the prose, poetry, and drama of the period. For students receiving French credit, readings must be done in French. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 455 One Author in French Literature/Culture (5, max. 15) VLPA In-depth focus on the works of one author in French literature or culture. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 457 One Decade in French Literature and Culture (5, max. 15) VLPA Content varies. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 458 French Art and Literature: Period Studies (5) VLPA Comparative studies of theme and technique in art and literature to illustrate major concerns of a particular period as expressed in these two media. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 461 Seventeenth-Century Drama (5) VLPA Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 463 Nineteenth-Century Drama (5) VLPA Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 465 Twentieth-Century Drama (5) VLPA Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 470 Cinema (5) VLPA Major films and figures of French cinema from the beginnings to the present. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 472 French-English/English-French Translation (5) VLPA Intense practice of translation from English into French and from French into English. Translation issues specific to French and English syntactic, semantic, and grammatical differences with emphasis on the naturalness of the target language and the accuracy of the translation of the source language. Conducted in French. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 473 Introduction to Localization and Project Management (5) Covers basic concepts of translation, localization, and internationalization. Explores rationales for localizing products; history and future of the industry; workflows, professional roles, and localization tools. Includes the application of central concepts of localization to real-life situations; and introduction to the basics of localization project management. Offered: jointly with JSIS D 473; S.

FRENCH 474 Localization: Technology and Tools (5) Covers basic concepts of localization and internationalization. Examines how technology and tools are applied to solving translation and localization scenarios in the real world. Includes daily tasks and basic steps; machine translation; community localization; and experience with actual localization tools. Offered: jointly with JSIS D 474; S.

FRENCH 490 Honors Seminar (2-5, max. 10) VLPA Special studies in French literature. Required of candidates for Honors in French. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 499 Special Topics (1-5, max. 10) Topics to meet specific needs. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 510 Methodology of French Language Teaching (3) Theoretical and practical foundation of teaching French. Major topics include modern theories of language and language acquisition which underlie modern methods of foreign language teaching, teaching techniques, testing, and classroom relations with emphasis on the multiple-approach direct method. Required for beginning French teaching assistants. Credit/no-credit only.

FRENCH 515 French Literature of the High Middle Ages (5, max. 10) Old French literature, from the beginning to 1315. Prerequisite: permission of instructor.

FRENCH 516 Middle French Literature (5, max. 10) French literature from 1315 to 1500. Prerequisite: permission of instructor.

FRENCH 541 History of the French Language (5) Survey of the phonological, morphological, and syntactical development of the French language from its origins to the present.

FRENCH 552 Manuscript Cultures (5) Techniques, terminology, and bibliography of manuscript scholarship. The production of manuscripts from Antiquity through the Renaissance; the evolution of scripts; the rise of literacy; and the development of libraries in Italy and France. Topics and methods include material philology, textual criticism, relations between text/image, and the digitalization of manuscripts. Offered: jointly with ITAL 552.

FRENCH 553 Topics in Print Culture (5) Key readings, theoretical questions, and critical approaches in book history, focusing on printed texts from Gutenberg to today. The impacts of evolving technologies, material forms, and circulation within French, Italian, and other literary traditions. Methods and tools for evaluating an interpreting these impacts (bibliography, *histoire du livre*, and textual scholarship). Offered: jointly with ITAL 553.

FRENCH 565 Studies in French Drama (5, max. 10) Studies in French drama, sixteenth to twentieth centuries.

FRENCH 570 Seminar in Cinema (5, max. 10) Prerequisite: permission of instructor.

FRENCH 575 Literary Criticism (5)

FRENCH 576 Critical Methodology (5) Basic scholarly tools of bibliography; historical review of literary doctrine; an introduction to critical methodology.

FRENCH 577 Modern Critical Methods (5) Modern critical methodology and theory.

FRENCH 590 Special Seminar and Conference (1-10, max. 30) Group seminars, or individual conferences, are scheduled under this number to meet special needs. Prerequisite: permission of the Graduate Program Coordinator.

FRENCH 591 Literary Problems: Middle Ages (5, max. 10)

FRENCH 592 Literary Problems: Renaissance (5, max. 10)

FRENCH 593 Literary Problems: Seventeenth Century (5, max. 10)

FRENCH 594 Literary Problems: Eighteenth Century (5, max. 10)

FRENCH 595 Literary Problems: Nineteenth Century (5, max. 10)

FRENCH 596 Literary Problems: Twentieth Century (5, max. 10)

FRENCH 600 Independent Study or Research (*-)

FRENCH 700 Master's Thesis (*-) Credit/no-credit only.

FRENCH 800 Doctoral Dissertation (*-) Credit/no-credit only.

Italian

ITAL 101 Elementary Italian (5) Methods and objectives are primarily oral-aural. Use of audio material required. First in a sequence of three. Offered: A.

ITAL 102 Elementary Italian (5) Methods and objectives are primarily oral-aural. Use of audio material required. Second in a sequence of three. Prerequisite: either ITAL 101 or score of 15-30 on IT TL placement test. Offered: W.

ITAL 103 Elementary Italian (5) Methods and objectives are primarily oral-aural. Use of audio material required. Third in a sequence of three. Prerequisite: either ITAL 102, ITAL 111, or score of 31-56 on IT TL placement test. Offered: Sp.

ITAL 111 Accelerated First-Year Italian (10) Intensive version of ITAL 101 and ITAL 102 designed for highly motivated students.

ITAL 127 Beginning Conversational Italian (2, max. 6) Development of beginning-level Italian conversational skills through class discussions and oral presentations. Topics vary. Not open to native speakers.

ITAL 134 Intensive First-Year Italian (15) An intensive language course equivalent to ITAL 101, ITAL 102, ITAL 103, designed for highly motivated students. Not open for credit to students who have taken ITAL 102 and ITAL 103. Offered: S.

ITAL 199 Foreign Study - Elementary (4-16, max. 16) Elementary instruction in approved foreign study program. Students who wish to satisfy foreign language proficiency requirement must see the departmental adviser and may be required to take additional courses through ITAL 103.

ITAL 201 Intermediate Italian (5) VLPA Intensive speaking, reading, and writing. Functional review of grammar. First in a sequence of three. Prerequisite: either ITAL 103, ITAL 113, ITAL 134, or score of 57-100 on IT TL placement test.

ITAL 202 Intermediate Italian (5) VLPA Intensive speaking, reading, and writing. Functional review of grammar. Second in a sequence of three. Prerequisite: ITAL 201.

ITAL 203 Intermediate Italian (5) VLPA Intensive speaking, reading, and writing. Functional review of grammar. Third in a sequence of three. Prerequisite: ITAL 202.

ITAL 227 Intermediate Conversational Italian (2, max. 6) VLPA Development of intermediate-level Italian conversational skills through class discussions and oral presenta-

tions. Topics vary. Not open to native speakers. Prerequisite: ITAL 103.

ITAL 234 Intensive Second-Year Italian (15) VLPA Intensive language course designed for highly motivated students. Equivalent to ITAL 201, ITAL 202, ITAL 203. Prerequisite: either ITAL 103, ITAL 113, ITAL 134, or score of 57-100 on IT TL placement test. Offered: S.

ITAL 250 Rome (5) VLPA/I&S Focuses on Rome as an historical, intellectual, and artistic world center. Literary and historic documents, visual arts, architecture, film, and opera used to explore the changing paradigms of the Eternal City. In English. Offered: jointly with ART H 250/HSTEU 250.

ITAL 260 Fashion, Nation, and Culture (5) VLPA/I&S *Gay-lard* Introduction to Italian culture focusing on fashion and manners from the late Middle Ages to today. Explores common assumptions about nation, gender, clothes, make-up, and manners, through literary and visual analysis. In English. Offered: jointly with ART H 260/JSIS A 260; W.

ITAL 261 Italian Cities (5) VLPA Introduces Italian culture by focusing on the past and present of five of the nation's most important cities: Rome, Florence, Venice, Milan, and Naples. Taught in English. Offered: jointly with ART H 261.

ITAL 262 Dante and the Middle Ages (5) VLPA *Arduini* Introduces the major currents of thirteenth-century Italian Poetry and explores Dante's *Divine Comedy* as an encyclopedic compendium of medieval thought as well as a very personal vision of the individual's place in the universe. Taught in English. Offered: W.

ITAL 299 Foreign Study - Intermediate (4-16, max. 16) VLPA Intermediate instruction in approved foreign study program. Evaluation by departmental adviser required to establish proficiency. Further study at 200-level subject to departmental evaluation.

ITAL 301 Advanced Syntax and Composition (5) VLPA Prerequisite: either ITAL 203 or ITAL 234.

ITAL 302 Advanced Syntax and Composition (5) VLPA Prerequisite: ITAL 301.

ITAL 303 Italian Stylistics (5) VLPA Functional grammar review; creative written and oral composition and reading, with special attention to problems of style. Prerequisite: ITAL 302.

ITAL 318 Italian Literature in English (5) VLPA

ITAL 327 Advanced Conversation (2, max. 8) VLPA Not open to students whose native language is Italian. Prerequisite: either ITAL 203 or ITAL 234.

ITAL 334 Intensive Third-Year Italian (15) VLPA Intensive advanced Italian language equivalent to ITAL 301, ITAL 302, and ITAL 303. Prerequisite: Either ITAL 203 or ITAL 234. Offered: S.

ITAL 341 Italian and American Poetry in Translation (5) VLPA Introduction to basic concepts and skills required for Italian-to-English translation. Examines the main aspects of contrastive grammar and stylistics used in translation, providing practical opportunities to incorporate and apply the material. Exposure to a variety of types of translation. Prerequisite: either ITAL 203 or ITAL 234.

ITAL 342 Advanced Italian Composition and Essay Writing (5) VLPA Addresses issues of syntax and grammar, register and style, and advanced vocabulary for academic writing. Teaches students to write a cogent, well-structured essay for upper-level literature classes in Italian. Writing intensive. Conducted in Italian (some material in English). Prerequisite: either ITAL 203 or ITAL 234.

ITAL 343 Stylistics and Rhetoric (5) VLPA Introduces rhetorical devices and figures of speech through analysis of texts within Italian literary tradition. Particular attention given to poetic texts. Prerequisite: either ITAL 203 or ITAL 234.

ITAL 351 Contemporary Italian Culture (5) I&S Italian culture from the 1980s to the present, with discussion of major events of the period and readings from fiction, political

manifestos, song lyrics, etc. Emphasis on recent linguistic developments, changed role of women, meaning of multiculturalism in Italy, and the spread of global culture. Conducted in Italian. Prerequisite: either ITAL 203 or ITAL 234.

ITAL 352 Italian Cultural History (5) VLPA/I&S Italian history and culture from the thirteenth to the twentieth century, with discussion of major historical and cultural events. Readings from selected bibliography and historical documents, literature, etc. Emphasis on the historical context of the most significant aspects of Italian culture through the centuries. Conducted in Italian. Prerequisite: either ITAL 203 or ITAL 234.

ITAL 353 Language and Cultural Identity (5) VLPA/I&S Investigates the connection between Italian language and cultural identity, from Dante's linguistic theories in the early fourteenth century to nineteenth-century nationalist myths and today's transformations in Italian society. Taught in Italian.

ITAL 366 Italian Society in Film and Literature (5, max. 15) VLPA/I&S Studies the evolution of Italian postwar society through the analysis of film and literature as well as critical, historical, and sociological readings.

ITAL 390 Supervised Study (2-6, max. 20)

ITAL 399 Foreign Study: Advanced (4-16, max. 16) VLPA Advanced instruction in approved foreign study program.

ITAL 401 Medieval Italian Readings (5) VLPA Exploration of medieval Italian cultural history through a broad variety of literary and other textual traditions. Prerequisite: ITAL 302.

ITAL 402 Early Modern Italian Readings I (5) VLPA Readings in Italian Quattro/Cinquecento, covering the period of the Renaissance. Prerequisite: ITAL 302.

ITAL 403 Early Modern Italian Readings II (5) VLPA Readings in Italian Sei/Settecento, covering the periods of Baroque and Enlightenment literature. Prerequisite: ITAL 302.

ITAL 404 Modern Italian Readings I (5) VLPA Readings in Italian Ottocento, covering the period of Romanticism. Prerequisite: ITAL 302.

ITAL 405 Modern Italian Readings II (5) VLPA Readings in Italian Novecento, covering the work of major Italian twentieth-century authors. Prerequisite: ITAL 302.

ITAL 413 Literature of the Renaissance: Quattrocento (5) VLPA The early Renaissance. Humanism; writings of Lorenzo de' Medici, Poliziano, Belcari, Alberti, Masuccio, Sannazaro, Pulci, Boiardo. Prerequisite: ITAL 302.

ITAL 431 Italian Theater (5) VLPA The development of Italian theater from the Renaissance to the twentieth century. Prerequisite: ITAL 302.

ITAL 465 Contemporary Italian Narrative (5, max. 15) VLPA Critical reading of selected modern exponents of the short story and novel. Prerequisite: ITAL 302.

ITAL 466 Italian Society in Cinema and Literature in Italian (5, max. 15) VLPA/I&S Studies the evolution of Italian postwar society through the analysis of film and literature as well as critical, historical, and sociological readings. Offered in Italian. Prerequisite: ITAL 302.

ITAL 470 Dante (5) VLPA Introduction to Dante's *Commedia* and minor works, conducted in Italian. Prerequisite: ITAL 302.

ITAL 475 Italian Fascism: Architecture and Power (5) VLPA/I&S Fascism in Italy as studied within the broader European context of nationalism, imperialism, and modernization, with particular emphasis on the arts - literature, film, architecture, and urbanism. Offered: jointly with ART H 495.

ITAL 480 Dante's Comedy in English (5) VLPA Introduction to Dante's *Comedy*. Considers formal, structural, linguistic, literary, historical, cultural, philosophical, and theological issues raised by the text. Discusses the main currents of twentieth-century Dante criticism.

ITAL 481 Dante's Comedy in English (5) VLPA Second half of a two-quarter series. Close study of Dante's *Purgatory*

and Paradiso and retrospective reading of Inferno. Explores Dante's concept of art, both human and divine, as it is developed in and defines the poem. Prerequisite: ITAL 480.

ITAL 482 The Decameron in English (5) VLPA An integral reading of the Decameron, with some consideration of its place in world literature and as an expression of the culture of its time.

ITAL 490 Proseminar in Italian Literature (3-5) VLPA Intended to help students achieve a mature critical mastery of Italian literature.

ITAL 499 Special Topics (1-5, max. 10) Topics to meet specific needs. Prerequisite: ITAL 302.

ITAL 501 Medieval Italian Readings (5) Exploration of medieval Italian cultural history through a broad variety of literary and other textual traditions.

ITAL 502 Early Modern Italian Readings I (5) Readings in Italian Quattro/Cinquecento over the period of the Renaissance. Covers major intellectual, literary, and cultural movements and figures of the period, including humanistic rediscovery of Graeco-Roman models, chivalric poems, comic theater.

ITAL 503 Early Modern Italian Readings II (5) Readings in Italian Sei/Settecento, covering the periods of Baroque and Enlightenment literature.

ITAL 504 Modern Italian Readings I (5) Readings in Italian Ottocento, covering the period of Romanticism.

ITAL 505 Modern Italian Readings 2 (5) Readings in Italian Novecento, covering the work of the major Italian twentieth-century authors.

ITAL 514 Dante (5, max. 10)

ITAL 531 Italian Theater (5) The development of Italian theater from the Renaissance to the twentieth century. Individual conferences with lecturing professor. Prerequisite: graduate students only.

ITAL 552 Manuscript Cultures (5) Techniques, terminology, and bibliography of manuscript scholarship. The production of manuscripts from Antiquity through the Renaissance; the evolution of scripts; the rise of literacy; and the development of libraries in Italy and France. Topics and methods include material philology, textual criticism, relations between text/image, and the digitalization of manuscripts. Offered: jointly with FRENCH 552.

ITAL 553 Topics in Print Culture (5) Key readings, theoretical questions, and critical approaches in book history, focusing on printed texts from Gutenberg to today. The impacts of evolving technologies, material forms, and circulation within French, Italian, and other literary traditions. Methods and tools for evaluating an interpreting these impacts (bibliography, *histoire du livre*, and textual scholarship). Offered: jointly with FRENCH 553.

ITAL 560 Reading Fashion (5) Examines the emergence and problematizing of the notion of "fashion" in early modern Europe, focusing on Italy, France, and England. Analyzes late medieval and early modern literary and visual reflections of "fashion" in relation to today's critical discourses on fashion. Taught in English.

ITAL 570 Seminar in Cinema (5) Studies in various areas of Italian cinema, concentrating on major directors, critics, and movements. Prerequisite: permission of instructor.

ITAL 590 Special Seminar and Conference (1-10, max. 30) Group seminars, or individual conferences, are scheduled under this number to meet specific needs. Prerequisite: permission of instructor.

ITAL 591 Literary Problems: Middle Ages and Fourteenth Century (5, max. 10)

ITAL 592 Literary Problems: Renaissance (5, max. 10)

ITAL 593 Literary Problems: Early Modern (5, max. 10)

ITAL 594 Literary Problems: Eighteenth Century (5, max. 10)

ITAL 595 Literary Problems: Nineteenth Century (5, max. 10)

ITAL 596 Literary Problems: Twentieth Century (5, max. 10)

ITAL 600 Independent Study or Research (*-)

Spanish and Portuguese Studies

C104 Padelford

The educational philosophy of Spanish and Portuguese studies is that knowledge and understanding of other cultures is fundamental in an increasingly global world, and that competence in the languages of those cultures is an indispensable gateway to them. Spanish studies provides students with the four basic language skills (listening, speaking, reading, and writing) in increasing levels of sophistication so that they may read and analyze works of literature written in Spanish as well as understand complex cultural structures and artifacts from Spain, Latin America, and the Latino populations of the United States. The UW offers beginning and intermediate Portuguese and all levels of Spanish.

UNDERGRADUATE PROGRAM

Adviser

C104F Padelford, Box 354360

(206) 543-2075

spsadv@uw.edu

The Division of Spanish and Portuguese Studies offers the following programs of study:

- The Bachelor of Arts degree with a major in Spanish
- A minor in Spanish

Bachelor of Arts

Suggested First- and Second-Year College Courses: SPAN 101, SPAN 102, SPAN 103, or SPAN 121, SPAN 122, SPAN 123, or SPAN 134; SPAN 201, SPAN 202 (or SPAN 210), SPAN 203. Spanish, Latin American, and Chicano literature. Courses related to history and culture. Courses in English literature and comparative literature

Department Admission Requirements

1. Completion of SPAN 203, with a minimum cumulative GPA of 2.70 for all Spanish coursework completed and a minimum grade of 2.5 in each Spanish course
2. Completion of at least 5 credits of English composition with a minimum grade of 2.5
3. Change-of-major forms, available online and outside C-104F Padelford Hall, are processed autumn, winter, and spring quarters only. Forms and unofficial transcripts must be turned in by the end of the third week of the quarter to assure registration priority for the following quarter. Paperwork turned in after the third week of the quarter is processed during the following admission cycle.

Major Requirements

58 credits beyond SPAN 203 as follows:

1. SPAN 301, SPAN 302, SPAN 303 (or equivalents, SPAN 314, SPAN 315, SPAN 316; SPAN 310; SPAN 330)
2. SPAN 321, SPAN 322, SPAN 323
3. One 300-level literature elective: See department website for list of eligible courses.

4. Five 400-level courses (only one course numbered SPAN 400 through SPAN 405 may apply to the major)
5. Participation in an approved study abroad program (one quarter minimum, any level) or one or more experiential learning projects (minimum 2 credits of SPAN 392) which involve significant engagement with the Spanish-speaking community. Students are strongly encouraged to do both.
6. Other than SPAN 400 through SPAN 406, only one course whose instructional materials are primarily in English may apply to the major.

Minor

Minor Requirements

Minimum 27 credits above SPAN 203 level to include the following:

1. One of the following sequences: SPAN 301, SPAN 302, and either SPAN 303 or SPAN 330; SPAN 314, SPAN 315, and either SPAN 316 or SPAN 330; SPAN 310 and either SPAN 303, SPAN 316, or SPAN 330
2. Four 300- or 400-level electives
3. Only one course in which instructional materials are primarily in English may apply to the minor. SPAN 327 may not apply to the minor and is not open to heritage/native speakers.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The study of Spanish and Portuguese is both skills- and content-based, i.e., it has practical and cognitive elements. Students learn to communicate in Spanish or Portuguese, refining their language skills as they acquire a body of knowledge about the literary and cultural history of Spain, Latin America, and the Spanish-speaking populations of the United States. Graduates have found these skills extremely useful as they pursue careers in teaching, business, NGOs and human rights organizations, law, and politics.
- *Instructional and Research Facilities:* Departmental facilities include a Writing Center for students registered in third-year Spanish. The Center for Spanish Studies, housed in the department, is a joint initiative of the University of Washington, the Education Office of the Embassy of Spain, and the Office of Superintendent of Public Instruction. This center provides services that include workshops for K-12 teachers of Spanish, sponsorship of cultural events, and a lending library of books as well as audio and visual materials. A branch of the Spanish government sponsored Cervantes Institute, also housed in the department, offers linguistic and cultural resources to the university and the general community as well.
- The department directs three study abroad programs, in León (Spain), Oaxaca (Mexico) and Cádiz (Spain). These programs are "living laboratories." Approximately 100 students participate each year.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Experiential Learning:* Internship opportunities are posted on the department website as they become available. Also, students may participate in experiential learning (which may include service learning), in which they combine study with service to the community. Students must volunteer two to five hours per week (a minimum of 30 hours per quarter) in organizations that provide services primarily, although not exclusively, to Spanish speakers. Alternatively, they may volunteer in public schools as tutors of

different academic themes. Some of the organizations and schools involved include CASA Latina, The Mexican Consulate, El Centro de la Raza, Our Lady of Mt. Carmel, Northwest Immigrant Rights Project, Cascade People's Center, Center for Spanish Studies, John Stanford International School, Bryant Elementary School, John Hay Elementary School, Hamilton Middle School, Nathan Hale High School, the Pipeline Project, and the East Side Literacy program. Students apply and increase their knowledge of the Spanish language in a real context. They are exposed to Hispanic multiculturalism and become active agents of social change in the community.

- *Department Scholarships:* An annual scholarship, the Susan B. Johnson Memorial Endowment Fund, is awarded to a student of Spanish for foreign study in Spain.
- *Student Organizations/Associations:* None.
- *Of Special Note:* 100- and 200-level Spanish courses do not count toward major/minor requirements.

GRADUATE PROGRAM

Graduate Program Adviser
C104F Padelford, Box 354360
(206) 543-2020
spsadv@uw.edu

The Division of Spanish and Portuguese Studies offers a program of graduate study leading to the Master of Arts degree.

The Master of Arts degree program in Hispanic Literary and Cultural Studies was reformed and updated in 2001 to foster study of Hispanic culture, literature, and language together. The program calls attention to the rich diversity of Hispanic cultural texts and to their interdisciplinary study while also promoting broad understanding of Spanish and Latin American literature. The program gives careful attention to acquainting students with the traditions of scholarship in the field as well as a range of current textual theory, criticism, and research methods.

Study of Portuguese and other Romance literatures and cultures, comparative literature, Romance and Spanish linguistics, and other related disciplines may be included in the master's degree program. The degree is earned normally in six academic quarters.

Students who wish to pursue advanced study in Spanish and Portuguese in a post-master's degree program may do so by entering the doctoral studies programs in Hispanic Studies of Comparative Literature or other departments of the University.

Master of Arts

Admission Requirements

1. Application for admission to the Graduate School
2. Three letters of recommendation
3. Unofficial transcripts. International applicants must also submit official transcripts to the Graduate School.
4. Academic autobiographical statement composed by the applicant in Spanish
5. A sample of the applicant's written work in Spanish in some area of Hispanic literature and culture. This may be a copy of a paper written for a course in the area of the applicant's major. An analytical or critical writing sample is preferred.
6. Graduate Record Examination (GRE) scores are required from applicants whose first language is English, and from applicants whose first language is not English who hold a bachelor's, master's, or doctoral degree from a regionally accredited university in one of the countries noted in Memo 8 from the Graduate School Memoranda. The GRE requirement is waived for applicants

whose first language is not English, if they do not hold a bachelor's, master's, or doctoral degree from a regionally accredited university in one of the countries noted in Memo 8 from the Graduate School Memoranda.

7. Foreign students Applicants whose native language is not English should note that the Graduate School requires proof of proficiency in the English language in one of the ways described in detail in Memo 8 of the Graduate School Memoranda. the form of the TOEFL (Test of English as a Foreign Language) or its computerized version (TOEFLC) or the Michigan Test and also the TSE (Test of Spoken English). A TOEFL score of 500 (or a TOEFLC score of 173) is required for admission, and a score of 580 (or 237 on the computerized form) is required for teaching assistant eligibility. Alternatively a Michigan Test score of 80 is required for admission and 90 for teaching assistantship eligibility. A minimum score of 55 is required on the TSE.8. Complete and upload Assistantship and Fellowship Application regardless of whether or not applicant is applying for a TA position.
8. Complete and upload Assistantship and Fellowship Application regardless of whether or not applicant is applying for a TA position. If applying for a Teaching Assistant position, the following is also required.
 - a. A digital voice recording (mp3 file format preferred) in which the applicant summarizes his/her reasons for applying to the graduate program and explains his/her interest in the TA position. Only spontaneous speech will be considered. The recording must be in English for native Spanish speakers, and in Spanish for all other applicants.
 - b. Resume or Curriculum Vitae

Degree Requirements

1. A total of 60 applicable credits (500 level and above). To remain in good standing the student must maintain a cumulative grade point average of 3.00. The minimum acceptable grade for any given course is 2.7.
2. Either SPAN 577, or an alternate graduate-level literary theory course which must be pre-approved by the GPC (Graduate Program Coordinator).
3. SPAN 510 is required of all teaching assistants and is to be taken during or before a student's first quarter of teaching.
4. *Distribution Requirement:* A minimum of 5 credits (normally one course) must be earned in five of the six: Medieval Spain, "Golden Age" Spain; Spain of the eighteenth and nineteenth centuries; twentieth-century Spain; colonial and nineteenth-century Latin America; and twentieth-century Latin America.
5. MA candidates must pass an MA examination: During the first quarter of graduate study, students must select one area in which to be examined from the six areas of study specified above. They then have a year to prepare that field. Students may not write their MA Thesis in the field they have chosen for their examination. The MA examination is written at the beginning of the fourth quarter of study (ordinarily fall quarter). The examination consists of one question, and the student has five hours to answer his/her question, with only a dictionary available for consultation. The examination in the chosen area is based on the MA reading list, available on this website: depts.washington.edu/spanport/programs/grad_readingList.html.
6. MA candidates must complete an MA Thesis: Students must take ten credits of MA thesis (SPAN 700) in their second year of study (5 credits in the fall quarter and 5 credits in the winter quarter). The MA Thesis (minimum 45 pages of text, plus bibliography) is directed by a graduate faculty member and submitted to the Graduate Studies Committee for its approval by the end of the fifth quarter of study.

7. Admission to the Graduate School allows students to continue graduate study and research at University of Washington only as long as they maintain satisfactory performance and progress toward completion of their degree program. Details can be found here: depts.washington.edu/spanport/programs/grad_academicRequirement.html.

Financial Aid

The department awards annually a number of teaching assistantships. The assistant normally participates in teaching three classes during the academic year. Each class is limited to approximately 25 students and meets five hours a week for the ten weeks of the quarter.

Applicants whose native language is not English must demonstrate English proficiency in one of the ways described in the Graduate School's Memorandum 15 to be considered for a TA position. For more information see: www.grad.washington.edu/policies/memoranda/memo08.shtml; www.grad.washington.edu/policies/memoranda/memo15.shtml.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

Portuguese

PORT 101 Elementary Portuguese (5) Methods and objectives are primarily oral-aural. Covers all major elements of Portuguese grammar. First in a sequence of three.

PORT 102 Elementary Portuguese (5) Methods and objectives are primarily oral-aural. Covers all major elements of Portuguese grammar. Second in a sequence of three. Prerequisite: PORT 101.

PORT 103 Elementary Portuguese (5) Methods and objectives are primarily oral-aural. Covers all major elements of Portuguese grammar. Third in a sequence of three. Prerequisite: PORT 102.

PORT 105 Intensive Portuguese for Spanish Speakers (6) VLPA Covers the verbal system and major grammatical points. Does not satisfy foreign language requirement. Prerequisite: SPAN 203.

PORT 110 Accelerated Elementary Portuguese (5) Covers the equivalent of PORT 101 and PORT 102 to prepare for PORT 103. May not be taken in addition to PORT 101 or PORT 102.

PORT 199 Foreign Study: Elementary (2-16, max. 16) Elementary instruction in approved foreign study program. Students who wish to satisfy foreign language proficiency requirement must see the departmental adviser and may be required to take additional courses through PORT 103.

PORT 201 Intermediate Portuguese (5) VLPA Modern texts, compositions, conversation, and a systematic review of grammar. First in a sequence of three. Prerequisite: either PORT 103 or PORT 105.

PORT 202 Intermediate Portuguese (5) VLPA Modern texts, compositions, conversation, and a systematic review of grammar. Second in a sequence of three. Prerequisite: PORT 201.

PORT 203 Intermediate Portuguese (5) VLPA Modern texts, compositions, conversation, and a systematic review of grammar. Third in a sequence of three. Prerequisite: PORT 202.

PORT 299 Foreign Study: Intermediate (2-16, max. 16) VLPA Intermediate instruction in approved foreign study program. Further study at 200-level subject to department evaluation.

PORT 301 Advanced Portuguese (5) VLPA Emphasizes oral skills while continuing to refine reading comprehension and

written expression. Aims to develop abilities to successfully deal with comprehension and production of oral texts of an academic and professional nature. Not a conversation course. Prerequisite: PORT 203.

PORT 302 Advanced Portuguese (5) VLPA Develops writing techniques and strategies for the production of Portuguese texts of an academic and professional nature. Prerequisite: PORT 301.

PORT 310 Introduction to Lusophone Literature (3) VLPA Introduction to the studies of Lusophone literature and culture.

PORT 335 Twentieth Century Brazilian Fiction in English (5, max. 10) VLPA Reading texts in connection with cultural and theoretical issues.

Spanish

SPAN 101 Elementary Spanish (5) Methods and objectives are primarily oral-aural. Language laboratory is required. First in a sequence of three. Prerequisite: score of 0-15 on SP100A placement test if Spanish is language of admission. No credit if Spanish is the language of admission. Cannot be taken for credit if SPAN 121 already taken.

SPAN 102 Elementary Spanish (5) Methods and objectives are primarily oral-aural. Second in a sequence of three. Prerequisite: either SPAN 101, or score of 16-44 on SP100A placement test. Cannot be taken for credit if SPAN 122 already taken.

SPAN 103 Elementary Spanish (5) Methods and objectives are primarily oral-aural. Third in a sequence of three. Prerequisite: either SPAN 102, SPAN 110 or score of 45-69 on SP100A placement test. Cannot be taken for credit if SPAN 123 already taken.

SPAN 110 Basic Spanish Review (5) Covers the equivalent of SPAN 101 and SPAN 102 to prepare for SPAN 103. May not be taken in addition to SPAN 101 or SPAN 102. Prerequisite: score of 10-44 on SP100A placement test. Offered: AWSp.

SPAN 121 Spanish Immersion (5) Covers the equivalent of elementary Spanish (SPAN 101). Uses an alternative "planned immersion" method with video as the central medium of presentation. First in a sequence of three. Prerequisite: no previous Spanish study, or score of 0-15 on SP100A placement test if Spanish is language of admission. Cannot be taken for credit if SPAN 101 already taken.

SPAN 122 Spanish Immersion (5) Covers the equivalent of elementary Spanish (SPAN 102). Uses an alternative "planned immersion" method with video as the central medium of presentation. Second in a sequence of three. Prerequisite: SPAN 121. Cannot be taken for credit if SPAN 102 already taken.

SPAN 123 Spanish Immersion (5) Covers the equivalent of elementary Spanish (SPAN 103). Uses an alternative "planned immersion" method with video as the central medium of presentation. Third in a sequence of three. Prerequisite: SPAN 122. Cannot be taken for credit if SPAN 103 already taken.

SPAN 134 Intensive First-Year Spanish (15) Equivalent of SPAN 121, SPAN 122, SPAN 123. Employs "planned immersion" method with video as the central medium of presentation. Not open for credit to students who have taken SPAN 121, SPAN 122, SPAN 123 or SPAN 102, SPAN 103. Offered: S.

SPAN 199 Foreign Study - Elementary (1-16, max. 16) Elementary instruction in approved foreign study program. Students who wish to satisfy foreign language proficiency requirement must see the departmental adviser and may be required to take additional courses through SPAN 103.

SPAN 201 Intermediate Spanish (5) VLPA Intensive practice in speaking, reading, and writing. Review of Spanish grammar. Oral practice based on literary and cultural readings. First in a sequence of three. Prerequisite: either SPAN 103, SPAN 123, SPAN 134, score of 70-100 on SP100A

placement test, minimum score of 51 on SP TL placement test, or score of 0-75 on SP200A placement test.

SPAN 202 Intermediate Spanish (5) VLPA Intensive practice in speaking, reading, and writing. Review of Spanish grammar. Oral practice based on literary and cultural readings. Second in a sequence of three. Prerequisite: either SPAN 201 or score of 76-145 on SP200A placement test.

SPAN 203 Intermediate Spanish (5) VLPA Intensive practice in speaking, reading, and writing. Review of Spanish grammar. Oral practice based on literary and cultural readings. Third in a sequence of three. Prerequisite: either SPAN 202, SPAN 210, or score of 146-165 on SP200A placement test.

SPAN 224 Spanish for Health Professionals I (3) Exposes students to a variety of medical terminology, providing opportunities for practicing medical-focused communication, and reading and analyzing written texts, as they would in a clinical setting. Not equivalent to any other Spanish language course. Prerequisite: either SPAN 201, or score of 76-145 on SP200A test, or A2 level DELE diploma.

SPAN 225 Spanish for Health Professionals II (3) Understand and use more complex structures of Spanish; with precision and fluency in the healthcare field. Starts with review of conducting a simple physical exam and follow-up on tests. Includes concepts such as learning to create a medical history, and discussing hospitalization/discharge of patients. Prerequisite: SPAN 224.

SPAN 227 Intermediate Conversation (2, max. 6) VLPA Focuses on developing intermediate conversation skills - listening and speaking - and increasing vocabulary in varying situations. Discussions are based on contemporary Spanish films, current articles, fiction, and essays. Not open to students whose native language is Spanish. Prerequisite: either SPAN 103, SPAN 123, or SPAN 134.

SPAN 237 Foreign Study - Intermediate Conversation (2-6, max. 6) VLPA For participants in approved foreign study programs. Prerequisite: either SPAN 103, SPAN 123, or SPAN 134.

SPAN 292 Experiential Learning in Spanish - Intermediate (1-3, max. 3) I&S An experiential learning project in an NGO or non-profit organization in the Spanish-speaking community that engages students in ways that supplement their formal in-class trainings. Prerequisite: SPAN 103.

SPAN 294 Special Topics in Spanish Literary/Cultural Studies (5, max. 10) VLPA Focuses on a special topic related to Spanish literary or cultural studies. Taught in English.

SPAN 299 Foreign Study - Intermediate (1-16, max. 16) VLPA Intermediate instruction in approved foreign study program. Further study at 200 level subject to placement test score.

SPAN 301 Advanced Spanish (5) VLPA Emphasizes oral skills while continuing to refine reading comprehension and written expression. It aims to develop the abilities to successfully deal with comprehension and production of oral texts of an academic and professional nature. Not a conversation course. Prerequisite: either SPAN 203 or score of 166-175 on SP200A placement test.

SPAN 302 Advanced Spanish (5) VLPA Develops writing techniques and strategies for the production of Spanish texts of an academic and professional nature. Prerequisite: SPAN 301 or SPAN 310, either of which may be taken concurrently.

SPAN 303 Advanced Spanish (5) VLPA Develops writing techniques and strategies for the creation of essays on literary criticism and cultural analysis. Prepares students to deal successfully with academic writing in Hispanic literature and culture courses. Prerequisite: either SPAN 302 or SPAN 310.

SPAN 304 Survey of Spanish Literature: 1140-1498 (3) VLPA Masterpieces of Spanish literature from origins to 1498. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 305 Survey of Spanish Literature: 1498-1681 (3/5) VLPA Gilbert Prerequisite: either SPAN 301, SPAN 302, SPAN 303, 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 306 Survey of Spanish Literature: 1681 to the Present (3/5) VLPA Mercer Prerequisite: either SPAN 301, SPAN 302, SPAN 303, 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 307 Introduction to Latin American Literature: Colonial Era through Early Independence (3/5) VLPA Albaran Study of selected works from the sixteenth through the nineteenth century, with special emphasis on their historical and cultural relevance. Development of reading and writing skills. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 308 Introduction to Latin American Literature: Independence to the Present (3/5) VLPA Study of selected works of twentieth-century Latin American literature and their sociohistorical context. Development of reading and writing skills. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 314 Spanish for Bilingual/Heritage Students (5) VLPA Gillman Provides bilingual students whose formal education has primarily been in English with the skills necessary to succeed in upper-division Spanish classes. Intensive review of grammar, readings of literary and journalistic texts, Web-based exercises, writing review, and a play to enhance their verbal skills. Offered: AW.

SPAN 315 Spanish for Bilingual/Heritage Students (5) VLPA Gillman Emphasizes reading, with attention to problems particular to Spanish-heritage students. Emphasis on critical reading, vocabulary expansion, and grammar review. Prerequisite: SPAN 314. Offered: WSp.

SPAN 316 Stylistics and Composition for Heritage Students (5) VLPA M. GILLMAN, A. WITTE Emphasis on the process of writing essays to help students develop a notion of style in Spanish, with attention to problems particular to Spanish heritage students. Prerequisite: SPAN 315. Offered: ASp.

SPAN 317 Spanish and Latin American Literature in English Translation (5, max. 10) VLPA Spanish and Latin American literature in English translation, with consideration of their background and influence. Does not fulfill any major or minor requirement.

SPAN 318 Cervantes' Don Quixote in English (5) VLPA Gilbert Cervantes' Don Quixote de la Mancha: close study of this comic masterpiece, and the life, times, and works of its author. Consideration of the work's enduring influence and vitality. Does not fulfill any major or minor requirement.

SPAN 319 Mexican Literature (3) VLPA Witte Analysis of selected works of Mexican literature from the second half of the twentieth century: short stories, poetry, essay, and theatre. Focus on issues such as nationalism and national identity, gender, ethnicity, dependent development, and globalization. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 321 Introduction to Hispanic Literary Studies (5) VLPA A. WITTE Acquaints the third-year student with elementary techniques of literary analysis, as applied to examples of narrative, poetry, and theater, within the context of the Spanish and Latin American literary traditions. Prerequisite: either SPAN 301 or SPAN 314, or SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently. Offered: W.

SPAN 322 Introduction to Hispanic Cultural Studies (5) VLPA/I&S Gomez-Bravo Introduces students to elite, mass, and folk cultures of Latin America, Spain, and Latinos in the United States. Sample topics include transculturation, globalization, border culture, and relations between

culture, democratization, and human rights. Prerequisite: either SPAN 301 or SPAN 314; or SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently. Offered: Sp.

SPAN 323 Introduction to Spanish Linguistics (5) VLPA A. FERNANDEZ DOBAO Synchronic and diachronic linguistic analysis of Spanish, including Spanish phonetics and phonology, morphology, syntax, and evolution of the language. Prerequisite: either SPAN 301 or SPAN 314, or SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently. Offered: Sp.

SPAN 327 Advanced Conversation (2-6, max. 6) VLPA Focuses on developing advanced conversational skills - listening and speaking - to fluency and increasing vocabulary in varying situations. Discussions are based on contemporary Spanish films, current articles, fiction, and essays. Does not fulfill any major or minor requirement. Not open to students whose native language is Spanish. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently.

SPAN 328 Spanish Cultural Studies (5, max. 10) VLPA/I&S Focusing on historical, social, and ideological aspects of modern Spanish culture. Lectures, readings, discussions, and written work in Spanish. Prerequisite: either SPAN 301, SPAN 310, or SPAN 314.

SPAN 329 Latin American Cultural Studies (5, max. 10) VLPA/I&S Focuses on historical, social, and ideological aspects of modern Latin American culture. Lectures, readings, discussions, and written work in Spanish. Prerequisite: either SPAN 301, SPAN 310, or SPAN 314.

SPAN 331 Themes in Mexican-American Studies (5) VLPA/I&S Examination of significant historical and cultural themes of the Mexican-American experience. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently.

SPAN 332 Chicano Film and Narrative (5) VLPA/I&S Flores Provides an historical overview of the evolution of Chicano culture through film. Critically examines the portrayal and self-portrayal of Chicanos in film and selected works of narrative. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently.

SPAN 333 Hispanic Film Studies (5) VLPA/I&S Mercer Introduction to major issues in the study of Hispanic cinema from various national contexts. The relationship of film to other types of narrative, and of film to society, specifically relations between class, gender, ethnicity, and artistic production, as well as between cinema and social change. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently.

SPAN 334 Latin American Film (5) VLPA/I&S Overview of the history of Latin American cinema, including the new Latin American cinema of the 1960s; the development of strong film industries in Mexico, Cuba, and Brazil; and recent developments in the context of globalization and democratization. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently.

SPAN 336 Creative Storytelling in Spanish (5) VLPA/I&S Introduction to the theory and practice of storytelling in Spanish. Helps prepare the Spanish language teacher for the classroom. Focuses on the improvement of presentation skills, creativity, and the integration of story in the (second) language classroom.

SPAN 337 Foreign Study Advanced Conversation (2-6, max. 6) VLPA For participants in foreign study program. Does not fulfill any major requirement. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314,

SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently.

SPAN 339 Women Writers (3) VLPA Diaz Critical analysis of Chicana/Latina writers in the United States; or by Spanish-American, Luso-Brazilian, and Spanish women writers in their specific socio-historical context. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 340 Introduction to Latin American Poetry (3) VLPA Traces the oral, musical, and written traditions of Latin American poetry. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 350 Drama (3) VLPA Gilbert Generic study of Spanish drama. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 351 Poetry (3) VLPA O' Hara Generic study of Spanish poetry. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 352 Fiction (3) VLPA Petersen Generic study of Spanish fiction. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 360 Contemporary Spain (5) VLPA/I&S Raneda Social, political, and cultural developments in Spain since the end of the Franco dictatorship in 1975. Extensive use of Spanish Web sites. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330. Offered: jointly with JSIS A 360.

SPAN 390 Supervised Study (2-6, max. 20)

SPAN 392 Experiential Learning in Spanish (1-3, max. 3) Experiential learning project in the local Spanish-speaking community. Engages students in ways that supplement/enhance formal in-class language training. Prerequisite: SPAN 203. Credit/no-credit only.

SPAN 393 Foreign Study (1-10, max. 20) VLPA Study in Spanish speaking country outside the standard Spanish curriculum of the University of Washington. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently.

SPAN 394 Special Topics in Spanish Literature (3/5, max. 10) VLPA Gomez-Bravo Focuses on an individual Spanish author or a special topic in Spanish literature. May be repeated once. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 395 Special Topics in Latin American Literature (3/5, max. 10) VLPA Albarran Focuses on an individual Latin American author or a special topic in Latin American literature. May be repeated once. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 396 Special Topics in Spanish Cultural Studies (3/5, max. 10) VLPA/I&S Focuses on a special topic related to Spanish cultural studies. Taught in English. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 398 Special Topics in Spanish Linguistics (3-5, max. 10) VLPA Focuses on a special topics related to Spanish linguistic studies. May be repeated once. Prerequisite: either SPAN 301 or SPAN 314.

SPAN 400 The Syntactic Structure of Spanish (5) VLPA Scientific study of the syntax of Spanish: structure of phrases, transformationally derived structures, grammatical relations, principles of interpretation. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400; recommended: SPAN 323. Offered: jointly with SPLING 400.

SPAN 401 The Morphological Structure of Spanish (5) VLPA Principles of word formation, including derivational and inflectional morphology. Relationship between inflectional morphology and other components of grammar. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400; recommended: SPAN 323. Offered: jointly with SPLING 401.

SPAN 402 The Phonological Structure of Spanish (5) VLPA Phonological component of the generative grammar of Spanish; representations of syllabic and segmental units, phonological rules, distinctive features and their articulatory correlates. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400; recommended: SPAN 323. Offered: jointly with SPLING 402.

SPAN 403 The Evolution of the Spanish Language (5) VLPA Fernandez-Mallat Historical survey of Spanish phonology, morphology, and syntax, from Latin origins to the modern language. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400; recommended: SPAN 323. Offered: jointly with SPLING 403.

SPAN 404 Dialects of World Spanish (5) VLPA Fernandez Dobao Introduction to dialectal variants of Spanish. Considers standardization and the real academia; variation and change; pragmatics and politeness; Spanish in contact; sound, word formation, and grammar variation. Taught in Spanish. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400; recommended: SPAN 323. Offered: jointly with SPLING 404.

SPAN 405 Spanish Phonetics (5) VLPA Analysis of sounds: training in pronunciation, intonation, and close transcription of Spanish language in its modalities. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400; recommended: SPAN 323. Offered: jointly with SPLING 405.

SPAN 406 Advanced Spanish Grammar (5) VLPA Fernandez-Mallat Problems of Spanish grammar. Differences from English grammar. Techniques for the effective teaching of Spanish. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400; recommended: SPAN 323. Offered: jointly with SPLING 406; A.

SPAN 407 Bilinguismo: Made in USA (5) VLPA/I&S Fernandez Dobao Introduces students to the study of bilingualism, focusing on Spanish/English bilingualism in the United States. Explores bilingualism as both an individual and social phenomenon, and aims to raise students' awareness about its benefits as well as complexities. Taught in Spanish. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400; recommended: SPAN 323. Offered: jointly with SPLING 407.

SPAN 408 Spanish Translation Workshop (5) VLPA Witte Intensive practice in translation to and from Spanish. Texts include literary prose, poetry, expository writing, newspaper and magazine articles. Problems of standard versus colloquial language, transposition of cultural references, concept of fidelity in translation. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400; recommended: SPAN 323 and SPAN 406.

SPAN 409 Translation for Performance (5) VLPA Focuses on the translation of a selection of one full length or several short plays from English into Spanish with special attention given both to translation methodology and to the particular challenges encountered when translating/adapting a play for performance.

SPAN 410 Creative Writing in Spanish (5) VLPA O' Hara Creative writing in poetry for students undertaking fourth year advanced coursework in Spanish literature. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 414 Spanish Literature: Eighteenth Century (5) VLPA Mercer Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 415 Spanish Literature: Nineteenth Century (5) VLPA Mercer Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 416 Spanish Literature: 1900 to the Present (5) VLPA *Geist*, *Mercer* Spanish literature of the twentieth century prior to the Civil War to the present. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 420 Spanish Poetry: Origins Through the Fifteenth Century (5) VLPA *Petersen* Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 423 Spanish Poetry: The Golden Age, Sixteenth Through Seventeenth Centuries (5) VLPA *Gilbert* Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 424 Hispanic Poetry: 1870 - 1936 (5) VLPA *Geist* Modern lyric poetry of the Hispanic world. The period studied extends from 1870 to 1936 and deals with thirteen major poets, from Becquer to Hernandez. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 433 Golden Age Prose (5) VLPA *Gilbert* Representative, and outstanding, prose works of sixteenth- and seventeenth-century Spain. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 436 Spanish Novel of the Nineteenth Century (5) VLPA *Mercer* Representative works of Galdos, Clarin, Pareda, Valera, and Blasco Ibanez. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 438 Spanish Novel: 1900 - Present (5) VLPA *Geist* Spanish novel from the generation of 1898 to the present. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 439 Women Writers (5) VLPA/I&S *Diaz* Feminist analysis of selected texts by Chicana/Latina writers in the United States as well as by Spanish-American, Luso-Brazilian and/or Spanish women writers in their specific socio-historical contexts. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 440 Spanish Drama: 1150-1600 (5) VLPA *Gilbert* From the beginning to Lope de Vega. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 441 Spanish Drama: 1600-1635 (5) VLPA *Gilbert* Spanish theatre of the seventeenth century, with emphasis on Lope de Vega. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 442 Latin American Colonial Theatre and Performance (5) VLPA *Albarran* Study of formal Spanish American theatre, performance, and theatricalization of power in political, religious, and social life. Emphasizing how indigenous and European forms combined to create unique forms of spectacle in the Americas. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 445 The Modern Theatre in Spain, 1700-1900 (5) VLPA *Mercer* Literature and historical context of Spain's theatre in the eighteenth and nineteenth centuries. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 446 Modern Spanish Theatre: 1900 to Present (5) VLPA *Mercer* Examines works of Spain's major dramatists since 1900 and their relationship to Spain's changing social and political context. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 447 Modern Latin American Theater (5) VLPA *Witte* Study of the origin, development, and achievements of Latin American theater with an overview of its history prior to the twentieth century. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 449 Spanish Drama and Play Production (5, max. 10) VLPA *Witte* Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Credit/no-credit only.

SPAN 453 Cervantes and His Times (5) VLPA *Gilbert* Study of Cervantes and his moment in Spanish history, with special attention to his cultural and artistic environment. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 461 Topics in Latin American Cultural Studies (5, max. 10) VLPA/I&S *Albarran*, *O' Hara* Examines Latin American society and its cultural production. Major movements in the development of Latin American society and

intellectual life as reflected in music, the visual arts, literature, etc. Specific topics vary. Prerequisite: either SPAN 303 or SPAN 316; SPAN 322.

SPAN 462 Topics in Spanish Cultural Studies (5, max. 10) VLPA/I&S *Gomez-Bravo*, *Gilbert*, *Petersen* Examines Spanish society and its cultural production. Major movements in the development of Spanish society and intellectual life as reflected in music, the visual arts, literature, etc. Specific topics vary. Prerequisite: either SPAN 303 or SPAN 316; SPAN 322.

SPAN 464 Chicana Expressive Culture (5) VLPA/I&S Expressive culture of Mexican women in United States. Cultural and artistic practices in home, film, literary (print, oral), performing, and visual arts. Focuses on ways Chicana visual artists re-vision traditional iconography. Prerequisite: either SPAN 303 or SPAN 316; SPAN 322.

SPAN 465 Contemporary Chicano Literature (5) VLPA *Flores* Examines one or more problems, themes, and/or figures in the developing body of Chicano literature. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 466 Chicano Literature: Fiction (5) VLPA *Flores* Examines nineteenth- and early twentieth-century fiction, as well as contemporary works in attempts to trace the development of Chicano fiction in the proper historical trajectory. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 467 Spanish Women (5) VLPA/I&S Women's culture in Spain, focusing on women's experience during Civil War; persecution and censorship of women activists, artists, intellectuals during Franco years; changes in women's culture brought about by reintroduction of democracy; major issues addressed by contemporary Spanish feminists. Prerequisite: either SPAN 303 or SPAN 316; SPAN 322.

SPAN 468 Latin American Women (5) VLPA/I&S *Albarran* The elaboration of discourses of identity in relation to gender, ethnicity, social class, and nationality, by women writers from South America, Mexico, Central America, and the Caribbean. Testimonial literature, literature and resistance, women's experimental fiction. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Offered: jointly with GWSS 468.

SPAN 472 Colonial Prose (5) VLPA *Albarran* Study of major genres of prose writing in Spanish America during the sixteenth through eighteenth centuries, including history writing, travel writing, historiography, and nascent forms of fictional writing. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 473 Latin American Fiction: Nineteenth Century (5, max. 15) VLPA *Albarran* Study of prose fiction in Latin America in the nineteenth century. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 474 Latin American Fiction: Twentieth Century (5) VLPA *O' Hara* Study of prose fiction in Latin America in the twentieth century. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 475 Latin American Poetry: Colonial Through Nineteenth Century (5) VLPA *Albarran* Poetic movements of the seventeenth, eighteenth, and nineteenth centuries in Spanish American, Renaissance, baroque, neoclassicism, romanticism, and modernism. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 476 Contemporary Latin American Poetry (5) VLPA *O' Hara* Evolution of Latin American poetry, from postmodernism and vanguardism to the most recent poetic expression. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 477 Latin American Essay (5) VLPA *O' Hara* Literary expression of ideas in Latin American countries, nineteenth and twentieth centuries. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 479 The City and Latin American Literature: Points of Departure (5) VLPA/I&S *O' Hara* Representations of Latin American, United States, and European cities by Latin

American authors, and of Latin American and Latino cities by authors from other literary traditions. The literary relation of urbanization to modernization, globalization, exile, and alienation. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 480 Spanish Medieval Literature (5) VLPA *Petersen* Principal literary works of the Spanish Middle Ages in the context of evolving intellectual, spiritual, and artistic climates of the period. Covers the evolution of narrative and lyric prose and verse in both their traditional and learned manifestations. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 481 Sixteenth- and Seventeenth-Century Spanish Literature (5) VLPA *Gilbert* Spanish literature of the sixteenth and seventeenth centuries. Close study of key texts from all genres as well as their socio-historical contexts. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 482 Eighteenth- through Twentieth-Century Spanish Literature (5) VLPA *Mercer* Survey of Spanish literature since 1700, and its historical context. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 483 Latin American Literature: Origins to Independence (5) VLPA *Albarran* The elaboration of discourses of legitimization by the Spanish conquistadores, and of resistance and accommodation by native and mestizo peoples; the development of a New World Baroque aesthetic; literatures of independence from Spain and of nation-building. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 484 Latin American Literature: Modernismo to the Present (5) VLPA *O' Hara* Principal literary movements of Latin America, late nineteenth century to the present, with particular emphasis on poetry and narrative: modernismo, postmodernismo, the vanguard, nueva and novísima narrativa. Includes essays and autobiographical writings to help place the literary works in socio-historical perspective. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 486 Photography and Cultural Studies in Latin America (5) VLPA/I&S *Steele* Interdisciplinary exploration of the connections between visual anthropology (ethnography through photography and film), documentary and art photography, and colonial and post-colonial discourse in Latin America during the twentieth century. Prerequisite: either SPAN 303 or SPAN 316; SPAN 322. Offered: jointly with JSIS A 486.

SPAN 487 Mexican Cinema (5) VLPA/I&S *Steele* Analysis of representative films about post-revolutionary Mexico by directors from both the Golden Age of Mexican Cinema (1940-1960) and the Mexican New Film movement (1975-the present). Revolutionary nationalism, modernization and its discontents; construction of gender, class, and ethnicity; migration and globalization. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 488 The Fantastic in Latin American Literature (5) VLPA *O' Hara* Introduction to the Fantastic in literature, in contrast to realism, and how the concept has been adapted by Latin American authors. May focus on a particular writer: Augusto Monterroso (Guatemala) or Julio Cortázar (Argentina), or survey various authors. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 489 The Mexico-U.S. Border in Literature and Film (5) VLPA/I&S *Steele* Analysis of the Mexico-U.S. Border region in literature and film of the 1990s and early 2000s. Includes migration, tourism, NGOs, globalization, transnational commerce, multiculturalism, and politics of gender, sexuality, and race. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Offered: jointly with JSIS A 489.

SPAN 490 Honors Seminar (2-5, max. 10) VLPA Special studies in Spanish literature. Required of candidates for Honors and Distinction in Spanish.

SPAN 491 Individual Authors and Special Topics in Spanish Literature (5, max. 10) VLPA Focus on an individual Spanish author or a special problem in Spanish literature. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 492 Individual Authors and Special Topics in Latin American Literature (5, max. 10) VLPA Focuses on an individual Latin American author or a special problem in Latin American literature. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 493 Foreign Study (2-10, max. 20) VLPA Advanced study in Spanish speaking country outside the standard Spanish curriculum of the University of Washington. Prerequisite: either SPAN 303, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; either SPAN 304, SPAN 305, SPAN 306, SPAN 307, SPAN 308, SPAN 319, SPAN 339, SPAN 340, SPAN 350, SPAN 351, SPAN 352, SPAN 394, or SPAN 395.

SPAN 495 Study in Spain (2-10, max. 20) VLPA Advanced study in Spain in approved foreign study programs. Prerequisite: either SPAN 303, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; either SPAN 304, SPAN 305, SPAN 306, SPAN 307, SPAN 308, SPAN 319, SPAN 339, SPAN 340, SPAN 350, SPAN 351, SPAN 352, SPAN 394, or SPAN 395.

SPAN 499 Special Topics (1-5, max. 10) Topics to meet special needs.

SPAN 510 Methodology of Spanish Language Teaching (5) *Fernandez Dobao* Theoretical and practical foundations of current trends in second/foreign language teaching. Emphasis on communicative and task-based approaches to Spanish language teaching. Required for beginning Spanish teaching assistants. Credit/no-credit only.

SPAN 521 The Renaissance in Spain (5, max. 20) *Gilbert* Literary creation and the cultural, social, historical context of Spanish literature from La Celestina through the sixteenth century. Extensive study of secondary materials, intensive analysis of representative literary texts.

SPAN 522 The Renaissance in Spain (5, max. 20) *Gilbert* Literary creation and the cultural, social, historical context of Spanish literature from La Celestina through the sixteenth century. Extensive study of secondary materials, intensive analysis of representative literary texts.

SPAN 541 History of the Spanish Language (5, max. 20) *Fernandez Dobao* Summary of the evolution of Spanish language from the fragmentation of Peninsular Romance to *Cantar de Mio Cid*. The main work consists of analysis of early Castilian texts.

SPAN 542 History of the Spanish Language (5, max. 20) *Fernandez Dobao* Summary of the evolution of Spanish language from the fragmentation of Peninsular Romance to *Cantar de Mio Cid*. The main work consists of analysis of early Castilian texts.

SPAN 561 Spanish-American Novel From 1940 to the Present (5, max. 20)

SPAN 571 The Modern Essay in Spanish America (5, max. 20)

SPAN 572 Twentieth-Century Spanish Poetry (5, max. 20)

SPAN 573 Twentieth-Century Spanish-American Poetry (5, max. 20)

SPAN 575 Literary Criticism (5)

SPAN 577 Contemporary Literary Theory (5) *D. GILBERT* Introduction to various structuralist and poststructuralist theories of literary analysis, including those developed by Hispanic theorists, and their application to the study of texts from the Spanish and Latin American traditions.

SPAN 590 Special Seminar and Conference (1-10, max. 30) Group seminars, or individual conferences, are scheduled under this number to meet special needs. Prerequisite: permission of the Graduate Program Coordinator.

SPAN 591 Literary Problems: Middle Ages (5, max. 20) *Gomez-Bravo, Petersen*

SPAN 592 Literary Problems: Renaissance (5, max. 20) *Gomez-Bravo*

SPAN 593 Literary Problems: Golden Age (5, max. 20) *D. GILBERT*

SPAN 594 Literary Problems: Eighteenth Century (5, max. 20)

SPAN 595 Literary Problems: Nineteenth Century (5, max. 20)

SPAN 596 Literary Problems: Twentieth Century (5, max. 20)

SPAN 597 Literary Problems: Spanish-American Colonial Literature (5, max. 20) *Albarrañ*

SPAN 598 Literary Problems: Latin America (5, max. 20) *E. O'HARA*

SPAN 600 Independent Study or Research (*-)

SPAN 700 Master's Thesis (*-) Credit/no-credit only.

SPAN 800 Doctoral Dissertation (*-) Credit/no-credit only.

Spanish Linguistics

SPLING 400 The Syntactic Structure of Spanish (5) VLPA Scientific study of the syntax of Spanish: structure of phrases, transformationally derived structures, grammatical relations, principles of interpretation. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400; recommended: SPAN 323. Offered: jointly with SPAN 400.

SPLING 401 The Morphological Structure of Spanish (5) VLPA Principles of word formation, including derivational and inflectional morphology. Relationship between inflectional morphology and other components of grammar. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400; recommended: SPAN 323. Offered: jointly with SPAN 401.

SPLING 402 The Phonological Structure of Spanish (5) VLPA Phonological component of the generative grammar of Spanish; representations of syllabic and segmental units, phonological rules, distinctive features and their articulatory correlates. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400; recommended: SPAN 323. Offered: jointly with SPAN 402.

SPLING 403 The Evolution of the Spanish Language (5) VLPA *Fernandez-Mallat* Historical survey of Spanish phonology, morphology, and syntax, from Latin origins to the modern language. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400; recommended: SPAN 323. Offered: jointly with SPAN 403.

SPLING 404 Dialects of World Spanish (5) VLPA *Fernandez Dobao* Introduction to dialectal variants of Spanish. Considers standardization and the real academia; variation and change; pragmatics and politeness; Spanish in contact; sound, word formation, and grammar variation. Taught in Spanish. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400; recommended: SPAN 323. Offered: jointly with SPAN 404.

SPLING 405 Spanish Phonetics (5) VLPA Analysis of sounds: training in pronunciation, intonation, and close transcription of Spanish language in its modalities. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400; recommended: SPAN 323. Offered: jointly with SPAN 405.

SPLING 406 Advanced Spanish Grammar (5) VLPA *Fernandez-Mallat* Problems of Spanish grammar. Differences from English grammar. Techniques for the effective teaching of Spanish. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400; recommended: SPAN 323. Offered: jointly with SPAN 406; A.

SPLING 407 Bilingüismo: Made in USA (5) VLPA/I&S *Fernandez Dobao* Introduces students to the study of bilingualism, focusing on Spanish/English bilingualism in the United States. Explores bilingualism as both an individual and social phenomenon, and aims to raise students' awareness about its benefits as well as complexities. Taught in Spanish. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400; recommended: SPAN 323. Offered: jointly with SPAN 407.

Scandinavian Studies

318 Raitt

Scandinavian studies is concerned with the study of languages, literature, history, politics, and cultures of Denmark, Finland, Iceland, Norway, Sweden, and the Baltic States of Estonia, Latvia, and Lithuania. Emphasis is placed both on contemporary literature and culture and on historical development. Although most courses designed for majors are taught in the original languages, a broad spectrum of courses designed primarily for nonmajors is offered in English.

UNDERGRADUATE PROGRAM

Adviser

305X Raitt, Box 353420

(206) 543-6099

The Department of Scandinavian Studies offers the following programs of study:

- The Bachelor of Arts degree with a major in Danish, Finnish, Norwegian, Swedish, or Scandinavian area studies.
- Minors in Danish, Finnish, Norwegian, Swedish, Baltic studies, and Scandinavian area studies.

Bachelor of Arts

Suggested First- and Second-Year College Courses: First- and second-year Danish, Estonian, Finnish, Latvian, Lithuanian, Norwegian, or Swedish.

Department Admission Requirements

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

Major Requirements

Danish, Finnish, Norwegian, or Swedish

65 credits, of which 35 are in upper-division courses. The 65 credits include 30 credits in first- and second-year language training, 15 credits in literature courses in the chosen language, one course in Scandinavian area studies, a course in the history of Scandinavian languages, a course in Scandinavian literature in translation, and a senior essay (SCAND 498).

Scandinavian Area Studies

65 credits, of which 30 are in upper-division courses. The 65 credits include 30 credits in the chosen Scandinavian or Baltic language (normally first and second year), a minimum of one course from each of four area-studies fields (Scandinavian folklore and film; literature in translation; history and mythology; society and politics), and a senior essay (SCAND 498).

Minor

Minor Requirements

Baltic Studies

35 credits as follows:

1. 15 credits of first year Estonian, Latvian, or Lithuanian
2. 20 credits of upper-division Scandinavian coursework, including at least one Baltic studies course from the following: SCAND 344, SCAND 345, SCAND 454, SCAND 455
3. Students entering the UW with language proficiency in Estonian, Latvian, or Lithuanian beyond the first year of language training must take an additional 10 credits of upper-division language courses and must earn a minimum total of 25 credits in relevant coursework

Danish, Finnish, Norwegian, or Swedish

35 credits as follows:

1. 15 credits of first year Danish, Finnish, Norwegian, or Swedish
2. 15 credits of second year Danish, Finnish, Norwegian, or Swedish
3. 5 credits of upper-division Scandinavian coursework or 5 credits of an upper-division language course
4. Students entering the UW with language proficiency in Danish, Finnish, Norwegian, or Swedish beyond the first year of language training must take an additional 10 credits of upper-division language courses and must earn a minimum total of 25 credits in relevant coursework.

Estonian, Latvian, Lithuanian

35 credits as follows:

1. 15 credits of first year Estonian, Latvian, or Lithuanian
2. 15 credits of second year Estonian, Latvian, or Lithuanian
3. 5 credits of Baltic studies coursework (SCAND 344, SCAND 345, SCAND 454, or SCAND 455), or 5 credits of an upper-division language course.
4. Students entering the UW with language proficiency in Estonian, Latvian, or Lithuanian beyond the first year of language training must take an additional 10 credits of upper-division language courses and must earn a minimum total of 25 credits in relevant coursework.

Scandinavian Area Studies

35 credits as follows:

1. 15 credits of first year Danish, Finnish, Norwegian, or Swedish
2. 20 credits of upper-division Scandinavian coursework
3. Students entering the UW with language proficiency in Danish, Finnish, Norwegian, or Swedish beyond the first year of language training must take an additional 10 credits of upper-division language courses and must earn a minimum total of 25 credits in relevant coursework.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Graduates of the Department of Scandinavian Studies have an advanced level of proficiency in a Scandinavian, Fenno-Ugric, or Baltic language. They can talk about a wide range of concrete topics in a sustained conversation and have the ability to interpret and write about literary texts, non-fiction, and other media. Graduates also have knowledge of major figures, ideas, and institutions in Baltic or Nordic culture, history, literature, and politics that enriches a global perspective. They have the ability to research and synthesize source material in the target language and can produce a scholarly essay in English on a topic within their area of concentration.

Graduates of the Scandinavian studies program have the qualifications to embark on careers that require skills in the interpretation of information in various media, critical analysis, and effective communication and to continue in graduate programs and professional schools that value an international perspective.

- *Instructional and Research Facilities:* None
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Internships at museums or with Scandinavian businesses are possible. Exchange program opportunities with Aarhus,

Copenhagen, Linköping, Stockholm, Uppsala, Bergen, Oslo, Åbo/Turku, and Helsinki also exist.

- *Department Scholarships:* The department offers several scholarships for students of Danish, Finnish, Norwegian, and Swedish.
- *Student Organizations/Associations:* The Danish Club, the Norwegian Club, the Swedish Club, and the Finnish Club.

GRADUATE PROGRAM

Graduate Program Coordinator

318 Raitt, Box 353420

(206) 543-0645

uwscand@uw.edu

The Department of Scandinavian Studies offers graduate programs of study leading to the Master of Arts and Doctor of Philosophy degrees. For the M.A. degree, the emphasis may be placed on Old Icelandic (Old Norse), Danish, Finnish, Norwegian, Swedish, or Scandinavian area studies. Ph.D. degree aspirants must complete one quarter's study of Old Icelandic and concentrate their studies primarily within one of five areas: Danish language and literature, Finnish language and literature, Norwegian language and literature, Swedish language and literature, or Scandinavian area studies.

For the graduate student, programs in Scandinavian studies open several areas of inquiry: medieval, particularly Old Icelandic; modern, including the eighteenth century; Romanticism; the Modern Breakthrough; and the twentieth century. Attention is paid to the history of Scandinavian languages, prose, drama, and poetry. Opportunities for supervised study and specialization also exist in such areas as Scandinavian history, politics, mythology, folklore, and Baltic studies, as well as in comparative-literature study.

Master of Arts

Two options are available, each allowing the student to emphasize a target language while pursuing courses in Scandinavian languages, literature, or area studies.

An emphasis on Scandinavian languages and literature includes acquisition of a working knowledge of literary history, critical theory and text analysis, plus study of one secondary area.

An emphasis on Scandinavian area studies includes the study of Scandinavian folklore, mythology, history, politics, society, and Baltic studies, with an emphasis in one of these areas.

Admission Requirements

Bachelor of Arts degree with major in Danish, Finnish, Norwegian, Swedish, or Scandinavian area studies, or equivalent background, including advanced language proficiency in one Nordic language.

Degree Requirements

Minimum 40 credits in courses or seminars in Scandinavian and related subjects approved by the department, of which at least 20 credits must be in courses numbered 500 and above; reading knowledge of French or German (another non-Scandinavian language may be substituted with faculty approval); written and oral examination; option between thesis and non-thesis program. Candidates in Scandinavian languages and literature must satisfy the departmental requirement in Old Icelandic.

Doctor of Philosophy

Concentration primarily on one of two areas: Scandinavian languages and literature, or Scandinavian area studies, with an emphasis on the student's target language. Major attention given to the history of the Scandinavian language

es, literary history and theory, and genre study. Opportunities for graduate work in such areas as Scandinavian history, politics, mythology, folklore, and Baltic studies exist.

Admission Requirements

Master of Arts degree with major in Scandinavian languages and literature or equivalent background.

Degree Requirements

Minimum 90 credits, to include:

40 credits beyond the master's degree in courses or seminars in Scandinavian languages and literature and related subjects approved by the department, one quarter's study of Old Icelandic, a reading knowledge of French and German (other non-Scandinavian languages may be substituted with faculty approval), general examination for admission to candidacy, 27 credits of SCAND 800 (dissertation) taken over at least three quarters, and a final examination on the dissertation.

Financial Aid

Teaching assistantships in Danish, Finnish, Norwegian, Swedish, and Scandinavian area studies are usually available, as well as occasional research assistantships. If funding allows, a Baltic-language teaching assistantship may be available.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at uw.edu/students/crscat/

Danish

DANISH 101 Elementary Danish (5) Fundamentals of oral and written Danish. First in a sequence of three.

DANISH 102 Elementary Danish (5) Fundamentals of oral and written Danish. Second in a sequence of three. Prerequisite: DANISH 101.

DANISH 103 Elementary Danish (5) Fundamentals of oral and written Danish. Third in a sequence of three. Prerequisite: DANISH 102.

DANISH 199 Foreign Study: Elementary Danish (1-15, max. 15) Fundamentals of oral and written Danish.

DANISH 201 Second-Year Danish (5) VLPA Intensive practice in speaking, reading, and writing. Review of grammar. Introduction of modern literary texts. Discussion of culture and current events in Denmark. First in a sequence of three. Recommended: DANISH 103.

DANISH 202 Second-Year Danish (5) VLPA Intensive practice in speaking, reading, and writing. Review of grammar. Introduction of modern literary texts. Discussion of culture and current events in Denmark. Second in a sequence of three. Prerequisite: DANISH 201.

DANISH 203 Second-Year Danish (5) VLPA Intensive practice in speaking, reading, and writing. Review of grammar. Introduction of modern literary texts. Discussion of culture and current events in Denmark. Third in a sequence of three. Prerequisite: DANISH 202.

DANISH 299 Foreign Study: Intermediate Danish (1-15, max. 15) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Discussion of culture and current events in Denmark.

DANISH 310 Topics in Danish Short Prose (5, max. 15) VLPA Focuses on the fairy tale and story, with selections by Bicher, H.C. Andersen, Bang, Blixen, and others.

DANISH 311 Topics in Danish Literature and Culture (5, max. 15) VLPA Selected topics in modern Danish literature and culture, such as women's literature, Danish identity and the European Union, contemporary drama and film, or children's literature. Recommended: DANISH 203.

DANISH 312 Topics in the Danish Novel (5, max. 15) VLPA

Focuses on selected novels from the nineteenth and twentieth centuries by figures such as J.P. Jacobsen, Herman Bang, J.V. Jensen, Hans Kirk, Scherfig and Ditlevsen.

DANISH 395 Foreign Study: Danish Area Studies (1-5, max. 10) I&S Courses in Danish history, society, and/or politics.**DANISH 399 Foreign Study: Topics in Danish Literature and Culture (1-5, max. 15) VLPA** Topics in Danish literature, life, and civilization.**DANISH 490 Supervised Reading (1-5, max. 10)** Readings in a selected area of Danish language, literature, or related fields.

Estonian

ESTO 101 Elementary Estonian (5) Fundamentals of oral and written Estonian. First in a sequence of three.**ESTO 102 Elementary Estonian (5)** Fundamentals of oral and written Estonian. Second in a sequence of three. Prerequisite: ESTO 101.**ESTO 103 Elementary Estonian (5)** Fundamentals of oral and written Estonian. Third in a sequence of three. Prerequisite: ESTO 102.**ESTO 150 Intensive Estonian (15)** Fundamentals of oral and written Estonian. Intensive practice in speaking, reading, and writing Estonian. Interactive classroom, computer-assisted learning, language, and reading laboratories. Emphasis on contemporary Estonian culture and society. If Estonian is the student's language of admission, only 10 credits count towards graduation.**ESTO 201 Second-Year Estonian (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. First in a sequence of three. Prerequisite: either ESTO 103 or ESTO 150.**ESTO 202 Second-Year Estonian (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. Second in a sequence of three. Prerequisite: ESTO 201.**ESTO 203 Second-Year Estonian (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. Third in a sequence of three. Prerequisite: ESTO 202.**ESTO 250 Intensive Intermediate Estonian (15) VLPA** Accelerated second-year Estonian. Systematic review of Estonian grammar. Intensive practice in conversation, reading, and writing. Prerequisite: either ESTO 103 or ESTO 150. Offered: S.**ESTO 490 Supervised Reading (1-5, max. 10)** Readings in a selected area of Estonian language, culture, or society.

Finnish

FINN 101 Elementary Finnish (5) Fundamentals of oral and written Finnish. First in a sequence of three.**FINN 102 Elementary Finnish (5)** Fundamentals of oral and written Finnish. Second in a sequence of three. Prerequisite: FINN 101.**FINN 103 Elementary Finnish (5)** Fundamentals of oral and written Finnish. Third in a sequence of three. Prerequisite: FINN 102.**FINN 150 Intensive First-Year Finnish (15)** Fundamentals of oral and written Finnish. Intensive practice in speaking, reading, and writing. Interactive classroom, computer-assisted learning, and language and reading laboratories. Emphasis on contemporary Finnish culture and society. If Finnish is the student's language of admission, only 10 credits count towards graduation.**FINN 199 Foreign Study: Elementary Finnish (1-15, max. 15)** Fundamentals of oral and written Finnish.**FINN 201 Second-Year Finnish (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of

grammar. First in a sequence of three. Prerequisite: either FINN 103 or FINN 150.

FINN 202 Second-Year Finnish (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Second in a sequence of three. Prerequisite: FINN 201.**FINN 203 Second-Year Finnish (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. Third in a sequence of three. Prerequisite: FINN 202.**FINN 250 Intensive Second-Year Finnish (15) VLPA** Intensive study of second-year Finnish. Prerequisite: either FINN 103 or FINN 150.**FINN 299 Foreign Study: Intermediate Finnish (1-15, max. 15) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. Discussion of culture and current events in Finland.**FINN 310 Topics in Finnish Language and Culture (5, max. 15) VLPA** Topics related to Finnish literature, life, and civilization. Recommended: FINN 203.**FINN 395 Foreign Study: Finnish Area Studies (1-5, max. 10) I&S** Courses in Finnish history, society, and/or politics.**FINN 399 Foreign Study: Topics in Finnish Literature and Culture (1-5, max. 15) VLPA** Topics in Finnish literature, life, and civilization.**FINN 490 Supervised Reading (1-5, max. 10)** Readings in a selected area of Finnish language, culture, or society.

Latvian

LATV 101 Elementary Latvian (5) Fundamentals of oral and written Latvian. First in a sequence of three.**LATV 102 Elementary Latvian (5)** Fundamentals of oral and written Latvian. Second in a sequence of three. Prerequisite: LATV 101.**LATV 103 Elementary Latvian (5)** Fundamentals of oral and written Latvian. Third in a sequence of three. Prerequisite: LATV 102.**LATV 150 Intensive Latvian (15)** Fundamentals of oral and written Latvian. Intensive practice in speaking, reading, and writing Latvian. Interactive classroom, computer-assisted learning, language, and reading laboratories. Emphasis on contemporary Latvian culture and society. If Latvian is the student's language of admission, only 10 credits count towards graduation.**LATV 201 Second-Year Latvian (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. First in a sequence of three. Prerequisite: either LATV 103 or LATV 150.**LATV 202 Second-Year Latvian (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. Second in a sequence of three. Prerequisite: LATV 201.**LATV 203 Second-Year Latvian (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. Third in a sequence of three. Prerequisite: LATV 202.**LATV 250 Intensive Intermediate Latvian (15) VLPA** Accelerated second-year Latvian. Systematic review of Latvian grammar. Intensive practice in conversation, reading, and writing. Prerequisite: either LATV 103 or LATV 150. Offered: S.**LATV 310 Topics in Latvian Literature (5, max. 15) VLPA** Topics in Latvian literature, life, and civilization. Recommended: LATV 203.**LATV 490 Supervised Reading (1-5, max. 10) VLPA** Readings in a selected area of Latvian language, culture, or society.

Lithuanian

LITH 101 Elementary Lithuanian (5) Fundamentals of oral and written Lithuanian. First in a sequence of three.**LITH 102 Elementary Lithuanian (5)** Fundamentals of oral and written Lithuanian. Second in a sequence of three. Prerequisite: LITH 101.**LITH 103 Elementary Lithuanian (5)** Fundamentals of oral and written Lithuanian. Third in a sequence of three. Prerequisite: LITH 102.**LITH 111 Basic Lithuanian (3)** Covers the fundamentals of conversational Lithuanian language. Completion of all three quarters does not meet the foreign language requirement.**LITH 112 Basic Lithuanian (3)** Covers the fundamentals of conversational Lithuanian language. Completion of all three quarters does not meet the foreign language requirement. Prerequisite: LITH 111.**LITH 113 Basic Lithuanian (3)** Covers the fundamentals of conversational Lithuanian language. Completion of all three quarters does not meet the foreign language requirement. Prerequisite: LITH 112.**LITH 150 Intensive Lithuanian (15)** Fundamentals of oral and written Lithuanian. Intensive practice in speaking, reading, and writing Lithuanian. Interactive classroom, computer-assisted learning, language, and reading laboratories. Emphasis on contemporary Lithuanian culture and society. If Lithuanian is the student's language of admission, only 10 credits count towards graduation.**LITH 201 Second-Year Lithuanian (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. First in a sequence of three. Prerequisite: either LITH 103 or LITH 150.**LITH 202 Second-Year Lithuanian (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. Second in a sequence of three. Prerequisite: LITH 201.**LITH 203 Second-Year Lithuanian (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. Third in a sequence of three. Prerequisite: LITH 202.**LITH 250 Intensive Intermediate Lithuanian (15) VLPA** Accelerated second-year Lithuanian. Systematic review of Lithuanian grammar. Intensive practice in conversation, reading, and writing. Prerequisite: either LITH 103 or LITH 150. Offered: S.**LITH 490 Supervised Reading (1-5, max. 10)** Readings in a selected area of Lithuanian language, culture, or society.

Norwegian

NORW 101 Elementary Norwegian (5) Fundamentals of oral and written Norwegian. First in a sequence of three.**NORW 102 Elementary Norwegian (5)** Fundamentals of oral and written Norwegian. Second in a sequence of three.**NORW 103 Elementary Norwegian (5)** Fundamentals of oral and written Norwegian. Third in a sequence of three.**NORW 150 Intensive First-Year Norwegian (15)** Fundamentals of oral and written Norwegian. Intensive practice in speaking, reading, and writing. Interactive classroom, computer-assisted learning, language and reading laboratories. Emphasis on contemporary Norwegian culture and society. If Norwegian is the student's language of admission, only 10 credits count towards graduation.**NORW 199 Foreign Study: Elementary Norwegian (1-15, max. 15)** Fundamentals of oral and written Norwegian.**NORW 201 Second-Year Norwegian (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. First in a sequence of three. Recommended: NORW 103.**NORW 202 Second-Year Norwegian (5) VLPA** Intensive practice in speaking, reading, and writing. Functional re-

view of grammar. Second in a sequence of three. Recommended: NORW 103.

NORW 203 Second-Year Norwegian (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Third in a sequence of three. Recommended: NORW 103.

NORW 299 Foreign Study: Intermediate Norwegian (1-15, max. 15) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Discussion of culture and current events in Norway.

NORW 310 The Norwegian Short Story (5) VLPA Generic study of the Norwegian short story. Recommended: NORW 203.

NORW 311 Drama After Ibsen (5) VLPA Recommended: NORW 203.

NORW 312 Topics in Norwegian Literature and Culture (5, max. 15) VLPA Topics related to Norwegian literature, life, and civilization. Recommended: NORW 203.

NORW 321 The Plays of Henrik Ibsen (5) VLPA Study of selected plays of Ibsen. Recommended: NORW 203.

NORW 395 Foreign Study: Norwegian Area Studies (1-5, max. 10) I&S Courses in Norwegian history, society, and/or politics.

NORW 399 Foreign Study: Topics in Norwegian Literature and Culture VLPA (1-5, max. 15) VLPA Topics in Norwegian literature, life, and civilization.

NORW 490 Supervised Reading (1-5, max. 10) Readings in a selected area of Norwegian language, literature, or related fields.

Scandinavian

SCAND 100 Introduction to Scandinavian Culture (5) VLPA/I&S The Scandinavian experience from the Viking Age to the present day; the background for contemporary Scandinavian democracy, with major emphasis on the cultural, political, and religious development of the Scandinavian countries.

SCAND 150 Norwegian Literary and Cultural History (5) VLPA A survey of Norwegian literary and cultural history from the Vikings to the present. Authors read include Bjornson, Ibsen, Hamsun, and Roolvaag.

SCAND 151 Finnish Literary and Cultural History (5) VLPA A survey of Finnish literature and cultural history during the nineteenth and twentieth centuries. Authors studied include Lonnrot, Snellmann, Kivi, Sodergran, Linna, Haavikko, and Kaurismaki.

SCAND 152 Latvian Literary and Cultural History (5) VLPA *Grinberga* Survey of Latvian literary and cultural history from the nineteenth century to the present. Authors include Pumpurs, Rainis, Aspazija, Blaumanis, Nesaule, Bels, and Zalite.

SCAND 153 Introduction to Lithuanian Literary and Cultural History (5) VLPA *Valanciauskiene* Surveys Lithuanian literary and cultural history from the Medieval period to the present. Authors include Dauksa, Maironis, Biliunas, Ciurlionis, Boruta, Granauskas, Aputis, Vilimaite, Milosz, and others.

SCAND 154 Estonian Literary and Cultural History (5) G. SMIDCHENS Surveys Estonian literary and cultural history from the prehistoric period to the present. Authors, musicians, artists, and filmmakers include Kaplinski, Koidula, Kreutzwald, Vilde, Part, Tormis, Meri, Parn, Pollu, and others. Offered: jointly with JSIS A 154; AWSpS.

SCAND 155 Danish Literary and Cultural History (5) VLPA *Hansen* Introduces the literary and cultural history of Denmark. Focuses on several major literary works and cultural moments from the Viking Age, the Enlightenment, nineteenth-century Romanticism, twentieth-century Modernism, and current Danish literature, journalism, and film.

SCAND 200 Contemporary Scandinavian Society (5) I&S Examines the distinctive policies, institutions, and social

norms of contemporary Scandinavian societies. Topics include: Nordic geography, the development of a "middle way" between capitalism and socialism, universal social policies, Scandinavia in the international system, and contemporary challenges to Scandinavian societies. Recommended: SCAND 100.

SCAND 230 Introduction to Folklore Studies (5) VLPA/I&S Comprehensive overview of the field of folkloristics, focusing on verbal genres, customs, belief, and material culture. Particular attention to the issues of community, identity, and ethnicity. Offered: jointly with C LIT 230.

SCAND 232 Hans Christian Andersen and the Fairy Tale Tradition (5) VLPA Influence of Hans Christian Andersen and the fairy tale on modern Scandinavian tales and stories. Investigates the significance of the fairy tale in the modern world, with attention to writers such as Isak Dinesen, Knut Hamsun, Villy Sorensen, William Heinesen.

SCAND 251 Holberg and His Comedies in English (2) VLPA Holberg and his major dramas, with attention to the comic tradition in the Scandinavian theatre.

SCAND 270 Sagas of the Vikings (5) VLPA Icelandic sagas and poetry about Vikings in the context of thirteenth-century society.

SCAND 275 Crime Scenes: Investigating the Cinema and Its Cultures (5) VLPA Teaches how to analyze film by closely studying crime scenes from historical and contemporary German and Scandinavian cinema. Directors studied include Fritz Lang, Carl Th. Dreyer, Billy Wilder, and Lars von Trier. Offered: jointly with GERMAN 275.

SCAND 280 Ibsen and His Major Plays in English (5) VLPA Reading and discussion of Ibsen's major plays.

SCAND 312 Masterpieces of Scandinavian Literature (5) VLPA Major works of Scandinavian literature by selected authors.

SCAND 315 Scandinavian Crime Fiction (5) VLPA *Nestingen* Studies Scandinavian crime-fiction literature and cinema since 1965, approaching crime fiction as a changing cultural artifact. Analyzes major issues and texts in the genre and its public status, while also training students in critical approaches to study of popular literature and culture. Offered: jointly with JSIS D 317; Sp.

SCAND 326 Scandinavia in World Affairs (5) I&S C. INGE-BRITSEN Introduction to the foreign relations of Scandinavia with a focus on Nordic security, international economic pressures, and global conflict resolution. Includes a survey of the national settings for international involvements and highlights the dilemmas for industrial societies exposed to the pressures of interdependence. Offered: jointly with POL S 326.

SCAND 327 Women in Scandinavian Society (5) VLPA/I&S Examines the changing position of women in Norway, Denmark, Finland, and Sweden from the 1880s to the contemporary period. Readings in literature and political science.

SCAND 330 Scandinavian Mythology (5) VLPA Integrative study of religious life in the pre-Christian North. Emphasis on source materials, including the Prose Edda and Poetic Edda. Discussion of historical, archeological, and folkloric evidence.

SCAND 331 Folk Narrative (5) VLPA Survey of various genres of folk narratives studied in performance contexts to reveal their socio-cultural functions in a variety of milieux. Theory and history of folk narrative study, taxonomy, genre classification, and interpretative approaches. Recommended: either SCAND 230 or C LIT 230. Offered: jointly with C LIT 331.

SCAND 334 Immigrant and Ethnic Folklore (5) VLPA/I&S Survey of verbal, customary, and material folk traditions in ethnic context. Theories of ethnic folklore research applied to the traditions of American communities of Scandinavian, Baltic, or other European ancestry. Recommended: either SCAND 230 or C LIT 230. Offered: jointly with C LIT 334.

SCAND 335 Scandinavian Children's Literature (5) VLPA The history, forms, and themes of Scandinavian children's literature from H. C. Andersen to the present. Exploration of the dominant concerns of authors, adult and non-adult audiences, and the uses to which juvenile and adolescent literature are put. Film adaptations and Scandinavian-American materials included.

SCAND 340 Kalevala and the Epic Tradition (5) VLPA An interdisciplinary approach to the Finnish national epic Kalevala, Estonian Kalevipoeg, and Saami Peivebarnen suongah jehtanasan maajisn. Discussion of traditional worldview, cultural revitalization, and emergent nationalism in nineteenth- and twentieth-century Finland, Estonia, and Saamiland.

SCAND 341 Sami Culture and History (5) VLPA/I&S An interdisciplinary look at the culture of Sami (Lapp) people in Scandinavia from the earliest archeological and textual evidence to the present day. Focus on indigenous modes of expression and worldview, as well as contemporary cultural and political activism.

SCAND 344 The Baltic States and Scandinavia (5) I&S Survey of the cultures and history of Estonia, Latvia, and Lithuania from the Viking Age to the present, with particular attention to Baltic-Scandinavian contacts. Offered: jointly with JSIS A 344.

SCAND 345 Baltic Cultures (5) VLPA/I&S Cultures and peoples of Estonia, Latvia, and Lithuania. Baltic literature, music, art, and film in social and historical context. Traditional contacts with Scandinavia and Central and East Europe. Offered: jointly with JSIS A 345.

SCAND 350 Environmental Norms in International Politics (5) I&S *Ingebritsen* Surveys development of international environmental consciousness from 1960s to present. Models of "green development"; ways in which norms for resource use have entered global politics. Patterns of state compliance with international environmental agreements, and why states fall short of meeting their international obligations. Offered: jointly with ENVIR 360/JSIS B 350.

SCAND 351 Scandinavia, the European Union, and Global Climate Change (5) I&S Reviews the history of climate change, the role of Swedish scientist Svante Arrhenius in defining greenhouse effects, Scandinavian policy response, and the role of the European Union in global climate change. Offered: jointly with JSIS A 351; WSp.

SCAND 360 Scandinavian Cinema (3/5) VLPA Major Scandinavian films and film directors from the 1920s to the present.

SCAND 367 Sexuality in Scandinavia: Myth and Reality (5) VLPA/I&S Examines selected Scandinavian literary and socio-political texts, films, and art to manifest the reality behind the myths of sexual freedom in Scandinavia.

SCAND 370 The Vikings (5) VLPA/I&S Vikings at home in Scandinavia and abroad, with particular emphasis on their activities as revealed in archaeological finds and in historical and literary sources. Offered: jointly with HSTAM 370.

SCAND 380 History of Scandinavia to 1720 (5) I&S Scandinavian history from the Viking Age to 1720, with an emphasis on the political, social, and economic development of Denmark, Norway, Sweden, Finland, and Iceland from the Middle Ages to the Enlightenment. Offered: jointly with HSTEU 380.

SCAND 381 History of Scandinavia Since 1720 (5) I&S Scandinavian history from the Enlightenment to the Welfare State with emphasis on the political, social, and economic development of the modern Scandinavian nations of Denmark, Norway, Sweden, Finland, and Iceland. Offered: jointly with HSTEU 381.

SCAND 399 Foreign Study in Scandinavia (1-5, max. 20) Pan-Scandinavian coursework in Scandinavia, including courses in English.

SCAND 402 International Political Economy and Scandinavia (5) I&S Overview of the most prominent theoretical

approaches to the study of international political economy. Evaluates competing theories and applies these to explain contemporary problems in international political economy. Readings include examples from Scandinavia's experience.

SCAND 427 Scandinavian Women Writers in English Translation (5) VLPA Selected works by major Scandinavian women writers from mid-nineteenth-century bourgeois realism to the present with focus on feminist issues in literary criticism. Offered: jointly with GWSS 429.

SCAND 430 Readings in Folklore (5) VLPA Exploration of theoretical and methodological issues in folklore studies through independent reading of journal articles published during the last five years. Recommended: either SCAND 230 or C LIT 230. Offered: jointly with C LIT 430.

SCAND 431 The Northern European Ballad (5) VLPA Integrative study of the Northern European Ballad, with an emphasis on texts, performance, context, history, theory, genre classification, and interpretive approaches. Offered: jointly with C LIT 431.

SCAND 437 Politics in Scandinavia (5) I&S C. INGEBRITSEN Twentieth-century politics in Scandinavia. How Scandinavian countries have been governed. Costs and consequences of their governmental style and its uncertain future. Optimal size of polities, problems of mature welfare states, process of leadership and representation in multi-party systems, decline of political parties. Offered: jointly with POL S 437.

SCAND 445 War and Occupation in Northern Europe: History, Fiction, and Memoir (5) VLPA/I&S The study of literary representations (fiction, memoirs, and personal narratives) dealing with World War II and the occupation of the Nordic and Baltic countries. Offered: jointly with JSIS A 442.

SCAND 450 Scandinavian Literary History (3) VLPA Survey of Scandinavian literary history. Recommended: either DANISH 203, FINN 203, NORW 203, or SWED 203.

SCAND 454 Baltic History (5) I&S Overview of the history of the area occupied by the Baltic countries of Latvia, Lithuania, and Estonia. Emphasizes their emergence as modern European nation-states. Era from World War I to present treated in depth, including the historical role and present situation of non-Baltic peoples, particularly Russians. Offered: jointly with HSTEU 454.

SCAND 455 Baltic States Since 1991 (5) I&S Intensive interdisciplinary survey of social, political, and economic developments in Estonia, Latvia, and Lithuania since 1991. Offered: jointly with JSIS A 455.

SCAND 460 History of the Scandinavian Languages (5) VLPA Development of languages from common Scandinavian to contemporary Danish, Norwegian, Swedish, Faroese, and Icelandic. Recommended: either DANISH 203, FINN 203, NORW 203, or SWED 203.

SCAND 462 Isak Dinesen and Karen Blixen (5) VLPA The fiction of Isak Dinesen (pseudonym for Karen Blixen) re-evaluated in light of current issues in literary criticism, particularly feminist criticism. Close readings of selected tales, essays, and criticism. Offered: jointly with GWSS 462.

SCAND 470 Scandinavian Auteurs (5, max. 10) VLPA *Nestingen* Studies the body of work of Scandinavia's auteur filmmakers. Introduces the theory and history of auteur cinema, with special attention to Scandinavian filmmakers' contribution. Offered: jointly with C LIT 474; AWSp.

SCAND 479 Eco-Capitalism (5) I&S *Ingebritsen* Explores the idea of environmentalism and sustainability across societies. Compares and contrasts how prominent authors in the field assess the risks and opportunities of human effects on climate and ecology. Questions explored include: will ecological solutions be critical to the revival of the global economy? Why do place such as Europe adapt more readily to environmental challenges? Offered: jointly with JSIS A 429.

SCAND 480 Kierkegaard and Decadence in European Literature (5) VLPA Reading and discussion of core texts by Søren Kierkegaard, as well as a consideration of the relationship between Kierkegaardian thought and the literary practice of various writers of Scandinavian and European decadence. Offered: jointly with JSIS A 480.

SCAND 481 August Strindberg and European Cultural History (5) VLPA/I&S Examines the work of Swedish dramatist, novelist, and painter August Strindberg, in the context of European literary movements and history of ideas from 1880 to 1912, and Strindberg's influence on twentieth-century drama and film. Offered: jointly with JSIS A 481.

SCAND 482 Knut Hamsun and Early European Modernism (5) VLPA Reading and discussion of significant novels by Knut Hamsun, whose oeuvre is considered in the context of works by other European modernist writers. Offered: jointly with JSIS A 482.

SCAND 490 Special Topics (1-5, max. 15) Special topics in Scandinavian art, literature, culture, and history. Course offerings based on instructor's specialty and student demand.

SCAND 495 Foreign Study: Research Project (1-5, max. 10) Research on approved topic.

SCAND 498 Senior Essay (5) VLPA Undergraduate research and the writing of a senior essay in Scandinavian area studies.

SCAND 499 Independent Study or Research (1-5, max. 10) Independent study or research in Scandinavian area studies. May be done in a Scandinavian language or in English.

SCAND 500 Introductory Readings in Old Icelandic (5) Systematic study of the grammatical structure of Old Icelandic and the reading of several short prose works.

SCAND 501 Old Icelandic Language and Literature (5) Reading of a major work in Old Icelandic literature as a vehicle for discussions about literary history and genre, narrative, and rhetorical strategies.

SCAND 503 Methods of Scandinavian Studies (5) Introduction to Scandinavian studies on the graduate level with emphasis on Scandinavian literature, folklore, history, and politics.

SCAND 504 Contemporary Literary Theory (5) Contemporary literary theory and its application to Scandinavian texts. Prerequisite: graduate student standing or permission of instructor.

SCAND 505 Topics in Scandinavian Drama and Film (5, max. 15) Seminar on a selected topic in Scandinavian drama or film, such as an author (Holberg, Ibsen, Strindberg, Bergman), a period, a genre, or a movement.

SCAND 508 Topics in Scandinavian Prose (5, max. 15) Seminar on various topics in Scandinavian prose, including shorter prose texts, as well as a selection of the significant novels of the nineteenth and twentieth centuries.

SCAND 515 Pre-Nineteenth-Century Scandinavian Literature (5) Seminar on Scandinavian literature of the sixteenth, seventeenth, and eighteenth centuries.

SCAND 518 Foreign Language Teaching Methodology (2) *Brandl* Current foreign language teaching methods and approaches. Learning and teaching strategies and techniques for the four skills (reading, writing, speaking, listening) including cultural notions. Current and future trends in pedagogy and technology. Offered: jointly with GERMAN 518/NEAR E 518/SLAV 518; A.

SCAND 519 Modern Scandinavian Politics (5) Analyzes the political, economic, and historical development of Sweden, Norway, Denmark, Iceland, and Finland from World War II to the present. Readings focus on domestic and foreign policies that distinguish these countries from other advanced industrial societies. Offered: jointly with POL S 519.

SCAND 520 Topics in Scandinavian Poetry (5, max. 15) Seminar on selected periods of Scandinavian poetry: romanticism, symbolism, modernism, and contemporary po-

etry. Poetry examined in relation to the literary canon of each country and to Scandinavian literature as a whole. International influences also discussed.

SCAND 525 Topics in Scandinavian History (5, max. 15) Seminar on selected topics in Scandinavian history.

SCAND 530 Old Norse Literature (3) Studies in the poetry and prose tradition of medieval Iceland and Norway.

SCAND 533 Interdisciplinary Approaches to Community in Scandinavia (5) Humanistic examination of community creation, maintenance, and change in the Nordic region. Examples drawn from folklore, literature, activism, popular culture, history. Focus on issues of gender, belief, and art in relation to community. Coursework includes both individual and collaborative assignments.

SCAND 570 Scandinavian Auteurs (5, max. 10) VLPA *Nestingen* Seminar on auteur filmmakers in Scandinavian cinema, studying specific auteurs' bodies of work, theories of auteur cinema, and the history of auteurism in Scandinavian cinema. Offered: jointly with C LIT 574; AWSp.

SCAND 579 Eco-Capitalism (5) *Ingebritsen* Explores the idea of environmentalism and sustainability across societies. Compares and contrasts how prominent authors in the field assess the risks and opportunities of human effects on climate and ecology. Questions explored include: will ecological solutions be critical to the revival of the global economy? Why do place such as Europe adapt more readily to environmental challenges? Offered: jointly with JSIS A 529.

SCAND 580 Kierkegaard and Decadence in European Literature (5) *Sjåvik* Examines Kierkegaardian thought and the literary practice of various writers of Scandinavian and European decadence. Offered: Sp.

SCAND 581 August Strindberg and European Cultural History (5) *Adams* Seminar on Swedish dramatist, novelist, scientist, and painter August Strindberg (1849-1912), on of Europe's most influential artists, and on of the most important innovators of modern drama. Offered: Sp.

SCAND 582 Knut Hamsun and Early European Modernism (5) *Sjåvik* Examines Knut Hamsun's early works and their relationship to early European modernist literature. Offered: W.

SCAND 590 Special Topics in Scandinavian Literature (1-5, max. 15)

SCAND 594 Modern Methods and Materials in Teaching Scandinavian and Baltic Languages (3) Theory and practice of communicative language teaching; current developments in foreign-language teaching; evaluation of teaching materials; includes attendance at the departmental and university-wide fall orientation; required for beginning teaching assistants of Scandinavian and the Baltic languages. May not be taken for credit if GRDSCH 615 already taken. Prerequisite: SCAND 518. Credit/no-credit only.

SCAND 595 Teaching Assistant Workshop (1) *Brandl* Focuses on topics in language pedagogy. Required for continuing teaching assistants in Scandinavian studies. Includes participation in the departmental and University-wide fall orientation teaching workshops. Prerequisite: SCAND 518; SCAND 594. Credit/no-credit only. Offered: A.

SCAND 600 Independent Study or Research (*-) Prerequisite: permission of instructor.

SCAND 700 Master's Thesis (*-)

SCAND 800 Doctoral Dissertation (*-)

Swedish

SWED 101 Elementary Swedish (5) Fundamentals of oral and written Swedish. First in a sequence of three.

SWED 102 Elementary Swedish (5) Fundamentals of oral and written Swedish. Second in a sequence of three.

SWED 103 Elementary Swedish (5) Fundamentals of oral and written Swedish. Third in a sequence of three.

SWED 150 Intensive First-year Swedish (15) Fundamentals of oral and written Swedish. Intensive practice in speaking, reading, and writing. Interactive classroom, computer-assisted learning, language and reading laboratories. Emphasis on contemporary Swedish culture and society. If Swedish is the student's language of admission, only 10 credits count towards graduation.

SWED 199 Foreign Study: Elementary Swedish (1-15, max. 15) Fundamentals of oral and written Swedish.

SWED 201 Second-year Swedish (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. First in a sequence of three. Recommended: SWED 103.

SWED 202 Second-year Swedish (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Second in a sequence of three. Recommended: SWED 103.

SWED 203 Second-year Swedish (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Third in a sequence of three. Recommended: SWED 103.

SWED 299 Foreign Study: Intermediate Swedish (1-15, max. 15) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Discussion of culture and current events in Sweden.

SWED 300 Swedish Women Writers (5) VLPA Readings from works by Swedish women writers. Recommended: SWED 203.

SWED 301 Topics in Swedish Literature and Culture (5, max. 15) VLPA Topics in Swedish literature, life, and civilization. Recommended: SWED 203.

SWED 302 The Swedish Novel (5) VLPA Selected works by novelists of the nineteenth and twentieth centuries. Recommended: SWED 203.

SWED 352 Strindberg and His Works (5) VLPA Representative short stories, dramas, autobiographical works, poems, and one novel. Recommended: SWED 203.

SWED 395 Foreign Study: Swedish Area Studies (1-5, max. 10) I&S Courses in Swedish history, society, and/or politics.

SWED 399 Foreign Study: Topics in Swedish Literature and Culture (1-5, max. 15) VLPA Topics in Swedish literature, life, and civilization.

SWED 490 Supervised Reading (1-5, max. 10) Readings in a selected area of Swedish language, literature, or related fields.

SWED 510 Graduate Level Proficiency in Swedish (2-5, max. 15) Adams, Dubois Advanced training in graduate level proficiency in Swedish. Prerequisite: 15 credits of 300-400 level SWED courses. Offered: AWPSS.

Slavic Languages and Literatures

M253 Smith

Slavic languages and literatures include the principal East European languages and literatures as well as Slavic linguistics. Languages include Bosnian/Croatian/Serbian, Bulgarian, Czech, Georgian, Polish, Romanian, Russian, Slovene, and Ukrainian.

UNDERGRADUATE PROGRAM

Adviser

M253A Smith, Box 353580

(206) 543-6848

slavicll@uw.edu

The Department of Slavic Languages and Literatures offers the following programs of study

- The Bachelor of Arts degree with a major in Slavic languages and literatures with options in Russian language, literature, and culture; and Eastern European languages, literatures, and culture
- Minors in Russian language, Russian literature/Slavic literatures, and Slavic languages

Bachelor of Arts

Suggested First- and Second-Year College Courses: First- and second-year Russian. Courses that develop writing skills.

Department Admission Requirements

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

Major Requirements

Russian Language, Literature, and Culture Option (Minimum 50 credits):

1. RUSS 322, RUSS 323
2. RUSS 403
3. RUSS 451
4. Courses from the following list of electives to reach the required 50-credit minimum: RUSS 210, RUSS 221, RUSS 223, RUSS 230, RUSS 240, RUSS 313, RUSS 324, RUSS 420, RUSS 421, RUSS 422, RUSS 423, RUSS 424, RUSS 425, RUSS 426, RUSS 430, RUSS 481, RUSS 482, RUSS 483, RUSS 486, RUSS 490, SLAV 110, SLAV 210, SLAV 223, SLAV 320, SLAV 323, SLAV 351, SLAV 401, SLAV 423, SLAV 425, SLAV 426, SLAV 470, SLAV 490, SLAVIC 498; HSTEU 444/SISRE 444, HSTEU 445/SISRE 448. No more than 15 credits from the following may apply: RUSS 303, RUSS 350 (only 5 credits of RUSS 350 may apply), RUSS 401, or RUSS 402. No more than 5 credits from the following units may apply: RUSS 110, RUSS 120.
5. Minimum 2.0 grade for each course and minimum 2.50 GPA for all UW and transfer courses presented for this option
6. Minimum 15 graded credits presented for this option must be completed at the UW

Eastern European Languages, Literature, and Culture Option (Minimum 50 credits):

1. One of the following: BCS 406, BCS 410, BULGR 406, CZECH 406, POLSH 406, ROMN 406, SLVN 406, UKR 406
2. SLAV 351 (5 credits)
3. Courses from the list below to reach the required 50-credit minimum. Additional 15 credits from the principal Eastern European language (item 1, above) may also be counted toward the 50-credit minimum requirement. Minimum 30 credits from BCS 420, CZECH 420, POLSH 320, POLSH 420, SLAV 110, SLAV 210, SLAV 223, SLAV 320, SLAV 323, SLAV 401, SLAV 423, SLAV 425, SLAV 426, SLAV 470, SLAV 481, SLAV 482, SLAV 483, SLAV 486, SLAV 490, SLAVIC 498, UKR 420
4. Minimum 2.0 grade in each course and minimum 2.50 cumulative GPA for all UW and transfer courses presented for this option.
5. Minimum 15 graded credits presented for this option must be completed at the UW.

Minor

Minor Requirements

Russian Language

Minimum 25 credits to include one of the following: RUSS 303, RUSS 350, RUSS 401, RUSS 402, RUSS 403, RUSS 450. Courses from the immediately preceding list or from the following list of electives to reach the required 25-credit minimum: RUSS 301, RUSS 302, RUSS 313, RUSS 451, RUSS 481, SLAV 110, SLAV 210, SLAV 351, SLAV 425, SLAV 426, SLAV 470. Minimum 2.0 grade in each course presented for the minor. Minimum 15 graded credits presented for the minor must be completed at the UW.

Russian Literature/Slavic Literatures

Minimum 25 credits to include RUSS 322, RUSS 323, and 15 credits from the following electives list: BCS 420, CZECH 420, POLSH 320, POLSH 420, RUSS 210, RUSS 221, RUSS 223, RUSS 230, RUSS 240, RUSS 324, RUSS 420, RUSS 421, RUSS 422, RUSS 423, RUSS 424, RUSS 425, RUSS 426, RUSS 430, RUSS 490, SLAV 223, SLAV 320, SLAV 323, SLAV 423, SLAV 490, UKR 420. No more than 5 credits from the following may also apply: RUSS 110, RUSS 120. Minimum 2.0 grade in each course presented for the minor. Minimum 15 graded credits presented for the minor must be completed at the UW.

Slavic Languages

Minimum 25 credits to include one of the following as a principal Eastern European language: BCS 406, BCS 410 (10 credits), BULGR 406, CZECH 406, POLSH 406, ROMN 406, SLVN 406, UKR 406. Also required: SLAV 351. Courses from the following list of electives to reach the required 25-credit minimum: SLAV 110, SLAV 210, SLAV 425, SLAV 426, SLAV 470, SLAV 481. Up to 25 credits from the principal Eastern European language above may also be counted toward the 25-credit minimum requirement. Minimum 2.0 grade in each course presented for the minor. Minimum 15 graded credits presented for the minor must be completed at the UW.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Graduating majors in Slavic languages and literatures have a solid command of the Slavic language of focus, with speaking, listening, reading, writing, and translation skills at the intermediate high or advanced level. They have a broad knowledge of the history of the relevant country, and of its modern culture. Students have a general knowledge of major periods and literature and detailed knowledge of two or three particular authors or genres. Students have a good understanding of Slavic languages in general and the language of their specialization in particular, as well as knowledge of major issues in contemporary phonology, morphology, and syntax. All students develop good general analytical skills and the ability to explore and understand another culture through mastery of its language.
- *Instructional and Research Facilities:* UW Language Learning Center
- *Honors Options Available:* Dobro Slovo membership is available to qualifying students (see adviser for requirements). With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Undergraduates may present their current research at the annual Slavic Student Symposium each spring. Suzzallo Library holdings include some 400,000 titles in Slavic languages and in other languages on Slavic subjects. The library subscribes to all important periodicals and newspapers in Russian and other languages and has exceptionally strong holdings in rare and antiquarian Slavic titles on microfilm and microfiche.

- *Department Scholarships:* Vadim Pahn Scholarship for continued study of Russian in an intensive summer language program; Asante Outstanding Paper Prize for the best undergraduate paper written in a Slavic Department course; Polish Studies Scholarship awarded for study in Poland of the Polish language and culture.
- *Student Organizations/Associations:* Rodnoi Ugolok, the Russian student society; Ukrainian Students United, the Ukrainian student society.

GRADUATE PROGRAM

Graduate Program Coordinator

M268 Smith, Box 353580

(206) 543-6848

The Department of Slavic Languages and Literatures offers a complete program of courses and seminars leading to the Master of Arts and Doctor of Philosophy degrees in Russian and East European languages, literatures, and cultures. Languages taught in the department include Czech, Old Church Slavonic, Polish, Russian, and Bosnian/Croatian/Serbian.

The graduate program is organized to permit completion of the master's degree in four to six quarters and the doctoral degree in three additional years. The duration of each program, however, depends on the extent of the student's preparation upon entrance into the program.

Master of Arts

Admission Requirements

A student seeking admission to the MA program should have a bachelor's degree in Russian or Slavic Studies which includes four years of Slavic language study. Applicants with equivalent experience and basic coursework in Slavic literatures, cultures, and history are considered. A student not meeting these requirements may be given conditional admission but is expected to make up any deficiencies. Consideration is given to those with three years of language who enroll in fourth-year summer intensive Russian the quarter before entry.

All students entering the program take a diagnostic language test to establish their level of proficiency and determine what further instruction may be necessary.

Degree Requirements

45 credits minimum, as follows:

1. *Slavic Core Courses:* 10 credits from the following: RUSS 501, RUSS 502, SLAV 501, SLAV 519
2. *Slavic Linguistics Courses:* 10 credits from the following: SLAV 550, SLAV 551, SLAV 570
3. *Slavic Literature Courses (10 credits):* RUSS 542, RUSS 543
4. *Second Slavic language, (5 credits):* One of the following: BCS 403, BULGR 403, CZECH 403 or POLSH 403 (implies completion of 401 and 402 in the relevant language)
5. *Elective Courses:* 10 credits from above or from the following: BCS 406, BCS 420, CZECH 406, CZECH 420, POLSH 406, POLSH 420, RUSS 420, RUSS 421, RUSS 422, RUSS 423, RUSS 425, RUSS 426, RUSS 430, RUSS 512, RUSS 520, RUSS 521, RUSS 522, RUSS 523, RUSS 526, RUSS 570, RUSS 577, SLAV 420, SLAV 423, SLAV 425, SLAV 426, SLAV 470, SLAV 490, SLAV 520, SLAV 561, SLAV 562, SLAV 563, SLAV 565, SLAV 566, UKR 420
6. *Examinations*
 - a. Russian Language
 - b. Other Slavic Languages

- c. MA Comprehensive Examinations

Doctor of Philosophy

Admission Requirements

Applicants to the doctoral program in Slavic Languages and Literatures, who are expected to possess an MA or equivalent degree, are admitted by vote of the graduate faculty on the basis of their language skills (Slavic and English), general background in Slavic cultures, and a comprehensive statement of purpose.

Degree Requirements

Minimum 90 credits, to include:

1. *Coursework:* At least 90 credits, including graduate credits taken toward the MA degree, and at least one full year of residence at the UW
2. *Readings:* Many post-MA credits are satisfied with individually arranged readings courses. Courses are mutually agreed upon by the student and the Supervisory Committee chair and are organized with an eye to the comprehensive examinations. Students whose emphasis is Slavic linguistics may include a third Slavic language as a field. PhD students with a literature focus should take one year of a second Slavic language (401-403 sequence) or test out of 403. PhD students with a linguistics focus should take two years of one language (401-406 sequence) or at least one year of two different second Slavic languages. The student may also satisfy this requirement by demonstrating appropriate proficiency in the language(s). Students majoring in language pedagogy follow the linguistics guidelines.
3. *Comprehensive Examinations:* As a prerequisite for scheduling the general examination, the candidate must demonstrate reading ability in a language appropriate for research purposes. The two-hour examination consists of a journal article (5-7 pages), which the student summarizes and a portion of which she/he translates. The particular language may be negotiated by the student with his or her adviser on the basis of the research interests of the student.

The student takes four written field examinations, followed two weeks later by the general (oral comprehensive) examination.

The general (oral comprehensive) examination must be set up with the Graduate School at least three weeks before the examination is scheduled. The procedure is described in the Graduate Student Services' how-to instructions on the web.

Part of the oral comprehensive examination is usually a presentation of the dissertation proposal.

4. *Dissertation and Defense:* The candidate must register for a minimum of three quarters of SLAVIC 800 at a maximum of 10 credits per quarter before submitting a dissertation for defense. With the approval of the dissertation reading committee (usually a subset of the Supervisory Committee), the candidate defends the dissertation in a final examination open to the graduate faculty of the University and invited guests.

Research Facilities

The Suzzallo Library holdings include some 400,000 titles in Slavic languages and in other languages on Slavic subjects. It subscribes to all important periodicals and newspapers in Russian and other languages and has exceptionally strong holdings in rare and antiquarian Slavic titles on microfilm and microfiche.

Assistantship Opportunities

The department regularly offers a number of teaching assistantships. In conjunction with the Henry M. Jackson

School of International Studies, students in the department are eligible for several other types of fellowships.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at [www.uw.edu/students/crscat/](http://uw.edu/students/crscat/)

Bosnian-Croatian-Serbian

BCS 401 First Year Bosnian/Croatian/Serbian (5) Comprehensive introduction to spoken and written literary Bosnian, Croatian, and Serbian. First in a sequence of three. Offered: A.

BCS 402 First Year Bosnian/Croatian/Serbian (5) Comprehensive introduction to spoken and written literary Bosnian, Croatian, and Serbian. Second in a sequence of three. Prerequisite: BCS 401, which may be taken concurrently during summer quarter. Offered: W.

BCS 403 First Year Bosnian/Croatian/Serbian (5) Comprehensive introduction to spoken and written literary Bosnian, Croatian, and Serbian. Third in a sequence of three. Prerequisite: BCS 402, which may be taken concurrently during summer quarter. Offered: Sp.

BCS 404 Second-Year Bosnian/Croatian/Serbian (5) **VLPA** Continuation of BCS 401, BCS 402, BCS 403; reinforces basic grasp of language and enlarges both vocabulary and command of grammatical patterns through the reading of contemporary short stories in Bosnian, Croatian, and Serbian. First in a sequence of three. Prerequisite: minimum grade of 2.0 in BCS 403. Offered: A.

BCS 405 Second-Year Bosnian/Croatian/Serbian (5) **VLPA** Continuation of BCS 401, BCS 402, BCS 403; reinforces basic grasp of language and enlarges both vocabulary and command of grammatical patterns through the reading of contemporary short stories in Bosnian, Croatian, and Serbian. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in BCS 404. Offered: W.

BCS 406 Second-Year Bosnian/Croatian/Serbian (5) **VLPA** Continuation of BCS 401, BCS 402, BCS 403; reinforces basic grasp of language and enlarges both vocabulary and command of grammatical patterns through the reading of contemporary short stories in Bosnian, Croatian, and Serbian. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in BCS 405. Offered: Sp.

BCS 410 Intensive Third Year Bosnian/Croatian/Serbian (10) **VLPA** Belic Advanced grammatical exercises and listening, reading, and writing skills development. Emphasis on strengthening of conversational and presentational competence. Prerequisite: BCS 406. Offered: A.

BCS 420 Literature, Film, and Culture of the Former Yugoslavia and the Yugoslav Successor States (5, max. 15) **VLPA** A travelogue through the intellectual and cultural landscape of the former Yugoslavia and the Yugoslav successor states, studying select literary works, films, and other artifacts, with the exploration of both how these phenomena are a part of their intellectual and historical environment, and how they transcend and change it.

Bulgarian

BULGR 401 First-Year Bulgarian (5) Introduction to Bulgarian phonology and grammar in terms of the modern spoken language. Writing conventions of literary Bulgarian. First in a sequence of three. Offered: A.

BULGR 402 First-Year Bulgarian (5) Introduction to Bulgarian phonology and grammar in terms of the modern spoken language. Writing conventions of literary Bulgarian. Second in a sequence of three. Prerequisite: BULGR 401. Offered: W.

BULGR 403 First-Year Bulgarian (5) Reading of modern texts to increase command of grammar and vocabulary.

Third in a sequence of three. Prerequisite: BULGR 402. Offered: Sp.

BULGR 404 Second-Year Bulgarian (5) VLPA Continuation of BULGR 401, BULGR 402, BULGR 403. Selected readings in Bulgarian literature, history, and culture. Reinforces and extends basic knowledge of Bulgarian grammar and vocabulary. First in a sequence of three. Prerequisite: minimum grade of 2.0 in BULGR 403. Offered: A.

BULGR 405 Second-Year Bulgarian (5) VLPA Continuation of BULGR 401, BULGR 402, BULGR 403. Selected readings in Bulgarian literature, history, and culture. Reinforces and extends basic knowledge of Bulgarian grammar and vocabulary. Second in a sequence of three. Prerequisite: BULGR 404. Offered: W.

BULGR 406 Second-Year Bulgarian (5) VLPA Continuation of BULGR 401, BULGR 402, BULGR 403. Selected readings in Bulgarian literature, history, and culture. Reinforces and extends basic knowledge of Bulgarian grammar and vocabulary. Third in a sequence of three. Prerequisite: BULGR 405. Offered: Sp.

Czech

CZECH 401 First-Year Czech (5) Introduction to spoken and written Czech. First in a sequence of three. Offered: A.

CZECH 402 First-Year Czech (5) Introduction to spoken and written Czech. Second in a sequence of three. Prerequisite: CZECH 401. Offered: W.

CZECH 403 First-Year Czech (5) Modern Czech prose, leading to a command of the language as a research tool and providing an adequate basis for further study. Third in a sequence of three. Prerequisite: CZECH 402. Offered: Sp.

CZECH 404 Second-Year Czech (5) VLPA Continuation of CZECH 401, CZECH 402, CZECH 403. Selected readings from the main works of Czech authors of the nineteenth and twentieth centuries. Reinforces and extends basic knowledge of Czech grammar and vocabulary. First in a sequence of three. Prerequisite: minimum grade of 2.0 in CZECH 403. Offered: A.

CZECH 405 Second-Year Czech (5) VLPA Continuation of CZECH 401, CZECH 402, CZECH 403. Selected readings from the main works of Czech authors of the nineteenth and twentieth centuries. Reinforces and extends basic knowledge of Czech grammar and vocabulary. Second in a sequence of three. Prerequisite: CZECH 404. Offered: W.

CZECH 406 Second-Year Czech (5) VLPA Continuation of CZECH 401, CZECH 402, CZECH 403. Selected readings from the main works of Czech authors of the nineteenth and twentieth centuries. Reinforces and extends basic knowledge of Czech grammar and vocabulary. Third in a sequence of three. Prerequisite: CZECH 405. Offered: Sp.

CZECH 420 Modern Czech Literature in English (5) VLPA Representative works of Czech literature from the 1920s to the present in the context of earlier Czech and general European literary trends. Emphasis on prose and drama of major writers, including Hasek, Capek, Vancura, Skvorecky, Kundera, Vaculik, and Havel.

Polish

POLSH 320 Introduction to Contemporary Polish Culture (5, max. 15) VLPA/I&S Overview of contemporary Polish culture: literature (prose, poetry, and drama), film (feature, documentary, and video art), music (classical, jazz, and rock), theatre, art, and architecture, as well as an introduction to the cultural life in Poland in the twenty-first century. Offered: AW.

POLSH 401 First-Year Polish (5) Focuses on oral communication in basic everyday life situations, sentence level grammar, reading simple connected tests, and writing simple letters and notes. Conducted mostly in Polish, to help enable students to move from novice to intermediate low/mid-level on the ACTFL Proficiency Scale. First in a sequence of three. Offered: A.

POLSH 402 First-Year Polish (5) Focuses on oral communication in basic everyday life situations, sentence level grammar, reading simple connected tests, and writing simple letters and notes. Conducted mostly in Polish, to help enable students to move from novice to intermediate low/mid-level on the ACTFL Proficiency Scale. Second in a sequence of three. Prerequisite: POLSH 401. Offered: W.

POLSH 403 First-Year Polish (5) Focuses on oral communication in basic everyday life situations, sentence level grammar, reading simple connected tests, and writing simple letters and notes. Conducted mostly in Polish, to help enable students to move from novice to intermediate low/mid-level on the ACTFL Proficiency Scale. Third in a sequence of three. Prerequisite: POLSH 402. Offered: Sp.

POLSH 404 Second-Year Polish (5) VLPA Reinforces basic grasp of the language and enlarges vocabulary and command of grammatical patterns beyond the sentence level. Pays special attention to oral communication, listening comprehension, and writing. Helps enable students to move from Novice High to Intermediate Mid/High-level on the ACTFL Proficiency Scale. First in a sequence of three. Prerequisite: minimum grade of 2.0 in POLSH 403. Offered: A.

POLSH 405 Second-Year Polish (5) VLPA Reinforces basic grasp of the language and enlarges vocabulary and command of grammatical patterns beyond the sentence level. Pays special attention to oral communication, listening comprehension, and writing. Helps enable students to move from Novice High to Intermediate Mid/High-level on the ACTFL Proficiency Scale. Second in a sequence of three. Prerequisite: POLSH 404. Offered: W.

POLSH 406 Second-Year Polish (5) VLPA Reinforces basic grasp of the language and enlarges vocabulary and command of grammatical patterns beyond the sentence level. Pays special attention to oral communication, listening comprehension, and writing. Helps enable students to move from Novice High to Intermediate Mid/High-level on the ACTFL Proficiency Scale. Third in a sequence of three. Prerequisite: POLSH 405. Offered: Sp.

POLSH 420 Modern Polish Literature in English (5, max. 15) VLPA Representative prose works by leading twentieth-century Polish writers. Polish literature's critique of modern European civilization. The relation of historical memory, collective victimization, and the utopian imagination in Polish literature to political power and national survival.

Russian

RUSS 101 First-Year Russian (5) Introduction to Russian. Emphasis on oral communication with limited vocabulary. Short readings and writing exercises. Basic grammar. Conducted mostly in Russian. First in a sequence of three. Offered: A.

RUSS 102 First-Year Russian (5) Introduction to Russian. Emphasis on oral communication with limited vocabulary. Short readings and writing exercises. Basic grammar. Conducted mostly in Russian. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in RUSS 101. Offered: W.

RUSS 103 First-Year Russian (5) Introduction to Russian. Emphasis on oral communication with limited vocabulary. Short readings and writing exercises. Basic grammar. Conducted mostly in Russian. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in RUSS 102. Offered: Sp.

RUSS 110 Introduction to Russian Culture and Civilization (5) VLPA/I&S Introduction to Russian culture and history from pre-Christian times to the present, as seen through literary texts, music, film, visual art, and historical works. All lectures and written materials in English. No prior knowledge of Russian necessary. Offered: jointly with JSIS A 110.

RUSS 120 Topics in Russian Literary and Cultural History (5, max. 15) VLPA Introduces important trends and movements in Russian literary and cultural history. Offered in English.

RUSS 150 Intensive First-Year Russian (15) Covers material of RUSS 101, RUSS 102, RUSS 103 in one quarter. Meets three to four hours daily. For continuation, see RUSS 250 or RUSS 201, RUSS 202, RUSS 203. No credit if RUSS 101, RUSS 102, RUSS 103 previously taken. Offered: S.

RUSS 201 Second-Year Russian (5) VLPA Comprehensive review of Russian grammar with continuing oral practice and elementary composition. Conducted mostly in Russian. First in a sequence of three. Prerequisite: either 2.0 in RUSS 103 or 2.0 in RUSS 150. Offered: A.

RUSS 202 Second-Year Russian (5) VLPA Comprehensive review of Russian grammar with continuing oral practice and elementary composition. Conducted mostly in Russian. Second in a sequence of three. Prerequisite: RUSS 201. Offered: W.

RUSS 203 Second-Year Russian (5) VLPA Comprehensive review of Russian grammar with continuing oral practice and elementary composition. Conducted mostly in Russian. Third in a sequence of three. Prerequisite: RUSS 202. Offered: Sp.

RUSS 210 From Paganism to Christianity: Medieval Russian Mythology, Literature, and Culture (5) VLPA/I&S Covers Pagan mythology and folk tales; Christian hagiography and morality tales; the beginnings of secular literature; and fashions, music, paintings, and architecture. Up to 1600. Offered: W.

RUSS 223 Russian Cinema (5) VLPA Covers Russian cinema from its beginnings to the present day. Directors include Yevgenii Bauer, Sergei Eisenstein, Vsevolod Pudovkin, Dziga Vertov, Mikhail Kalatozov, Andrei Tarkovsky, Alexei Balabanov, and Aleksandr Sokurov. Also "Russians in Hollywood." Covers the relevant sociopolitical context. Also features documentaries and animation. Offered: AWSp.

RUSS 230 Masterpieces of Russian Literature (5, max. 15) VLPA Examines the greatest authors and masterpieces of Russian literature, including Tolstoy, Dostoevsky, and Chekhov. All readings, discussions, and assignments in English.

RUSS 240 Vladimir Nabokov (5) VLPA Examines the works of Vladimir Nabokov, from his early novels written in Europe to his later masterpieces, including *Lolita*, *Invitation to a Beheading*, and *Invitation to a Wedding*. Offered: AWSp.

RUSS 250 Intensive Second-Year Russian (15) VLPA Covers material of RUSS 201, RUSS 202, RUSS 203 in one quarter. Meets three to four hours daily. No credit if RUSS 201, RUSS 202, RUSS 203 previously taken. Prerequisite: either 2.0 in RUSS 103 or 2.0 in RUSS 150. Offered: S.

RUSS 301 Third-Year Russian (5) VLPA Extensive practice in spoken and written Russian based on a variety of prose readings. Intensive review and supplementation of strategic grammatical concepts. First in a sequence of three. Prerequisite: either 2.0 in RUSS 203 or 2.0 in RUSS 250. Offered: A.

RUSS 302 Third-Year Russian (5) VLPA Extensive practice in spoken and written Russian based on a variety of prose readings. Intensive review and supplementation of strategic grammatical concepts. Second in a sequence of three. Prerequisite: RUSS 301. Offered: W.

RUSS 303 Third-Year Russian (5) VLPA Extensive practice in spoken and written Russian based on a variety of prose readings. Intensive review and supplementation of strategic grammatical concepts. Third in a sequence of three. Prerequisite: RUSS 302. Offered: Sp.

RUSS 304 Reading and Translation (1, max. 3) VLPA Translation techniques with emphasis on development of vocabulary and reading skills. Primarily for Russian regional studies majors. Prerequisite: either RUSS 203 or RUSS 250. Credit/no-credit only. Offered: AWSp.

RUSS 313 Business Russian (5) VLPA Emphasizes the language and practice of business in Russia today. Prerequisite: either RUSS 203 or RUSS 250.

RUSS 322 The Golden Age: Nineteenth Century Russian Literature and Culture (5) VLPA/I&S *Diment, Henry* Explores Russian literature and culture during the "Golden Age" of the nineteenth century. Authors include some of the best-known and most influential Russian writers, including Tolstoy, Dostoevsky, Gogol, Turgenev, Chekhov, and Goncharov. Students gain a comprehensive knowledge of major literary themes, ideas, and developments of nineteenth century Russian literature. Offered: W.

RUSS 323 Revolution: Twentieth Century Russian Literature and Culture (5) VLPA/I&S Explores Russian literature and culture during the twentieth century before perestroika, a period of "revolutions" and unprecedented change in political, cultural, and economic life. Authors include Babel, Bulgakov, Il'f and Petrov, and Nabokov. Periods include symbolism, revolution, Soviet, Stalinist, the "thaw", and post-Soviet. Offered: Sp.

RUSS 324 Russian Folk Literature in English (5) VLPA/I&S Explores the diversity of forms, themes, and functions of the Russian folktale, the literary art of the historically and culturally marginalized Russian peasantry. Discussion of theoretical frameworks for interpretation, resistance strategies, and with dominant literary models.

RUSS 350 Intensive Third-Year Russian (15) VLPA Covers material of RUSS 301, RUSS 302, RUSS 303 in one quarter. Meets three hours daily. No credit if RUSS 301, RUSS 302, RUSS 303 previously taken. Prerequisite: either 2.0 in RUSS 203 or 2.0 in RUSS 250. Offered: S.

RUSS 401 Fourth-Year Russian (5) VLPA Class discussion, oral presentations, and composition, based on reading a variety of texts, both literary and non-literary. Advanced grammar. Translation one full course period per week. First in a sequence of three. Prerequisite: either 2.0 in RUSS 303 or 2.0 in RUSS 350. Offered: A.

RUSS 402 Fourth-Year Russian (5) VLPA Class discussion, oral presentations, and composition, based on reading a variety of texts, both literary and non-literary. Advanced grammar. Translation one full course period per week. Second in a sequence of three. Prerequisite: RUSS 401. Offered: W.

RUSS 403 Fourth-Year Russian (5) VLPA Class discussion, oral presentations, and composition, based on reading a variety of texts, both literary and non-literary. Advanced grammar. Translation one full course period per week. Third in a sequence of three. Prerequisite: RUSS 402. Offered: Sp.

RUSS 420 Topics in Russian Literary and Cultural History (5, max. 20) VLPA A special topic in the literary and cultural history of Russia. Topics vary.

RUSS 421 Post-Soviet Literary and Cultural Scene (5, max. 15) VLPA Covers Russian literature of the post-Soviet period. In English.

RUSS 422 Russian Literature in Emigration and Exile (5) VLPA Examines writers who left the Soviet Union during the post-Stalin period up to the fall of the Soviet Union. Features writers: Vladimir Nabokov, Nina Berberova, Nadezhda Terri, Vasily Aksyonov, Andrei Siniavsky, and Gary Shteyngart.

RUSS 423 Russian Film (5, max. 15) VLPA Explores early Russian, Soviet, and post-Soviet film. Features filmmakers: Sergei Eisenstein, Dziga Vertov, Vsevolod Pudovkin, Andrei Tarkovsky, Alexandr Sourov, and others. Focuses on critical materials pertaining to filmmaking and film theory.

RUSS 424 Topics in Ethnicity and Cultural Identity (5, max. 15) VLPA/I&S Issues of cultural and ethnic identities and neo-colonialism. Special focus on Russian and East European Jewish literature and culture, and central Asian literature, art, and culture. Taught in English.

RUSS 425 Russian Drama (5, max. 15) VLPA Analysis of history and development of Russian drama from the eighteenth century to present times. Playwrights featured include Alexander Griboedev, Alexander Ostrovsky, Anton

Chekhov, Vladimir Mayakovsky, and others. Taught in English.

RUSS 426 Russian Art and Architecture (5) VLPA West Survey of Russian art and architecture from the middle ages to the twentieth century, covering the place of the visual arts in Russian culture, the relationship between visual and verbal art, and the appropriate reading of works of Russian art of all periods.

RUSS 430 Major Authors (5, max. 15) VLPA Explores major Russian writers of the nineteenth and twentieth centuries. Features authors: Pushkin, Gogol, Goncharov, Turgenev, Tolstoy, Dostoevsky, Chekhov, Babel, Bulgakov, Olesha, and Pasternak. Content varies.

RUSS 450 Intensive Fourth-Year Russian (15) VLPA Covers material of RUSS 401, RUSS 402, RUSS 403 in one quarter. Meets three hours daily. No credit if RUSS 401, RUSS 402, RUSS 403 previously taken. Prerequisite: either 2.0 in RUSS 303 or 2.0 in RUSS 350. Offered: S.

RUSS 451 Structure of Russian (5) VLPA Descriptive analysis of contemporary standard Russian. Includes detailed phonetic transcription, discussion of major Great Russian dialects, as well as variations in popular speech, examination of common roots, and productive derivational elements in Russian words, and elementary principles of syntax. Prerequisite: either RUSS 303 or RUSS 350; either LING 200 or LING 400. Offered: W.

RUSS 481 Russian Language in Russia (5, max. 15) VLPA Daily work in phonetics, grammar, conversation, translation, analytical reading, stylistics, newspaper analysis, and advanced syntax. Prerequisite: either RUSS 203 or RUSS 250. Offered: AWSpS.

RUSS 482 Research Project in Russia (3, max. 15) VLPA Supervised research in student's selected area of concentration, combined with language instruction tailored to the student's field. Successful completion of course requires a 15-page term paper in Russian. Prerequisite: either RUSS 203 or RUSS 550. Offered: AWSpS.

RUSS 483 Russian Literature in Russia (3, max. 15) VLPA Selection of courses on specialized topics in Russian literature; specific authors or periods. Prerequisite: either RUSS 203 or RUSS 250. Offered: AWSpS.

RUSS 486 Culture in Russia (3, max. 15) VLPA/I&S Lectures on education, history, economics, law, the arts, ethnography, architecture; complemented by visits to places of cultural and historical interest and meetings with Russian groups. 4 credits for summer abroad program, 6 for semester abroad program. Prerequisite: either RUSS 203 or RUSS 250. Offered: AWSpS.

RUSS 490 Studies in Russian Literature (3-5, max. 15) VLPA In either Russian or English. Topics vary.

RUSS 499 Directed Study or Research (1-5, max. 15) Individual study of topics to meet specific needs. By arrangement with the instructor and the Department of Slavic Languages and Literatures office. Offered: AWSpS.

RUSS 501 Russian Language for Graduate Students (2, max. 10) Develops skills of particular use to graduate students. Emphasis on rapid assimilation of variety of written materials with sophisticated understanding and maximum retention of vocabulary, and ability to discuss in Russian the more theoretical and abstract kinds of material. Prerequisite: RUSS 403 or equivalent and graduate standing in Russian, East European, and Central Asian Studies.

RUSS 502 Russian Translation (3) Introduction to the theory of translation; translation to and from Russian of selected prose passages in a variety of styles, with emphasis on idiomatic accuracy and stylistic compatibility. Prerequisite: two quarters of RUSS 501 or permission of instructor.

RUSS 512 Russian Literary Criticism (3) A study of critical positions, problems, and literary values of major Russian literary critics from Belinsky to the present.

RUSS 520 Topics in Russian Literature and Culture (5, max. 20) Detailed study of a single author or a movement, theme, or short period in Russian literature or culture.

RUSS 521 Russian Literature to 1800 (5) Representative works of East Slavic, Muscovite, and Russian literature from the beginnings to 1800. Studies include a varied selection of primary texts. Intended as an introduction to the study of modern literature for beginning graduate students in Russian literature.

RUSS 522 Russian Literature of the Nineteenth Century (5) Survey of nineteenth-century Russian poetry and prose. Representative works of Russia's major and minor authors, literary trends, and genres.

RUSS 523 Russian Literature of the Twentieth Century (5) Survey of twentieth-century Russian poetry and prose. Pre-revolutionary, Soviet, and emigre authors, trends, and genres. Includes survey of twentieth-century literary criticism as well, in particular Russian formalists and Mikhail Bakhtin.

RUSS 526 Modern Russian Literary, Cultural, and Film Studies (5, max. 15) Modern literature and film. Topics include post-colonialism, gender, reflections of social upheavals, artistic experimentation, issues of commercialism in art, search for new cultural expressions and identity. Readings in both Russian and English. Offered: Sp.

RUSS 542 Seminar in Russian Poetry (5, max. 20) One specific problem or theme in Russian poetry, seen in its widest possible dimensions. Students read, in Russian, the literary works involved and become familiar with the social, historical, and philosophical backgrounds that inspire them.

RUSS 543 Seminar in Contemporary Russian Prose (5, max. 20) Analysis of Russian prose fiction. Selected authors and topics.

RUSS 554 History of the Russian Literary Language (5) Russian literary language from the eleventh through the twentieth centuries, with special attention to syntax and lexicon and to the development of notions of literary styles. Offered in Russian. Prerequisite: SLAV 565, or permission of instructor.

RUSS 570 Research Seminar in Russian Literature (5, max. 40) Working in consultation with a faculty adviser, students formulate a topic and prepare a 30-minute oral presentation to be delivered at the seminar and submit a written paper to be read and critiqued by all participants.

RUSS 577 Russian Folk Literature (5) Examines the artistic forms, varieties, and themes of the Russian folktale, its roots in pre-Christian Slavic religion, connections with myth and legend, adaptation for Soviet and modern Russian literature, film, and music.

RUSS 600 Independent Study or Research (*-)

Slavic

SLAV 101 Introduction to Slavdom: Who are the Slavs? (5) I&S Introduces students to basic concepts regarding the whole body of present-day Slavs as well as the area inhabited by or under the influence of present-day Slavs. Uses latest achievements in technology and in social media advancements to retrieve relevant information from present-day Slavs themselves. Taught in English.

SLAV 110 Introduction to Slavic Linguistics: Slavs and Their Tongues (5) VLPA Introduces the basic concepts of Slavic linguistics. Addresses the origin of the Slavs and major stages of their linguistic history. Considers Slavic languages and their peculiarities in detail. Taught in English.

SLAV 130 Introduction to Slavic Culture and Civilization (5) VLPA Examines the culture of the Slavs, an ethno-linguistic group of peoples living primarily in Central/Eastern Europe. Among nations investigated: the Czech Republic, Russia, Poland, and Ukraine. Student gain a fundamental grasp of major issues and historical events of this region, expressed through culture.

SLAV 175 The Slavic Text and Its Context (2) VLPA A contextual study of a significant work or intellectual movement from a Slavic culture. Study includes literature, film, music, or art. Credit/no-credit only.

SLAV 200 Introduction to Slavic Literature (5) VLPA G. CRNKOVIC Introduces major Slavic literary works of different types (stories, novels, poetry), mostly from the 20th and 21st century, focusing on the intense “close reading” of these texts that identifies their main literary features. Excellent beginning training for the informed reading of any kind of literature. Taught in English.

SLAV 210 Introduction to Bilingualism (5) VLPA/I&S K. DZIWIWREK A multidisciplinary examination of bilingualism as a societal and individual phenomenon. Considers language versus dialect, diglossia, state language policies, language rights, indigenous languages, and linguistic minorities. Explores bilingualism and biculturalism as human experience and as indexes of identity and diversity. Includes a fieldwork project focused on linguistic diversity in the Pacific Northwest. Offered: W.

SLAV 223 East European Cinema (5, max. 20) VLPA Emphasizes international cultural, artistic, and historical diversity by introducing select contemporary Eastern European film directors. Focuses on a single filmmaker and studies his/her opus in depth, both in his/her Eastern European country of origin and abroad. Special attention paid to Eastern European filmmakers in Hollywood.

SLAV 320 The Other Europe: Post-World War II East European Fiction (5) VLPA Crnkovic Introduces post-WWII Eastern European fiction created during and after the communist era, both in Eastern European countries and in exile. Includes works by Polish, Czech, Yugoslav, post-Yugoslav, Hungarian, and Baltic writers. Taught in English.

SLAV 323 Masterpieces of East European Cinema (5) VLPA Crnkovic Studies aesthetically most interesting films from Eastern Europe from the 1950s to present. Includes select films by Polish film icon Andrzej Wajda, the Czech 1960s New Wave, the Zagreb School of Animated Film, works by Eastern European women directors, as well as more recent internationally awarded and acclaimed films.

SLAV 351 History of the Slavic Languages (5) VLPA History of Slavic languages from Indo-European to present time, including development of writing systems and national languages. Principles of historical linguistics: sound change, analogy, semantic change, as well as relevance of historical linguistics to our knowledge of human development, ancestral culture, etc. Prerequisite: either SLAV 110, LING 200, or LING 400.

SLAV 370 What is in a Language Name? The Case of Bosnian, Croatian, Montenegrin, and Serbian (5) VLPA Examines diverse phenomena related to the language known as Serbo-Croatian, and to the Bosnian, Croatian, Montenegrin, and Serbian languages. Explores concepts such as language death, birth, politics, standardization, and codification. The relation between dialect and language is observed in an ecology exhibiting ethnic and religious diversity.

SLAV 401 Research Methods and Writing (2) Introduces writing and research in Slavic studies. Students review secondary literature in their chosen fields, rewrite and revise their own work to bring it up to discipline standard, and work collaboratively to evaluate their own work and that of their peers.

SLAV 423 East European Film (5, max. 15) VLPA Crnkovic Studies major East European film makers who left their countries at some point in their careers. Compares East European and Western production of those directors who worked partially in the West. Offered: jointly with C LIT 423.

SLAV 425 Ways of Meaning: Universal and Culture Specific Aspects of Language (5) VLPA/I&S K. DZIWIWREK Focuses on the diversity of human experience and the social and cultural conditioning of language use. Language as a mirror of culture and national character. Universal and culture/

language specific components in linguistic expression of emotions, courtesy/politeness and rudeness, prejudice and (in)sensitivities, linguistic expression of gender differences in different cultures.

SLAV 426 Ways of Feeling: Expressions of Emotions Across Languages and Cultures (5) VLPA/I&S K. DZIWIWREK Investigate the diversity of human experience by focusing on culture specific aspects of linguistic expression of emotion. Examination of the meaning and form of emotion words in different languages, facial expressions, cultural attitudes to emotion and emotional behavior, and gender-specific emotional expressions.

SLAV 470 Special Topics in Slavic Linguistics (3-5, max. 15) VLPA Augerot, Belic, Dziwerek Special topics in Slavic linguistics. Course offerings based on instructor's specialty and student demand. Offered: AWWSp.

SLAV 481 East European Language in Eastern Europe (5, max. 15) VLPA Daily work in phonetic, grammar, conversation, translation, analytical reading, stylistics, newspaper analysis, and advanced syntax. Provides an opportunity to earn credits while studying in Eastern Europe. Offered: AWWSpS.

SLAV 482 Research Project in Eastern Europe (3, max. 15) VLPA Supervised research in student's selected area of concentration, combined with language instruction tailored to the student's field. Provides an opportunity to earn credits while studying in Eastern Europe. Offered: AWWSpS.

SLAV 483 East European Literature in Eastern Europe (3, max. 15) VLPA Selection of courses on specialized topics in East European literature; specific authors or periods. Provides an opportunity to earn credits while studying in Eastern Europe. Offered: AWWSpS.

SLAV 486 East European Culture in Eastern Europe (3, max. 15) VLPA Lectures on various aspects of Eastern European culture, complemented by visits to places of cultural historical interest. Provides an opportunity to earn credits while studying in Eastern Europe. Offered: AWWSpS.

SLAV 490 Studies in Slavic Literatures (3-5, max. 15) VLPA Topics vary.

SLAV 499 Directed Study or Research (1-5, max. 15) Individual study of topics to meet specific needs. By arrangement with the instructor and the Department of Slavic Languages and Literatures office. Prerequisite: permission of instructor and undergraduate adviser. Offered: AWWSpS.

SLAV 501 Using Slavic Resources (2) Introduction to graduate studies in Slavic languages, literatures, and cultures. Discusses field of study and research materials and techniques employed.

SLAV 518 Foreign Language Teaching Methodology (2) Brandl Current foreign language teaching methods and approaches. Learning and teaching strategies and techniques for the four skills (reading, writing, speaking, listening) including cultural notions. Current and future trends in pedagogy and technology. Offered: jointly with GERMAN 518/NEAR E 518/SCAND 518; A.

SLAV 519 Slavic Language Pedagogy (3, max. 6) Augerot, Belic Introduction to current issues of foreign language pedagogy. Concentrates on the practical classroom application of methodological theory through lectures and micro-teaching presentation. Topics discussed and practiced include testing, proficiency teaching, teaching listening and reading skills, writing, teaching grammar, and computers. Offered: A.

SLAV 520 New Trends in Literary Theory (5) Crnkovic Explores recent theoretical trends which no longer search for a unified theoretical meta-narrative (i.e., post-structuralism or new historicism), but instead explore various literary genres (such as diary or fictional book reviews) and texts as the primary terrain of theory. Bakhtin, Lem, Bruns, Corradifiumara, Crnkovic, and others.

SLAV 550 Synchronic Slavic Linguistics (5) Linguistic analysis of the phonology, morphology, and syntax of Russian

and other Slavic languages. Investigation of current theoretical work in these areas.

SLAV 551 The Introduction to the Study of Slavic Languages (5) History of Slavic languages from Indo-European to present time, including development of writing systems and national languages. Principles of historical linguistics: sound change, analogy, semantic change, as well as relevance of historical linguistics to our knowledge of human development, ancestral culture, etc. Prerequisite: either SLAV 110, LING 200, or LING 400.

SLAV 561 History of the East Slavic Languages (5) Designed to acquaint majors in Slavic linguistics with the details of the historical development of the phonological and morphological structure of the Ukrainian and Byelorussian literary languages.

SLAV 562 History of the West Slavic Languages (5) Designed to acquaint majors in Slavic linguistics with the details of the historical development of the phonological and morphological structure of literary Polish, Czech, Slovak, and Upper and Lower Sorbian languages.

SLAV 563 History of the South Slavic Languages (5) Designed to acquaint majors in Slavic linguistics with the details of the historical development of the phonological and morphological structure of the South Slavic languages.

SLAV 565 Old Church Slavic (5) Rise and development of earliest Slavic literary language and a descriptive study of its orthography, phonology, morphology, and syntax. Readings from normalized texts.

SLAV 566 Readings in Old Church Slavic (4) Reading and grammatical interpretation of a selected group of canonical texts, as well as some examples of the various later recensions of Old Church Slavonic. Prerequisite: SLAV 565.

SLAV 570 Special Topics in Slavic Linguistics (3-5, max. 15) Investigation and discussion of special topics in Slavic linguistics.

Slavic Languages and Literatures

SLAVIC 498 Senior Honors Thesis ([3-9]-, max. 9) VLPA Directed research on a topic approved by department for a thesis presented in partial fulfillment of requirement for degrees “With College Honors” or “With Distinction.” Offered: AWWSpS.

SLAVIC 600 Independent Study or Research (*-)

SLAVIC 800 Doctoral Dissertation (*-)

Slovenian

SLVN 401 Introductory Slovene Language (3/5) Biggins Introduction to spoken and written Slovene language. First in a two course sequence. Prerequisite: either BCS 403, BULGR 403, CZECH 403, GERMAN 103, ITAL 103, POLISH 403, ROMN 403, RUSS 103, RUSS 150, UKR 403, or status as a heritage speaker of Slovene.

SLVN 402 Introductory Slovene Language (3/5) Biggins Introduction to spoken and written Slovene language. Second in a two course sequence. Prerequisite: SLVN 401.

SLVN 404 Second-Year Slovene Language (3/5) Biggins Reinforces and expands foundational knowledge of Slovene language through grammatical topics and exercises, reading of authentic texts, composition, listening, oral presentations, and conversation. Prerequisite: SLVN 402.

SLVN 406 Second-Year Slovene Language II (3-5) VLPA Biggins Consolidates knowledge of Slovene language through advanced grammatical topics, exercises, reading, composition, listening, and conversation. Prerequisite: SLVN 404.

SLVN 499 Directed Study in Slovene (1-5, max. 15) Biggins Individual study of topics in Slovene culture, linguistics, or current affairs to meet specific needs, based primarily on readings of undapated Slovene texts. Offered: AWWSp.

Ukrainian

UKR 320 Introduction to Ukrainian Literature and Culture (5) VLPA Provides an overview of Ukrainian culture: literature, film, music, theatre, art, and architecture, as well as an introduction to Ukrainian cultural life. Taught in English.

UKR 401 First-Year Ukrainian (5) Introduction to spoken and written Ukrainian. First in a sequence of three.

UKR 402 First-Year Ukrainian (5) Introduction to spoken and written Ukrainian. Second in a sequence of three. Prerequisite: UKR 401, which may be taken concurrently.

UKR 403 First-Year Ukrainian (5) Introduction to spoken and written Ukrainian. Third in a sequence of three. Prerequisite: UKR 402, which may be taken concurrently.

UKR 420 Literature, Film, and Culture of Ukraine (5) VLPA Representative prose works by leading Ukrainian authors. Shows originality of Ukrainian literature through acquaintance with the peculiar historical and political situation of Ukraine. Offered in English.

Sociology

211 Savery

The Department of Sociology has a strong commitment to research, publication, and training and is dedicated to providing a rich undergraduate program, both for students majoring in sociology and for others who wish to learn about human society and social relations.

UNDERGRADUATE PROGRAM

Adviser

203 Savery, Box 353340

(206) 543-5396

asksoc@uw.edu

The Department of Sociology offers the following program of study

- The Bachelor of Arts degree with a major in sociology

Bachelor of Arts

Suggested First- and Second-Year College Courses: SOC 110, SOC 212, SOC 240, SOC 270, or any 200-level sociology courses. General coursework developing critical thinking or analytical skills.

Department Admission Requirements

1. *Introductory Courses (10 credits):* Minimum grade of 2.0 in SOC 300 and any additional 5 credit sociology course, one of which may be in progress.
2. Minimum 2.0 grade for each course required for admission. Minimum cumulative UW GPA of 2.0.
3. *Application:* See department website for information required as part of application packet. Exceptions based on special circumstances are reviewed on a case-by-case basis. Application deadlines are the first Friday of each quarter. All applicants who meet the qualifications stated above are admitted in time to register as sociology majors for the following quarter.

Major Requirements

50 credits as follows:

1. *Introductory Courses (10 credits):* SOC 300 and any additional 5 credit sociology course
2. *Statistics and Theory (10 credits):* 5 credits from STAT 220, STAT 311, SOC 221/STAT 221/CS&SS 221, or SOC 321/STAT 321/CS&SS 321; and 5 credits for SOC 316

3. *Upper-Division Sociology Electives (20 credits):* Any 300-level or 400-level sociology courses, excluding SOC 316, SOC 395, SOC 399, SOC 499, and including a maximum of 5 credits of SOC 494

4. *Sociology Electives (10 credits):* Any additional sociology courses, with a maximum 5 credits of either SOC 399 or SOC 499, and a maximum 5 credits of SOC 494

5. *Academic Standards:* Minimum 2.0 grade in any course applied to major requirements. Minimum cumulative 2.50 GPA for courses applied to major requirements. 25 of 50 required sociology credits completed in residence at UW.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The Department of Sociology's undergraduate degree is designed to teach majors to think systematically about the relationships among individuals, groups, organizations, and societies. Sociology majors engage current research in political sociology, social stratification, race and ethnicity, deviance and social control, demography and other areas, and develop quantitative and analytical skills in research methods and social theory courses.
- *Instructional and Research Facilities:* The Center for Social Science Computing and Research (CSSCR) maintains an extensive data archive, and offers consulting support and computer lab access to students in sociology courses. The Center for Studies in Demography and Ecology (CSDE) and the Center for Statistics and the Social Sciences (CSSS) provide interdisciplinary courses, seminars, and research opportunities for sociology students.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Sociology majors participate in a variety of internships each quarter. Students can receive academic credit under the supervision of a Sociology faculty member. See adviser for details.
- *Department Scholarships:* None offered.
- *Student Organizations/Associations:* A chapter of the Alpha Kappa Delta International Sociology Honor Society organizes events involving undergraduates with faculty and graduate students.

GRADUATE PROGRAM

Graduate Program Coordinator

211 Savery, Box 353340

(206) 221-3280

socadvis@uw.edu

Sociology seeks to explain social structure, social institutions, and social interaction. There are three emphases in the graduate training program at the University of Washington: understanding and critically evaluating social theory and empirical research; doing theoretically guided research that explores, assesses, and further develops explanatory theories; and developing communication skills (with emphasis on teaching and scholarly writing) that are useful in transmitting sociological knowledge. The department has particular strengths in social and formal demography, deviance and social control, stratification and inequality, health, comparative and historical sociology, family and gender studies, and quantitative methods.

Emphasis is on empirical research aimed at developing explanatory theories. Students are trained in problem formulation, research design, data gathering and analysis,

and bringing data to bear on significant questions. Instruction is offered on various methods: statistical, survey, demographic and ecological, field research, and historical. Students learn social research by participating in faculty projects or developing their own studies.

Master of Arts

Admission Requirements

1. Applicants are evaluated on undergraduate performance, Graduate Record Examination scores, statement of educational plans, recommendations, and samples of written work.
2. *Application Deadline:* December 15. Admission offers are made for autumn quarter only. The UW Graduate Admissions Office strongly recommends that international applicants submit required application materials by November 1
3. *Application Materials:* All information about the University of Washington Department of Sociology graduate program and the application materials are online. The Department of Sociology no longer sends out printed information or application materials. All applicants use the web-based application. Applying to the sociology graduate program involves application to both the University of Washington Graduate School and the Department of Sociology. See departmental website (<http://www.soc.washington.edu>) for more information.

Degree Requirements

The master's program, designed primarily as preparation for PhD work, is not a terminal degree, although it may serve as good training for non-academic research. The MA program consists of three elements:

1. *Substantive Training:* Coursework in substantive areas and social theory
2. *Methodological Training:* Work in social statistics, general social science methodologies, and a data analysis practicum
3. *The Master's Thesis:* Independent empirical research conducted under the supervision of the MA committee.

Students working toward an MA degree must complete 45 graduate credits or more with a minimum cumulative 3.30 GPA:

1. *Sociological Theory:* SOC 510
2. *Statistics:* SOC 504, SOC 505, SOC 506
3. *Logic of Social Inquiry:* SOC 508
4. *Proseminar:* SOC 501
5. *MA Thesis:* SOC 700
6. *Electives:* 18 credits

A minimum of 12 graded elective credits must be in courses offered by the Sociology Department. All courses should be at the 500 level or above, although a student may petition for inclusion of a 400-level course. No more than 3 elective credits may be assigned a letter grade (e.g., S or CR) in place of a numerical grade. Minimum GPA of 3.30.

Doctor of Philosophy

Admission Requirements

Completion of an MA degree in sociology in the UW Sociology Department or elsewhere. Occasionally MA degrees in other fields are accepted. The department encourages applications from minority students.

See above under Master of Arts section for admission requirements.

Degree Requirements

Minimum 90 credits, to include:

45 credits beyond the Master of Arts requirements (above) as follows:

1. Eight graded Sociology courses beyond the required first-year required courses. Electives taken while completing the MA can be counted towards these 8 courses. This is a minimum of 24 credits overall
2. Complete a PhD Training Plan which is a set of 4 methods/skills/knowledge courses focusing on particular advanced methodological skills (broadly defined) or knowledge necessary to undertake the planned dissertation research. Up to 2 of these courses may also count as part of the required 8 graded Sociology courses.
3. 27 dissertation credits

Additionally, students must maintain a GPA of 3.30, pass a comprehensive examination, pass the general examination (prospectus defense), pass the final examination, and submit an approved dissertation to the Graduate School.

Financial Aid

Fellowships, research assistantships, and teaching assistantships are available to qualified graduate students including those in their first year of training.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

SOCIOLOGY

SOC 110 Survey of Sociology (5) I&S Human interaction, social institutions, social stratification, socialization, deviance, social control, social and cultural change. Course content may vary, depending upon instructor.

SOC 111 American Society (5) I&S Explores the power of social structures using examples drawn primarily from the American culture. The impact of social institutions, the emergence of concrete patterns of social relations which organize and regulate social life and the inequality inherent in most social structures.

SOC 195 Study Abroad: Sociology (2-5, max. 10) I&S Lower-division sociology courses for which there are no direct University of Washington equivalents, taken through a University of Washington study abroad program.

SOC 201 Introductory Topics in Sociology (3-5, max. 10) I&S Selected introductory topics of contemporary interest.

SOC 211 Stability and Change in American Society (5) I&S Examines two views of American life that dominate public discourse: one, that the United States is the best country in the world, the other that it is in decline. Addresses questions like: what is the United States really like; what values do Americans share; how do their values affect success and hope for a better society?

SOC 212 Evolution and Revolution: An Introduction to the Study of Comparative Social Change (5) I&S, DIV Examines the major aspects of human societies, including political and economic systems, family structure, social stratification, and demographic patterns as influenced by environmental conditions, technology, cultural traditions, and legacies of prior history and relationships to other societies.

SOC 215 Introduction to Urban Sociology (5) I&S Introduces the field of urban sociology. Focuses primarily on urban dynamics in the United States with attention to the global context in which they operate.

SOC 220 Introduction to Sociological Methods (5) I&S, QSR Familiarizes students with the logic of analysis in social sciences. Students learn to recognize good research design, understand and interpret main arguments employing different methods, and evaluate whether research findings support stated conclusions.

SOC 221 Statistical Concepts and Methods for the Social Sciences (5) NW, QSR Develops statistical literacy. Examines objectives and pitfalls of statistical studies; study designs, data analysis, inference; graphical and numerical summaries of numerical and categorical data; correlation and regression; and estimation, confidence intervals, and significance tests. Emphasizes social science examples and cases. (Students may receive credit for only one of STAT 220, STAT 221, STAT 311, STAT 221/CS&SS 221/SOC 221, and ECON 311.) Offered: jointly with CS&SS 221/STAT 221; AWSp.

SOC 222 Sociology of Sport (5) I&S Weis Introduction to the sociological analysis of sport. Issues discussed include the history, definition, and functions of sport; role of sport in the socialization of children; the relationship between sport and values; athletics within the social organization of education; deviance, crime, and violence in sport; the business and economics of sport.

SOC 223 Sociology of Rock and Roll (5) I&S Sociological analysis of a very influential and popular musical art form, from its origins in the first half of the twentieth century to more contemporary social contexts. Examines the roles of race relations, social class, gender, inequalities, region, genre, commercial exploitation, and technology in the evolution of rock and roll.

SOC 230 Introduction to Racial and Ethnic Health Disparities in the United States (5) I&S, DIV Examines health status and healthcare disparities among racial/ethnic minority groups in the United States. Utilize sociological, demographic, (social) epidemiological, and (social) psychological concepts to introduce students to racial/ethnic health disparities research.

SOC 240 Introduction to Social Psychology (5) I&S Introduction to social psychology with an emphasis on sociological perspectives and problems.

SOC 247 Contemporary Social Movements (5) I&S Introduction to theory and research on national-level collective mobilizations organized for political change. Emphasis on how political, organizational, and cultural factors shape social movement emergence and development, and individual participation.

SOC 260 African American Family (5) I&S, DIV Explores the structures and functioning of various types of black families. Single-parent families, two-parent families, extended families, and consensual families are explored. Their consequences for male/female relationships are linked and critiqued. Offered: jointly with AFRAM 260.

SOC 261 The African American Experience Through Literature (5) VLPA/I&S Scott Instructs students in hermeneutical and sociological methods of analyses. Analyzes selected novels, essays, poems, short stories, and plays with the purpose of understanding the structures and functions of both society and personality. Offered: jointly with AFRAM 261.

SOC 266 Introduction to Labor Studies (5) I&S Conceptual and theoretical issues in the study of labor and work. Role of labor in national and international politics. Formation of labor movements. Historical and contemporary role of labor in the modern world. Offered: jointly with HSTCMP 249/POL S 249.

SOC 270 Social Problems (5) I&S, DIV Processes of social and personal disorganization and reorganization in relation to poverty, crime, suicide, family disorganization, mental disorders, and similar social problems.

SOC 271 Introduction to the Sociology of Deviance and Social Control (5) I&S Examination of deviance, deviant behavior, and social control. Deviance as a social process; types of deviant behavior (e.g., suicide, mental illness, drug use, crime, "sexual deviance," delinquency); theories of deviance and deviant behavior; nature and social organization of societal reactions; and social and legal policy issues.

SOC 275 Murder (5) I&S Weis Introduces topics related to the crime of murder, including: laws of homicide; research on the characteristics of victims, killers, and murders; theories of murder and related violence; investigation strategies; and crime and control policies.

SOC 287 Introduction of the Sociology of Sexuality (5) I&S, DIV Investigates sexuality on the basis of social construction of norms and values, within the context of gender, race, class, and sub-cultures and in the social control of sexuality and why it is so highly regulated. Looks for social rather than biological or personal explanations for why human sexuality is conceptualized or practiced in a certain way.

SOC 292 Who Gets Ahead? Public Schooling in America (5) I&S, DIV Addresses fundamental questions about the relationship between education and society. Examines why some students learn more and advance further than others; what factors shape how schools are run/organized and which materials are taught; how race/class/gender affect students within schools; how schools maintain our economic system and can become more effective.

SOC 299 Sociology Interest Group (2) I&S Provides opportunity for students new to the major, or contemplating the major, to meet twice weekly in a small group to discuss issues relating to two designated five-credit sociology courses. Concurrent enrollment in the two five-credit designated courses required. See department adviser.

SOC 300 Foundations of Social Inquiry (5) I&S Covers what makes social science a science, the components of good research design, and what counts as valid evidence for sociological claims. Pays special attention to links between theory, research questions, and data. Offered: AWSpS.

SOC 301 War (5) I&S Origins and conduct of war; readings from anthropology, political science, economics, and history, as well as novels and some recent works on the arms-control controversy. Modern forms of warfare, including guerrilla war, world war, and nuclear war. Offered: jointly with JSIS B 301.

SOC 316 Introduction to Sociological Theory (5) I&S Introduction to sociological theory. Includes classical theorists Adam Smith, Karl Marx, Emile Durkheim, and Max Weber and their influence on contemporary theoretical debate.

SOC 320 Evaluating Social Science Evidence (5) I&S, QSR A critical introduction to the methods used to collect data in social science: surveys, archival research, experiments, and participant observation. Evaluates "facts and findings" by understanding the strengths and weaknesses of the methods that produce them. Case based. Offered: jointly with CS&SS 320/STAT 320.

SOC 321 Case-Based Social Statistics I (5) I&S, QSR Introduction to statistical reasoning for social scientists. Built around cases representing in-depth investigations into the nature and content of statistical and social-science principles and practice. Hands-on approach: weekly data-analysis laboratory. Fundamental statistical topics: measurement, exploratory data analysis, probabilistic concepts, distributions, assessment of statistical evidence. Offered: jointly with CS&SS 321/STAT 321; W.

SOC 322 Case-Based Social Statistics II (5) I&S, QSR Continuation of CS&SS 321/SOC 321/STAT 321. Progresses to questions of assessing the weight of evidence and more sophisticated models including regression-based methods. Built around cases investigating the nature and content of statistical principles and practice. Hands-on approach: weekly data analysis laboratory. Prerequisite: CS&SS 321/SOC 321/STAT 321, or permission of instructor. Offered: jointly with CS&SS 322/STAT 322; Sp.

SOC 328 Methodology of Sociological Research (5-) I&S, QSR Logic of formulating, testing, and modifying hypotheses. Methods of producing social data (survey research, evaluation research, field observation) and utilizing stored data (census tapes, historical materials). Methods of quantitative data analysis techniques commonly used in

contemporary sociological analysis. Not open for credit to students who have taken SOC 320.

SOC 329 Methodology of Sociological Research (-5) I&S, QSR Logic of formulating, testing, and modifying hypotheses. Methods of producing social data (survey research, evaluation research, field observation) and utilizing stored data (census tapes, historical materials). Methods of quantitative data analysis techniques commonly used in contemporary sociological analysis. Not open for credit to students who have taken SOC 320 or SOC 323.

SOC 330 Human Ecology (5) I&S Factors and forces that determine the distribution of people and institutions.

SOC 331 Population and Society (5) I&S Population growth and distribution, population composition, population theory, urbanization. Determinants and consequences of fertility and mortality trends and migration in economically developed and underdeveloped areas.

SOC 340 Symbolic Interaction (5) I&S Examines the role of language, culture, and the symbolic environment in shaping interpersonal processes.

SOC 341 Tutoring Sociology (2-4, max. 4) Trains students to serve as tutors in designated courses. Teaches how to assist with writing assignments, explain course material, and lead group discussions. Credit/no-credit only.

SOC 344 Cognitive Social Psychology (5) I&S Cognitive structures and processes and their antecedents and consequences, both societal and individual. Reciprocal influences of social roles, social institutions, and social cognition.

SOC 345 Sects and Violence: Cults, Religious Innovation, and Social Conflict (5) I&S Examines controversial religious groups often called cults. Uses sociological lenses to examine cults' occasionally catastrophic conflicts with government authorities, established religious organizations, and anti-cult movements.

SOC 346 Group Processes (5) I&S Systematic analysis of social processes in small groups, including conformity, deviance, cooperation, competition, coalition formation, status and role differentiation, inequity, communication, and authority and power. A variety of methods of research are considered: field studies, field experiments, laboratory studies, and the simulation of social processes.

SOC 347 National Social Movements: Current Trends and Explanations (5) I&S Introduction to theory and research on a specific form of social movement: national-level collective mobilizations organized for political change. Emphasizes how political, organizational, and cultural factors shape social movement emergence and development. Focuses on American activism, New Left, women's movements, the abortion conflict, gay/lesbian activism, and Central American Peace movement.

SOC 351 Intimate Relationships (5) I&S Explores the nature of love, desire, and commitment between heterosexual and homosexual couples, as well as parenting as a dyadic act. Evaluates political and social pressures and preferences on these topics within our society in a comparative context.

SOC 352 The Family (5) I&S The family as a social institution. Historical changes and societal variation in family patterns. Changes over the life cycle. Alternative family forms.

SOC 353 The Family in Cross-Cultural Perspective (5) I&S Scott Form, content, and functions of families through case studies of different countries. Family organization, including family structure, inheritance, sexual division of labor, and socialization with attention given to life-cycle stages.

SOC 355 Social Change in Latin America (5) I&S Explores cultures, identities, political economy, and popular mobilization in Latin America. Examines relations of power and production between social classes and ethnic groups, as well as ideologies and intellectual movements. Offered: jointly with JSIS A 355.

SOC 356 Society and Politics (5) I&S Causes of political change in democratic countries, including public opinion, social movements, interest group activity, and party organization. Offered: jointly with POL S 356.

SOC 357 Sociology of Religion (5) I&S The relations between religion, polity, economy, and social structure; in particular, the political, economic, and social impact of religious beliefs and organizations, as well as the social determination of these beliefs and organizations; the rise of secularism, the rationalization of modern life, and the emergence of political quasi-religions.

SOC 360 Introduction to Social Stratification (5) I&S, DIV Social class and social inequality in American society. Status, power, authority, and unequal opportunity are examined in depth, using material from other societies to provide a comparative and historical perspective. Sociological origins of recurrent conflicts involving race, sex, poverty, and political ideology.

SOC 362 Race Relations (5) I&S Reviews social science perspectives on race and ethnicity. Explores sociological definitions and understandings associated with race and ethnicity and the construction of identities. Examines different issues that impact individuals' and groups' life chances.

SOC 363 Ethnicity, Business, Unions, and Society (5) I&S Scott Interrelationships of ethnicity, business, unions, and the larger society. Examines financial and sociological structure of business and manufacturing sector, how this sector performs, and consequences of performance for selected ethnic groups in United States. Offered: jointly with AES 361.

SOC 364 Women in the Social Structure (5) I&S Gender and social institutions; the family, politics, education, medicine, law, the labor force. Intersection of gender with other minority statuses such as race, age, socioeconomic status, and sexual orientation. Structural, ideological, and historical determinants of gender relations.

SOC 365 Urban Community (5) I&S Guest Comparative and analytic study of organization and activities of urban groups.

SOC 366 Sociology of Organizations (5) I&S Introduction to the sociological study of organizations including what organizations are, where they come from, and how they relate to individuals, other organizations, and other institutions of society.

SOC 368 Sociology of Black Americans (5) I&S Socio-cultural context of the Black person's environment and consequences of interaction with that environment.

SOC 371 Criminology (5) I&S Crutchfield, Matsuoka Survey of legal definitions, types of criminal behavior, trends and patterns, recidivism, characteristics of offenders, environmental influences, diagnostic methods, prediction, theories of crime and delinquency prevention, social policy.

SOC 372 Introduction to Criminal Justice (5) I&S Examines role of police, courts, and corrections in criminal justice. Applies sociological theories and perspectives to issues in law enforcement, adjudication, and corrections. Legislative reforms. Innovations in policy.

SOC 374 Law and Society (5) I&S Introduces major issues of the sociological foundations and implications of legal institutions; examines social life within legal institutions, the individual and collective justice, the malleability of precedent, and truth and the effects of inequality on legal outcomes. Encompasses legal practice and social science.

SOC 375 Sociology of Juvenile Justice (5) I&S Harris Overviews the United States juvenile justice system and related societal issues, including racial and ethnic disproportionality, the criminalization of delinquent offenders, and the future of the juvenile justice system.

SOC 376 Drugs and Society (5) I&S K. BECKETT, J. WENDER Explores the questions of drug use and abuse, social and political factors that shape response to their use, and the

social conditions under which drug use is likely to have adverse consequences. Also covers U.S. drug control policy, the political economy of legal and illegal drugs, and political aspects of drug use. Offered: jointly with LSJ 376.

SOC 377 The American Jewish Community (5) I&S, DIV Burstein Development and current status of American Jewish community; immigration; changes in religious practice, institutions in response to circumstances in American society; creation of new types of secular communal organizations; assimilation; confrontation with antisemitism; family life; social, economic mobility; religious, secular education; intermarriage, and future of community. Offered: jointly with JSIS C 377.

SOC 378 Contemporary Jewish American Identities (5) I&S, DIV Friedman Introduction to the debates about post-Holocaust Jewish identities in multicultural America. Explores whether a distinctive Jewish community is headed toward assimilation, experiencing revival, or merely transforming the multiple ways Jewish experience is lived. Topics include new Jewish immigrants, the new Orthodox, Black Jews, Jewish feminism, children of Holocaust survivors. Offered: jointly with JSIS C 378.

SOC 379 Environmental Sociology (5) I&S/NW S. ASAH Social processes by which environmental conditions are transformed into environmental problems; scientific claims, popularization of science, issue-framing, problem-amplification, economic opportunism, and institutional sponsorship. Examination of social constructs such as ecosystem, community, and free-market economy. Use of human ecology to assess whether the current framing of environmental problems promotes ecological adaptability. Offered: jointly with ENVIR 379/ESRM 371; A.

SOC 395 Study Abroad: Sociology (2-5, max. 15) I&S Upper-division sociology courses for which there are no direct University of Washington equivalents, taken through a University of Washington study abroad program.

SOC 399 Undergraduate Internship (2-5, max. 10) Students serve in approved internships. Credit/no-credit only.

SOC 401 Special Topics in Sociology (5, max. 15) I&S Selected topics of contemporary interest taught by a sociologist active in the field. Topics vary and may be substantive, theoretical, or methodological.

SOC 402 Sociology in Practice: Education Service Program (5, max. 10) I&S Combines an experience in tutoring with critical reflection on practical and theoretical issues in education. Gives practical classroom experience as well as insight into the complexity of public schools and issues in education policy.

SOC 403 Sociology in Practice: Applied Community Research Program (5, max. 10) I&S Participation in a project-based research group for a real-world client, addressing complex and enduring problems of urban life.

SOC 404 Sociology in Practice: Community/Civic Internship Program (5, max. 10) I&S Combines the real-world benefits of an internship with the critical reflection provided by a seminar course. Students participate in internships at local agencies and organizations, and may either come with their own internship or apply for specialized internships through the Sociology Department.

SOC 410 History of Sociological Thought (5) I&S Contributions of individual theorists (from Comte to the present); emphasis on cumulative development of concepts and principles, emergence of sociology as a science, probable future developments.

SOC 415 The City and Neighborhood Dynamics (5) I&S Focuses on a diverse set of topics including the changing social meaning of community, the effects of the urban setting on social interactions and attitudes, urban poverty, residential segregation, and the neighborhood dynamics of crime. Students have the opportunity to contribute directly to research- and policy-related projects.

SOC 416 Sociological Theory (5) I&S Theories of individual action, social order, and institutional change. Cumulative development of solutions rather than on works of given theorists. Theories of social order. How sociological treatments of these issues compare with those offered by economists and other social scientists.

SOC 420 Sociology of Food (5) I&S Provides a historical and comparative overview of what people eat and how this relates to other types of social differentiation.

SOC 430 Social Determinates of Health and Health Disparities (5) I&S, DIV Examine the social conditions related to the health of populations. How patterns of health vary by social class, race/ethnicity, and gender and some mechanisms that produce and maintain these differences.

SOC 432 Population and Modernization (3) I&S Hirschman, Lately Examines role of demographic factors in the process of social modernization and economic growth. The approach is both historical, focusing on populations of developed countries since 1700, and analytic, stressing the attempts made by different disciplines to model demographic relationships, with attention to less-developed regions. Offered: jointly with JSIS D 435.

SOC 434 Demographic Issues in Asia (3-5) I&S Hirschman, Lately Contemporary Asian countries face a number of issues with demographic components, including environmental and resource issues, ethnic rivalries, international migration, and public health. Addresses a set of these issues by focusing on the demography of one or more countries in Asia. Offered: jointly with JSIS A 431.

SOC 440 Comparative Social Problems (5) I&S Examines a variety of social problems from a comparative perspective. Issues such as epidemics, slavery, and genocide within and beyond U.S. borders analyzed with historical and contemporary examples.

SOC 445 Religious Movements: The Sociology of Cults and Sects (5) I&S Investigates the organizational dynamics of new religious movements. Seeks to understand why 'cults' emerge and how they proliferate or decay. Examines conflicts within established churches, counter-movements, and the state.

SOC 447 Social Movements (5) I&S Social movements as collective attempts to change society: why people join; characteristics of successful and unsuccessful movements; consequences of social movement activities.

SOC 450 Political Economy of Women and Family in the Third World (5) I&S Theoretical and empirical aspects of the political economy of women and the family in the Third World during the process of development, with a focus on labor. Main theoretical approaches examined and applied to case studies from Asia and Latin America. Offered: jointly with JSIS D 450.

SOC 451 Theory and Process of Social Change (5) I&S Basic trends in economic and social development; comparative and historical analysis of social and economic changes; the rise of capitalist societies.

SOC 456 Political Sociology (5) I&S Relationships between social change and political change. Focus on selected issues, including social bases of democracy, political organization, elections, and consequences of public policy.

SOC 460 Social Differentiation (5) I&S Analysis of societal organization based on sex, age, residence, occupation, community, class, caste, and race.

SOC 461 Comparative Ethnic Race Relations in the Americas (5) I&S Sketches the ethnoracial systems operating in American society. Studies these systems as systems and examines their institutional and interpersonal dynamics. Compares ethnoracial systems in order to arrive at empirical generalizations about race/ethnorelations in the Americas. Offered: jointly with AES 461.

SOC 462 Comparative Race and Ethnic Relations (5) I&S, DIV Race and ethnicity as factors of social differentiation in a number of Western and non-Western societies in Eu-

rope, Africa, Asia, and the Americas. Offered: jointly with AES 462.

SOC 463 African-American Political Thought (5) I&S Examines the historical and sociological experiences of African-Americans from slavery, emancipation, mobilization, and organization, to present socioeconomic situation. Reviews the political philosophy of black leaders from the early black conventions to today, the black experience in the American education system, and origins and evolution of the black middle class.

SOC 464 Contemporary Society in the People's Republic of China (5) I&S Lately Separate development of rural and urban social institutions in the People's Republic of China since 1949 from a sociological perspective. Family and marriage, social control, educational institutions. Dilemmas of contemporary China and reasons for institutional change. Offered: jointly with JSIS A 464.

SOC 465 Complex Organizations (5) I&S Examination of the structure of complex organizations. Attention to developing generalizations applicable to industrial organizations, businesses, hospitals, prisons, labor unions, governments, universities, armies, and similar formally instituted organizations. The major focus is on empirical research, with some attention to methodological problems in studying such organizations.

SOC 466 Economic Sociology (5) I&S Changing focus of field; cultural variation, work, and the worker; technology, society, and the evolution of industrial forms; types and forms of industrial organizations; industrial organizations as social and technical systems; issues of control, process, and change; the individual in social and technical systems.

SOC 467 Immigration and Ethnicity (5) I&S, DIV Focus on contemporary American diversity - the multiethnic, multi-cultural society created by recent immigrants from Latin America, Asia, and by people of European, African, and American Indian origins; its issues and debates, including ethnic conflict, integration, multiculturalism, and assimilation, as viewed through comparisons with the past and with other societies.

SOC 468 Sociology of Occupations and Professions (5) I&S Frameworks for study of occupations and professions; occupational structure and mobility in American society in relation to adult socialization and career development; occupational and professional associations and society.

SOC 469 Balkan Societies (5) I&S Examination of the roots of Balkan social problems (economic backwardness, minority-group conflicts, peasant problem), the failure of pre-1945 attempts to solve these problems, the post-1945 communist failures, the causes of the upheavals of 1989, and the prospects for success in the 1990s.

SOC 470 Contemporary Southeast Asia (5) I&S Sociological survey of Southeast Asia, including development, demographic changes, family structure, and ethnic relations.

SOC 472 Juvenile Delinquency (5) I&S Factors in delinquency, juvenile courts. Programs of treatment and prevention.

SOC 476 Miscarriages of Justice (5) I&S Examines legal and social factors that shape criminal case outcomes, analyzing how one type of miscarriage of justice - wrongful conviction - occurs. How can cases of wrongful conviction be explained? Why are some people, against whom there is only weak evidence, convicted-and sometimes even executed? Offered: jointly with LSJ 476.

SOC 481 Issues in Analytic Sociology (5, max. 15) I&S Examination of current issues in sociological analysis. Specific content of the course varies according to recent developments in sociology and the interests of the instructor.

SOC 482 Issues in Analytic Sociology (3, max. 9) I&S Examination of current issues in sociological analysis. Specific content of the course varies according to recent developments in sociology and the interests of the instructor.

SOC 483 Issues in Analytic Sociology (1-3, max. 9) I&S Examination of current issues in sociological analysis. Specific content of the course varies according to recent developments in sociology and the interests of the instructor.

SOC 487 Sociology of Gender and Sexuality (5) I&S Addresses the intersection of gender and sexuality in U.S. society, social institutions and movements, families, and the individual. Topics include the history of sexuality as practiced and politicized since colonial times, major theoretical approaches to sexuality, and how gender and other social status characteristics influence the meanings of sexuality.

SOC 490 The Urban Underclass (5) I&S Examines underlying issues which have led to the emergence and perpetuation of an underclass within an affluent society. Explores some of the consequences for these people and for this society. Considers policies that might be used to address problems of the urban underclass.

SOC 492 Sociology of Education (5) I&S Emphasizes the ways in which schools and colleges reproduce, reinforce, and challenge prevailing social, economic, and political relationships. Examines the structures, practices, content, and outcomes of schooling and its relationship to the wider society as well as the rise and dynamics of the modern education system.

SOC 494 Practicum (5, max. 10) I&S Exploration of selected sociological concepts or problems through advanced practical experience in research, internships, or other applications. Topics vary.

SOC 495 Honors Senior Thesis (1-5, max. 5) I&S Preparation of senior Honors thesis. Sociology majors only.

SOC 496 Honors Senior Seminar ([3/5]-) I&S Exploration of selected sociological problems with emphasis on research experience and the interpretation of data. For sociology majors only, primarily for Honors students. Offered: A.

SOC 497 Honors Senior Seminar (-[3/5]-) I&S Exploration of selected sociological problems with emphasis on research experience and the interpretation of data. For sociology majors only, primarily for Honors students. Offered: W.

SOC 499 Undergraduate Independent Study or Research (2-5, max. 10) Credit/no-credit only.

SOC 500 Teaching Sociology as a Teaching Assistant (1) Techniques of quiz section administration, advising of students, and student evaluation important to successful teaching as a Teaching Assistant. Students develop presentations and classroom materials and develop and grade student examinations. Prerequisite: admission to graduate program in sociology. Credit/no-credit only.

SOC 501 Proseminar (1-3, max. 3) Introduction for first-year graduate students to substantive areas of sociology, research and information resources, and issues in graduate education and professional socialization. Credit/no-credit only. Offered: AWSp.

SOC 502 Seminar on Teaching Sociology (3) Techniques of lecturing, leading discussion, evaluating student performance, and other pedagogical skills ancillary to successful teaching. Students develop a course and obtain videotaped feedback of presentations. Prerequisite: completion of MA.

SOC 503 Seminar on Writing Social Science (3) Techniques, skills, and strategies helpful for publishing in the social sciences. Includes writing and revision of own work and evaluation of the writing of other students. Also includes social scientific analysis of writing and other forms of academic communication. Prerequisite: completion of MA.

SOC 504 Applied Social Statistics (3-) Applications of statistics in sociology and related social sciences. Emphasis on problems of analysis with imperfect data. Probability in statistical inference. Analysis of variance; contingency

table analysis, nonparametric procedures; regression analysis in social research.

SOC 505 Applied Social Statistics (-3) Applications of statistics in sociology and related social sciences. Emphasis on problems of analysis with imperfect data. Probability in statistical inference. Analysis of variance; contingency table analysis, nonparametric procedures; regression analysis in social research.

SOC 506 Methodology: Quantitative Techniques in Sociology (3) Applied regression analysis with emphasis on interactive computer graphics techniques and interpretation. Application to typical sociological problems. Offered: jointly with CS&SS 507.

SOC 507 Statistical Classification and Measurement (3) Application of statistical principles and methods to problems of classification and measurement in social research.

SOC 508 Logic of Social Inquiry (3) Study design from problem formulation to the analysis and interpretation of data.

SOC 509 Practicum in Data Analysis (3) Introduction to selected programs for data analysis and practice in their application. Practice in coordination of research problem, data, and mode of analysis into a coherent, interrelated set. Interpretation of results. Offered: A.

SOC 510 Seminar in Sociological Theory (3) Macrosociological theories; functionalism and neoevolutionism; conflict and consensus approach; comparative strategies; models and long-range theories; ideology and sociology. From Marx and de Tocqueville to contemporary literature.

SOC 511 Classical Social Theory (3) Study of classical masters of social theory: Marx, Durkheim, and Weber, their precursors, and their immediate successors.

SOC 512 Review of Mathematics for Social Scientists (1) Reviews basic mathematical skills needed for a meaningful understanding of elementary statistics, data analysis, and social science methodology. Overview of core knowledge required for graduate courses in quantitative methods in social sciences. Topics include discrete mathematics, differential and integral calculus, review of matrix algebra, and basic probabilistic and statistical concepts. Credit/no-credit only. Offered: jointly with CS&SS 505; Sp.

SOC 513 Demography and Ecology (3) *Hirschman* Theories and research on human fertility, mortality, mobility, migration, and urbanization in social/economic context. Comparative and historical materials on Europe, the United States, and the Third World. Offered: jointly with CSDE 513.

SOC 514 Current Theories in Social Psychology (3) Broad graduate-level introduction to the theories in the field of social psychology.

SOC 515 Current Research in Social Psychology (3) *Howard* Broad graduate-level introduction to the research in the field of social psychology.

SOC 516 Organizations (3) Broad graduate-level introduction to the theory and research on complex organizations.

SOC 517 Deviance and Social Control (3) Survey of current research on deviant behavior and mechanisms of social control; definitions and forms of deviant behavior, causal analysis, and legal or other methods of social control.

SOC 518 Social Stratification (3) Intensive preparation in theoretical, methodological, and substantive topics in social stratification.

SOC 519 Fieldwork: Observation and Interviewing (3-) Perspective, logic, and techniques of qualitative social research and analysis. Nature and uses of intensive interviewing, participant observation, and analytic ethnography. Application of field research principles. Research project required in addition to reading and analysis of classic studies.

SOC 520 Fieldwork: Observation and Interviewing (-3) Logic and techniques of qualitative social research and analysis. Intensive interviewing, participant observation, qualitative data analysis (including applications of data

base technology, problem reformulation, and techniques of visual documentation). Results of student work reported and discussed in class.

SOC 524 Master's Thesis Research Seminar (1, max. 3) Facilitates the development of a thesis and its execution. Forum for refining research questions, presenting work in progress, and receiving feedback from instructor and other students on ideas and written work. Credit/no-credit only.

SOC 526 Causal Approach to Theory Building and Data Analysis (3) Theory construction and testing from a causal models perspective. Path analysis, standardized versus unstandardized measures, feedback models, identification problems, estimation in overidentified models, difference equations, differential equations, stability conditions. Multiplicative models as alternatives to additive ones. Causal approach to measurement error.

SOC 527 Measurement of Basic Sociological Concepts (3) Conceptualization and measurement problems in sociology, using major concepts as illustrations of basic issues. Causal approach to measurement to deal with problems of indirect measurement, cross-level measurement problems, aggregation and disaggregation. Consequences of crude measurement for data analyses. Prerequisite: SOC 504; recommended: SOC 506.

SOC 528 Seminar on Selected Statistical Problems in Social Research (3) *Raftery* Prerequisite: SOC 506.

SOC 529 Structural Equation Models for the Social Sciences (3) Structural equation models for the social sciences, including specification, estimation, and testing. Topics include path analysis, confirmatory factor analysis, linear models with latent variables, MIMIC models, non-recursive models, models for nested data. Emphasizes applications to substantive problems in the social sciences. Prerequisite: SOC 504, SOC 505, SOC 506 or equivalent; recommended: either CS&SS 505 and CS&SS 506, or equivalent. Offered: jointly with CS&SS 526.

SOC 530 Urbanism and Urbanization (3) *I&S* Human population distribution and migration patterns. Causes and consequences of world urbanization. Spatial and social patterns in the metropolis. Aggregate population movements and selectivity of migrants.

SOC 531 Fertility and Mortality (3) *I&S* Theories of fertility and mortality, demographic transitions, individual variations. Specific analytic approaches. Familiarity with basic fertility and mortality measures, and with the life table, is assumed.

SOC 533 Research Methods in Demography (3) *I&S* Basic measures and models used in demographic research. Sources and quality of demographic data. Rate construction, standardization, the life table, stable population models, migration models, population estimation and projection, measures of concentration and dispersion, measures of family formation and dissolution.

SOC 536 Analysis of Categorical and Count Data (3) Analysis of categorical data in the social sciences. Binary, ordered, and multinomial outcomes, event counts, and contingency tables. Focuses on maximum likelihood estimations and interpretations of results. Prerequisite: SOC 504, SOC 505, SOC 506, or equivalent; recommended: CS&SS 505 and CS&SS 506, or equivalent. Offered: jointly with CS&SS 536/STAT 536; A.

SOC 537 Modeling Emergence: Social Simulation (3) Seminar and practicum in computational modeling of social processes with emphasis on using agent-based simulation models to investigate and refine theory.

SOC 539 Selected Topics in Demography and Ecology (3, max. 9) Specialized problems in demography or ecology are covered; for example, migration, fertility, mortality, language, race and ethnic relations, metropolitan community. See quarterly announcement for specific problem to be covered.

SOC 542 Selected Topics in Group Processes (3) Theories, methodology, and studies in the area of small-group research. Prerequisite: permission of instructor for nonmajors.

SOC 543 Seminar on Group Solidarity (3) Interdisciplinary perspectives on solidarity, focusing on member commitment, group structure, and contributions to collective goals.

SOC 547 Social Cognition and Attribution (3) Theories and research on social cognition and attribution. Theoretical and methodological debates on cognition. Sociological aspects of attribution. Prerequisite: SOC 514 or equivalent.

SOC 551 Family and Gender Relations (3) Overview of major research findings on marriage, the family, and gender, including demographic trends, the place of children in society, courtship, the internal management of intimate relationships, divorce, and social policy.

SOC 553 Seminar on Gender and Sexuality (3) Research seminar considering theoretical and empirical approaches to sexuality, with particular attention to the importance of gender. Examines the social control of sexuality by the state and by families, as well as social meanings of sexuality within social movements related to various aspects of sexuality.

SOC 554 Seminar in the Sociology of Religion (3) Survey of significant and active areas of theory and research in contemporary social scientific studies of religion.

SOC 555 Methods in Macro, Comparative, and Historical Sociology (3) Systems of conducting research with qualitative methods brought to bear on broad questions.

SOC 559 Seminar on Gender Roles (3) Broad graduate-level introduction to theoretical issues concerning gender and society. Current state of empirical knowledge on the sociology of gender and strategies for research. Cross-cultural variations in conception of gender roles and how gender intersects with social institutions and social interactions.

SOC 560 Hierarchical Modeling for the Social Sciences (4) Explores ways in which data are hierarchically organized, such as voters nested within electoral districts that are in turn nested within states. Provides a basic theoretical understanding and practical knowledge of models for clustered data and a set of tools to help make accurate inferences. Prerequisite: SOC 504, SOC 505, SOC 506 or equivalent; recommended: CS&SS 505, CS&SS 506 or equivalent. Offered: jointly with CS&SS 560/STAT 560.

SOC 562 Seminar in Comparative Race Relations (3) Cross-cultural approach to race and ethnic relations, including case studies from Africa and Latin America. Prerequisite: graduate standing in social sciences.

SOC 565 Inequality: Current Trends and Explanations (3) Discussion of recent growth in economic inequality in the United States and competing explanations for these new trends through examination of labor market demographics, industrial composition and restructuring, and the broader political context that impacts policies like minimum wage, strength of unions, and foreign trade. Prerequisite: SOC 504, SOC 505, SOC 506, or equivalent; recommended: either CS&SS 505 and CS&SS 506, or equivalent. Offered: jointly with CS&SS 565.

SOC 566 Seminar in Complex Organizations (3) Special topic seminars in the field of complex organizations or industrial sociology.

SOC 567 Seminar in Complex Organizations (3) Special topic seminars in the field of complex organizations or industrial sociology.

SOC 568 Social Mobility (3) Description and measurement of social mobility. Determinants of mobility and cross-national comparisons. Consequences of mobility for social behaviors. Emphasizes movement from the socioeconomic position of family of origin to adult position. Prerequisite: SOC 518.

SOC 569 Demographic Studies of Stratification (3) Overview of development of models of socioeconomic achievement ("status attainment" paradigm) in the field of stratification. Begins with work of Blau and Duncan. Covers elaboration of basic models to include race and ethnicity, social psychological variables, class, school and labor market effects, and other structural variables. Prerequisite: SOC 513, SOC 518.

SOC 570 Seminar in Environmental Sociology (3) Offered: jointly with SEFS 570.

SOC 574 Seminar in Methods of Criminological Research (3) Provides training in the technical analysis of published research in criminology; designs and processes studies in parole prediction, prediction of prison adjustment, and prediction of treatment effect.

SOC 575 Social Movements: Politics and Organization (3) Theoretical perspectives and research on the dynamics of national social movements from a macrosociological perspective. Introduces dominant models that stress organizational and political processes, with some examination of approaches that consider the intersection of politics, organization, and culture. Emphasis on the United States.

SOC 581 Special Topics in Theory and the History of Sociological Thought (3, max. 9) Examination of current topics in theory and the history of sociological thought. Content varies according to recent developments in the field and the interests of the instructor.

SOC 582 Special Topics in Research Methods and Statistical Analysis in Sociology (3, max. 9) Examination of current topics in research methods and statistical analysis in sociology. Content varies according to recent developments in the field and the interests of the instructor.

SOC 583 Special Topics in Demography and Ecology (3, max. 9) Examination of current topics in demography and ecology. Content varies according to recent developments in the field and the interests of the instructor.

SOC 584 Special Topics in Social Psychology (3, max. 9) Examination of current substantive topics in social psychology. Content varies according to recent developments in the field and the interests of the instructor.

SOC 585 Special Topics in Marriage and Family (3, max. 9) Examination of current substantive topics in marriage and the family. Content varies according to recent developments in the field and the interests of the instructor.

SOC 586 Special Topics in Organization and Industrial Sociology (3, max. 9) Examination of current substantive topics in organizational and industrial sociology. Content varies according to recent developments in the field and the interests of the instructor.

SOC 587 Special Topics in Deviance and Social Control (1-3, max. 9) Examination of current substantive topics in deviance and social control. Content varies according to recent developments in the field and the interests of the instructor.

SOC 588 Special Topics in Stratification and Race Relations (3, max. 9) Examination of current substantive topics in stratification and race relations. Content varies according to recent developments in the field and the interests of the instructor.

SOC 589 Special Topics in Macrosociology (3, max. 9) Examination of current substantive topics in macrosociology. Content varies according to recent developments in the field and the interests of the instructor.

SOC 590 Special Topics in Sociology (1-3, max. 21) Examination of current substantive topics in sociology. Content varies according to recent developments in the field and the interests of the instructor. Topics covered in courses with this number lie outside those covered by other special topics courses numbered SOC 581 through SOC 589.

SOC 591 Political Sociology (3) Introduction to political sociology, considering the rise of the modern state, power,

political organization, social movements, and other related topics.

SOC 597 Field Seminar in States, Markets, and Societies (5) Hamilton, R. Pekkanen, Radnitz Exposes students to theoretical and empirical debates about engagement of states with their societies and with transnational actors in their historical, political, and social settings. Topics include state formation, social change, development, state-market relations, globalization, identities, ethnicities, gender, revolutions, democratization, corruption, clientalism, civil societies, NGOs, and social movements. Offered: jointly with JSIS 597.

SOC 600 Independent Study or Research (*-) Credit/no-credit only.

SOC 700 Master's Thesis (*-) Credit/no-credit only.

SOC 800 Doctoral Dissertation (*-) Credit/no-credit only.

Speech and Hearing Sciences

210 Eagleson Hall

Speech and hearing sciences concern the processes and disorders of human communication and swallowing. This includes the study of normal typical and atypical hearing, speech, and language, cognitive-communication, and swallowing development, anatomy and physiology of speech, hearing, and swallowing, speech acoustics, speech physiology and perception, hearing, the nature of language, speech, cognitive-communication, swallowing, and hearing disorders in children and adults, social and cultural aspects of communication disorders, and the clinical processes involved in identification, prevention, and remediation of those disorders.

UNDERGRADUATE PROGRAM

Adviser

210 Eagleson, Box 354875

(206) 685-7403

shugadv@uw.edu

The Department of Speech and Hearing Sciences offers the following program of study:

- The Bachelor of Science degree with a major in speech and hearing sciences
- An accelerated, fee-based, Bachelor of Science degree with a major in speech and hearing sciences for candidates with an existing bachelor's degree.

Bachelor of Science

Suggested First and Second-Year College Courses: introductory course in anthropology, public health, psychology, or sociology; introductory biological science course – BIOL 118 recommended; introductory course in physics or chemistry – PHYS 107, PHYS 110, or CHEM 110 recommended; statistics course – STAT 220 or EDPSY 490 recommended.

Department Admission Requirements

Admission is competitive. The admissions committee reviews all applicants based on the following criteria: GPA (minimum 2.50 overall GPA guarantees consideration but not admission); personal statement reflecting an interest in and commitment to speech and hearing sciences; other evidence of a commitment to becoming a speech and hearing sciences major. Students may apply any time after they have earned 60 credits. The application deadline for current UW students is Monday of the third week of the

quarter for admission the next quarter; transfer students may apply to the department (if they are at or near junior standing) and to the University concurrently. Admission is for autumn, winter, or spring quarter. Only students admitted to the UW are eligible for admission to the major. Applicants are notified of the department's decision within four weeks. Applications and additional information are available outside 210 Eagleson and on the department's website.

Students who meet admission requirements are eligible for one of two options:

1. *Option 1, General Academic*, is intended to provide broad perspectives of the discipline, but not to prepare students specifically for careers in clinical speech-language pathology and audiology. It is appropriate for students with interests in education, healthcare, and communication.
2. *Option 2, Speech and Hearing Sciences and Disorders*, is intended for students interested in graduate study in speech and hearing sciences and clinical speech-language pathology and audiology. (Note that graduate study is required for the professional practice a speech-language pathologist and audiologist.)

Major Requirements

Core Requirements for Both Options: 33 credits in the following courses: SPHSC 250, SPHSC 261, SPHSC 302, SPHSC 303, SPHSC 304, SPHSC 320, SPHSC 371, SPHSC 461. A minimum 3.00 cumulative GPA is required in core courses for students following Option 2.

Option 1, General Academic: 67-75 credits as follows:

1. Core requirements listed above (33 credits)
2. 22 credits from the following: SPHSC 305, SPHSC 308, SPHSC 405, SPHSC 406, SPHSC 425, SPHSC 445, SPHSC 462, SPHSC 499 (6 credits maximum)
3. An approved 3-5 credit college-level human- or animal-based biological science, anatomy and physiology, neuroanatomy and neurophysiology, human genetics, or veterinary science course. See adviser for approved list. Laboratory component not required.
4. An approved 3-5 credit college-level psychology, sociology, anthropology, or public health course. See adviser for approved list.
5. An approved 3-5 credit college-level chemistry or physics course. See adviser for approved list.

Option 2, Speech and Hearing Sciences and Disorders: 77-85 credits as follows:

1. Core requirements listed above (33 credits)
2. SPHSC 305, SPHSC 308, SPHSC 405, SPHSC 406, SPHSC 425, SPHSC 445, SPHSC 471, SPHSC 481 (32 credits)
3. An approved 3-5 credit college-level statistics course. See adviser for approved list.
4. An approved 3-5 credit college-level psychology, sociology, anthropology, or public health course. See adviser for approved list.
5. An approved 3-5 credit college-level chemistry or physics course. See adviser for approved list. Laboratory component not required.

Post-Baccalaureate Program

The fee-based postbaccalaureate program is designed for individuals who already have a bachelor's degree or an advanced degree in a discipline other than speech and hearing sciences and wish to obtain the necessary academic background to apply directly to a graduate program. This is an intensive program designed to take five quarters with a mandatory summer start. Postbaccalaureate students have matriculated status as they are working toward a second bachelor's degree in preparation for graduate school.

Admissions Requirements

Postbaccalaureate program admission is based on multiple factors: the overall academic record from the first bachelor's or advanced degree, the personal statement, the letters of recommendation and the perceived commitment to speech, language, and hearing sciences.

Applying to the postbaccalaureate program is a two-part process. The applicant is responsible for ensuring both the UW Office of Admissions and the SPHSC Department receive the application materials by the deadline of February 15. Incomplete applications are not processed. Admission to SPHSC is contingent upon admission to UW. See the program website for details on the two-part admission process.

1. Bachelor's degree or advanced degree outside the area of speech and hearing sciences
2. Statement of purpose
3. All college-level transcripts
4. Three letters of recommendation must be sent to the department. The SPHSC recommendation form is available on the department website, depts.washington.edu/sphsc/. However, a letter is acceptable in lieu of the recommendation form. Students should read and fill out the top section of the recommendation form before giving it to the evaluator.

Degree Requirements

Minimum 65 credits as follows:

1. Summer, 15 credits: SPHSC 250, SPHSC 371, SPHSC 308, SPHSC 261
2. Autumn, 13 credits: SPHSC 303, SPHSC 305, SPHSC 471
3. Winter, 14 credits: SPHSC 302, SPHSC 405, SPHSC 425, SPHSC 481
4. Spring, 15 credits: SPHSC 304, SPHSC 320, SPHSC 461
5. Summer, 8 credits: SPHSC 406, SPHSC 445, SPHSC 449

In addition, the American Speech-Language-Hearing Association (ASHA) requires the following four course requirements for anyone seeking certification in speech-language pathology and audiology. The courses must be taken outside the Speech and Hearing Sciences Department. Courses can be any number of credits and can be taken for a grade or satisfactory/not satisfactory. If students need to complete these courses prior to graduate school, they can be added to the postbaccalaureate program.

1. Statistics course
2. Biological science course (biology, anatomy & physiology, neuroanatomy & neurophysiology, human genetics, or veterinary science)
3. Physical science course (physics or chemistry)
4. Social or behavioral science course (psychology, sociology, anthropology, or public health)

Student Outcomes and Opportunities

- **Learning Objectives and Expected Outcomes:** The graduate (1) has knowledge of the following: mechanisms involved in speech, language, and hearing; societal implications of language differences and of disorders of speech, language, and hearing; opportunities in, and requirements for, careers available to those in the speech and hearing sciences; (2) understands the following: normal acquisition of speech and language; the etiology and nature of communication disorders across the lifespan; principles and procedures for diagnosis and treatment of speech, language, and hearing disorders; the manner in which context (specifically, situation, social/interpersonal, and culture context) influences communication and disorders; social-cultural aspects of communication development and disorders; (3) has

the following abilities: to analyze language in terms of its auditory, phonetic, phonological, morphological, and syntactic properties; to utilize strategies for solving scientific problems; to read and understand relevant literature; (4) have experience with a research project

- **Instructional and Research Facilities:** Classrooms, research laboratories, computer laboratory, and clinic located in the department and in nearby campus buildings.
- **Honors Options Available:** With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- **Research, Internships, and Service Learning:** Faculty welcome undergraduate students into their research labs, offering independent study research opportunities (SPHSC 499), in addition to mentored, year-long honors research projects (SPHSC 498). No formal internship programs offered. See adviser for community-based service learning and internship opportunities.
- **Department Scholarships:** None offered
- **Student Organizations/Associations:** The National Student Speech Language Hearing Association (NSSLHA) UW chapter, 153 Eagleson Hall.

GRADUATE PROGRAM

Graduate Student Services

Eagleson Hall, Box 354875

(206) 685-7402

shgrad@uw.edu

The Department of Speech and Hearing Sciences offers four graduate degree programs that equip students to do research, teach at the college and university level, and provide clinical services to the communicatively impaired.

- The Master of Science in Speech-Language Pathology (MS SLP)
- The Master of Science in Medical Speech-Language Pathology (MS MedSLP)
- The Doctor of Audiology (AuD)
- The Doctor of Philosophy (PhD)

At the Master of Science and Doctor of Audiology level, the specific focus is on the evidence-based clinical procedures involved in the identification, prevention, and remediation of communication disorders. Students granted these degrees meet all the requirements of the Certificate of Clinical Competence (CCC) granted by the American Speech-Language-Hearing Association (ASHA), which is the professional, scientific and credentialing organization for speech-language pathology and audiology professionals.

At the Doctor of Philosophy level, the program consists of a wide range of coursework and seminars providing opportunities for the development of scholarly and professional competence in various areas of specialization: speech and language acquisition, phonetics, speech production, hearing, hearing development, psychoacoustics, physiological acoustics, speech perception, and assessment and treatment of human communication disorders related to language, speech, and hearing.

To complement departmental curricula in various specialization areas, close interdisciplinary relationships are maintained with other University departments and off-campus centers.

Master of Science in Speech-Language Pathology (MS SLP)

Entrance to the program is for autumn quarter only. The department does not accept transfer students, Graduate

non-matriculated (GNM) applicants, or applicants interested in a non-clinical master's degree.

Admission Requirements

1. Complete UW Graduate School between September 15th and by February 1st. Applicants must submit by February 1st:
 - a. Department's supplemental application
 - b. Unofficial transcripts for all schools attended
 - c. GRE scores earned within the last five years
 - d. Three letters of recommendation
 - e. Personal statement
2. A minimum 3.00 GPA during the last 90 quarter credit hours of study (60 semester)
3. Demonstrated English language proficiency as outlined by the UW Graduate School
4. Bachelor's degree from a regionally accredited institution with a major in speech and hearing sciences (communication disorders, communication sciences and disorders, or a similarly named major) or in another major with sufficient undergraduate coursework in speech and hearing sciences (communication disorders, communication sciences and disorders, or a similarly named program)
5. Completed prerequisite undergraduate coursework as dictated by the American Speech-Language-Hearing Association's (ASHA) accreditation standards and guidelines.
 - a. Speech and hearing sciences coursework across these areas of knowledge:
 - i. Linguistics
 - ii. Phonetics/language science
 - iii. Anatomy and physiology of the speech mechanism
 - iv. Speech and language acquisition/development
 - v. Speech and language disorders
 - vi. Hearing science/nature of sound
 - vii. The hearing mechanism
 - viii. Hearing disorders
 - ix. Audiometry
 - x. Aural rehabilitation/management of hearing loss
 - xi. Social cultural aspects of communication
 - xii. Principles of assessment
 - xiii. Principles of treatment
 - b. Basic science and statistics coursework. Applicants must have completed a minimum of one course in each of the following areas:
 - i. Statistics course
 - ii. Biological science course (biology, anatomy & physiology, neuroanatomy & neurophysiology, human genetics, or veterinary science)
 - iii. Physical science course (physics or chemistry)
 - iv. Social or behavioral science course (psychology, sociology, anthropology, or public health)
 - c. Minimum 25 documented, clinical observation hours within the scope of practice of speech-language pathology. Observations must be under the direction of an ASHA certified speech-language pathologist.

Degree Requirements

Minimum 102 credits for Adult emphasis path: 57 didactic, 41 clinical, and 4 emphasis path:

Minimum 107 credits for Pediatric emphasis path: 57 didactic, 41 clinical, and 9 emphasis path:

1. *Didactic*, 57 credits as follows for all students:

- a. SPHSC 500, SPHSC 501, SPHSC 506, SPHSC 529, SPHSC 531, SPHSC 532, SPHSC 533, SPHSC 534, SPHSC 535, SPHSC 536, SPHSC 537, SPHSC 538, SPHSC 539, SPHSC 540, SPHSC 565
 - b. Completion of one of two emphasis paths focused on either adult or pediatric practice:
 - i. *Pediatric Emphasis Path*: Minimum of four didactic courses (9 credits): SPHSC 526, SPHSC 543, SPHSC 550, and one out-of-department elective course of choice
 - ii. *Adult Emphasis Path* requires a minimum of three didactic courses (4 credits): Choice of SPHSC 545, SPHSC 546, SPHSC 541 or SPHSC 548, and two out-of-department elective courses of choice
 - c. *Additional Program Requirements*: Minimum 36 credits of non-practicum graduate work at the 400 level or above. Minimum 18 of the 36 quarter credits in courses numbered 500 and above. No more than 9 credits of courses 500 level and above can be thesis credits. Satisfactory completion of all didactic and practicum requirements detailed above. Satisfactory completion of written thesis and oral defense of the thesis. Minimum 9 quarter credits of thesis (SPHSC 700) for students taking thesis option. Students completing the thesis must take a course in statistics at the 400 level or above.
 - d. Students also satisfactorily complete requirements for the Certificate of Clinical Competence of the American Speech-Language-Hearing Association by registering for the required coursework and practica, pre-internship and internship credits.
2. *Clinical*, 41 credits as follows for all students:
- a. Minimum 41 credits of clinical practicum coursework from the following: SPHSC 591, SPHSC 551, SPHSC 552, SPHSC 555, either SPHSC 601 or SPHSC 602
 - b. Minimum 375 clock hours of supervised clinical experience in the practice of speech-language pathology
 - c. The clinical practicum coursework requirements include completion of a pre-internship and a culminating full-time internship in a community-based clinical facility.
3. *Thesis Coursework (optional)*: Minimum 9 credits of SPHSC 700 required for anyone choosing to pursue a master's thesis. Students must also successfully complete a written document and oral defense of their thesis.
4. *Additional Degree Requirements*: 36 credits of non-clinical practicum graduate work at the 400 level or above. Minimum 18 of the 36 quarter credits in courses numbered 500 and above. No more than 9 credits of courses 500 level and above can be thesis credits. Satisfactory completion of all didactic and practicum requirements detailed above. Students also satisfactorily complete the requirements for the Certificate of Clinical Competence (CCC) of the American Speech-Language-Hearing Association by registering for the required coursework and practica, pre-internship and internship credits.
- b. Unofficial transcripts for all schools attended
 - c. GRE scores earned within the last five years
 - d. Three letters of recommendation
 - e. Personal statement
2. Minimum 3.00 GPA for the last 90 quarter credit hours of study (60 semester)
3. Demonstrated English language proficiency as outlined by the UW Graduate School
4. Bachelor's degree from a regionally accredited institution with a major in speech and hearing sciences (communication disorders, communication sciences and disorders, or a similarly named major) or in another major with sufficient undergraduate coursework in speech and hearing sciences (communication disorders, communication sciences and disorders, or a similarly named program)
5. Completed prerequisite undergraduate coursework as dictated by the American Speech-Language-Hearing Association's (ASHA) accreditation standards and guidelines.
- a. Speech and hearing sciences coursework across these areas of knowledge:
 - i. Linguistics
 - ii. Phonetics/language science
 - iii. Anatomy and physiology of the speech mechanism
 - iv. Speech and language acquisition/development
 - v. Speech and language disorders
 - vi. Hearing science/nature of sound
 - vii. The hearing mechanism
 - viii. Hearing disorders
 - ix. Audiometry
 - x. Aural rehabilitation/management of hearing loss
 - xi. Social cultural aspects of communication
 - xii. Principles of assessment
 - xiii. Principles of treatment
 - b. Basic science and mathematics coursework. Applicants must have completed a minimum of one course in each of the following areas:
 - i. Statistics course
 - ii. Biological science course (biology, anatomy & physiology, neuroanatomy & neurophysiology, human genetics, or veterinary science)
 - iii. Physical science course (physics or chemistry)
 - iv. Social or behavioral science course (psychology, sociology, anthropology, or public health)
 - c. Minimum 25 documented, clinical observation hours within the scope of practice of speech-language pathology. Observations must be under the direction of an ASHA certified speech-language pathologist.

Degree Requirements

Minimum 114 credits; 72 didactic and 42 clinical

1. *Didactic*, 72 credits as follows: SPHSC 500, SPHSC 501, SPHSC 506, SPHSC 507, SPHSC 529, SPHSC 531, SPHSC 532, SPHSC 533, SPHSC 534, SPHSC 535, SPHSC 536, SPHSC 537, SPHSC 538, SPHSC 539, SPHSC 540, SPHSC 541, SPHSC 543, SPHSC 545, SPHSC 546, SPHSC 548, SPHSC 549, SPHSC 565.
2. *Clinical*, 42 credits as follows:
 - a. 42 credits of SPHSC 553 and SPHSC 554
 - b. Minimum of 375 clock hours of supervised clinical experience in the practice of speech-language pathology.
 - c. The clinical practicum coursework requirements include completion of a pre-internship and a culminating

ing full-time internship in a community-based clinical facility.

3. *Thesis Coursework (optional)*: Minimum 9 credits of SPHSC 700 required for anyone choosing to pursue a master's thesis. Students must also successfully complete a written document and oral defense of their thesis.
4. *Additional Degree Requirements*: 36 credits of non-clinical graduate work at the 400 level or above. Minimum 18 of the 36 quarter credits in courses numbered 500 and above. No more than 9 credits of courses 500 level and above can be thesis credits. Satisfactory completion of all didactic and practicum requirements detailed above. Students also satisfactorily complete the requirements for the Certificate of Clinical Competence (CCC) of the American Speech-Language-Hearing Association by registering for the required coursework and practica credits.

Doctor of Audiology

Entrance to the program is for autumn quarter only. The department does not accept transfer students, Graduate non-matriculated (GNM) applicants, or applicants interested in a non-clinical AuD degree.

Admission Requirements

1. Complete UW Graduate School Application between September 15th and February 1st. Applicants must submit by February 1st:
 - a. Departmental's supplemental application
 - b. Unofficial Transcripts for all schools attended
 - c. GRE scores earned within the last five years
 - d. Three letters of recommendation
 - e. Personal statement
2. Minimum 3.00 GPA for the last 90 quarter credit hours of study (60 semester)
3. Demonstrated English language proficiency as outlined by the UW Graduate School
4. Bachelor's degree from a regionally accredited institution
5. *Undergraduate Coursework*: Foundational coursework in speech and hearing sciences, as well as the principles of biological science, physical science, social/behavioral science, and basic math or statistics. All foundational coursework is required for the graduate degree and clinical certification in audiology as dictated by the American Speech-Language-Hearing Association's (ASHA) accreditation standards and guidelines. The department encourages, but does not require, students to complete this foundation coursework prior to starting graduate study.
 - a. Basic science and math coursework. Graduates of any Doctor of Audiology program must complete a minimum of one undergraduate course in each of the following areas in order to be eligible for ASHA certification. See advisor for list of acceptable courses.
 - i. Statistics course
 - ii. Biological science course (biology, anatomy & physiology, neuroanatomy & neurophysiology, human genetics, or veterinary science)
 - iii. Physical science course (physics or chemistry)
 - iv. Social or behavioral science course (psychology, sociology, anthropology, or public health)
 - b. Speech and Hearing Sciences coursework. Graduates of the Doctor of Audiology program must also complete undergraduate coursework that covers the following foundational areas in order to be eligible for ASHA certification:
 - i. Normal development of speech and language

Master of Science in Medical Speech-Language Pathology (MS MedSLP)

Entrance to the program is for autumn quarter only. The department does not accept transfer students, Graduate non-matriculated (GNM) applicants, or applicants interested in a non-clinical MS degree.

Admission Requirements

1. Complete UW Graduate School Application between September 15th and February 1. Applicants must submit by February 1st:
 - a. Department's supplemental application

- ii. Language and speech disorders across the life span
- c. If not completed prior to graduate study, students take one or more of the following speech and language courses during their graduate program: SPHSC 250, SPHSC 304, SPHSC 305, SPHSC 425

Degree Requirements

Minimum 193 credits: 81 didactic, 8 elective, 92 clinical, and 12 capstone as follows:

1. *Didactic*, minimum 81 credits as follows:
 - a. SPHSC 462, SPHSC 503, SPHSC 504, SPHSC 509, SPHSC 521, SPHSC 522, SPHSC 523, SPHSC 542, SPHSC 570, SPHSC 571, SPHSC 572, SPHSC 574, SPHSC 575, SPHSC 576, SPHSC 577, SPHSC 579, SPHSC 580, SPHSC 581, SPHSC 582, SPHSC 583, SPHSC 584, SPHSC 585, SPHSC 586, SPHSC 588, SPHSC 592, SPHSC 593.
 - b. Elective minimum 8 credits as follows: Students are required to take elective coursework that meet the following requirements: (a) 300/400 levels courses are preferred and should taken for a grade (or Satisfactory/Nonsatisfactory), (b) 100/200 level courses approved based on content but must be taken for a grade, (c) elective courses must be a minimum of 2 credits with the exception of SPHSC 563 or permission must be granted from the AuD Graduate Program Advisor, and (d) total elective credits must equal 8 credits by graduation.
2. *Clinical*, minimum 92 credits as follows:
 - a. 2 credits of SPHSC 552
 - b. 50 credits of SPHSC 591
 - c. 40 credits of SPHSC 601
 - d. *Year 4 (30 credits)*: SPHSC 601 (10 credits) for three quarters
3. *Practice Doctorate/Capstone Research Coursework*:
 - a. Minimum 12 credits of SPHSC 801.
 - b. A course in statistics at the 400 level or above (e.g., EDPHY 490).
 - c. Complete a written document and oral defense of their research.
4. *Comprehensive Examinations*: Three comprehensive examinations including two clinical comprehensive examinations (examination one is autumn quarter of year one and examination two is winter quarter of year two). A written comprehensive examination in Winter quarter of year three. Students may retake each comprehensive examination only once.
5. *Additional Degree Requirements*: 36 credits of non-clinical graduate work at the 400 level or above. Minimum 18 of the 36 quarter credits in courses numbered 500 and above. No more than 12 credits of courses 500 level and above can be capstone research credits. Satisfactory completion of all didactic and practicum requirements detailed above. Students also satisfactorily complete the requirements for the Certificate of Clinical Competence (CCC) of the American Speech-Language-Hearing Association by registering for the required coursework and practica credits.

Doctor of Philosophy

Entrance to the program is for summer or autumn quarters only. The department does not accept Graduate Non-matriculated (GNM) applicants.

Admission Requirements

1. Identify and contact a faculty mentor from within the Department of Speech and Hearing Sciences who agrees to support the student's application to the PhD program.

2. Complete UW Graduate School Application between September 15th and February 15. Applicants must submit by February 15th:
 - a. Unofficial transcripts for all schools attended
 - b. GRE scores earned within the last 5 years
 - c. Three letters of recommendation
 - d. Statement of Purpose
 - e. Writing sample or paper
 - f. Department's supplemental application

3. Minimum 3.00 GPA for the last 90 quarter credit hours of study (60 semester)
4. Demonstrated English language proficiency as outlined by the UW Graduate School
5. Bachelor's or master's degree from a regionally accredited institution, depending upon area of interest

Degree Requirements

Minimum 90 credits including: 36 credits of graduate work at the 400 level or above and a minimum 18 of the 36 quarter credits in courses numbered 500 and above.

Academic Coursework: The curriculum for a student in the PhD program is planned on an individual basis in consultation with the student's faculty mentor and committee. Students may concentrate in basic and applied research. Courses, seminars, laboratory experiences, and assistantships are selected to provide preparation for careers in research and university or college teaching.

Although each student's academic plan is customized, every student is required to complete the following courses:

1. Three-quarter introductory level doctoral course sequence in speech, hearing, and language science and disorders (SPHSC 560, SPHSC 561, and SPHSC 562)
2. Research Methods course (SPHSC 504, SPHSC 506, or approved alternative)
3. Minimum four statistics courses (chosen in consultation with advisory committee)
4. Grant-writing course (SPHSC 568)
5. Research seminar (SPHSC 567; registration required autumn, winter and spring quarters, throughout the degree program)

Students entering the program with a degree in a field other than speech and hearing sciences are also expected to complete undergraduate courses in speech science, language science, and hearing science, and one course in the area of communication disorders, to obtain a basic understanding of the discipline. Courses that may be used to meet this requirement are: SPHSC 303, SPHSC 305, SPHSC 320, SPHSC 371, SPHSC 425, and SPHSC 461.

Research Coursework: All students are expected to conduct supervised research by the end of their first year. Students must register for SPHSC 600 to document their research activity. In addition, students complete:

1. A pre-dissertation research project (PDP)
2. Written and oral general examination
3. Written dissertation based on independent research (minimum 27 credits of SPHSC 800, over 3 quarters) with an oral defense

Teaching Experience: Students pursuing an academic career complete a customized teaching experience plan with their advisory committee. Students also enroll in:

1. Instructional Development Forum (SPHSC 563)
2. Teaching Practicum (SPHSC 564)

Financial Aid

PhD students in the Department of Speech and Hearing Sciences are guaranteed financial support as teaching or research assistants: —“graduate service appointees” — during the academic year, as long as they make adequate

progress in the program with an established mentor. In addition, the department has traineeships/fellowships supported by the National Institutes of Health on a competitive basis. Students are strongly encouraged to apply to the National Institutes of Health or other funding agencies for individual fellowships to support dissertation work. Summer support can also generally be arranged, although it is not guaranteed.

Research Facilities

The department's research laboratories, as well as those of the Virginia Merrill Bloedel Hearing Research Center, the Institute for Learning and Brain Sciences, contain sophisticated equipment for the collection and analysis of data related to the study of human communication and its disorders. The University Speech and Hearing Clinic and the Center on Human Development and Disability also provide laboratories to support basic and applied research in speech, language and hearing development and disorders, across the life span.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

SPHSC 100 Voice and Articulation Improvement (3) VLPA

For native speakers of English only. Voice production and the sound system of standard American speech. Speech standards, regional and social dialects, voice quality and basic language-oriented characteristics. Practice for improving speech style. May not be repeated. Offered: AWSpS.

SPHSC 111 The American English Sound System (2, max. 4)

For non-native speakers of English only. Speech sounds of American English. Practice in listening and using American speech sounds and intonation patterns. Credit/no-credit only. Offered: AWSpS.

SPHSC 250 Human Communication and Its Disorders (5)

I&S/NW Overview of normal and impaired human communication, including speech, language, and hearing disorders. Required for majors; open to nonmajors. Offered: S.

SPHSC 261 The Nature of Sound (4) NW

Fundamental principles of sound and vibration with emphasis on examples relevant to the speech and hearing systems. Required for majors; open to nonmajors. Recommended: MATH 120; PHYS 114. Offered: WS.

SPHSC 302 Phonetics (3) VLPA

Introduction to the description and classification of speech sounds with a focus on American English. Phonetic analysis of segmental and suprasegmental properties of speech. Practice using the International Phonetic Alphabet to transcribe normal and disordered speech patterns. Required for majors; open to nonmajors. Prerequisite: either SPHSC 303, LING 200, or LING 400. Offered: W.

SPHSC 303 Language Science (3) VLPA

J. THORNE Introduction to techniques of linguistic analysis used in the study of phonology, morphology, syntax, semantics, and pragmatics. Required for majors; open to nonmajors. Offered: A.

SPHSC 304 Developmental Aspects of Communication (5)

I&S T. COGGINS Patterns of communicative development in English speaking children and adolescents. Introduction to the study of language and communication from a developmental perspective. Application to children with various types of communication impairments. Required for majors; open to nonmajors. Prerequisite: either SPHSC 303, ANTH 203, LING 200, or LING 400. Offered: Sp.

SPHSC 305 Speech and Language Disorders (5) NW

Etiology and nature of developmental and acquired communication disorders across the lifespan. Behavioral characteristics of language delay and disorders, developmental

apraxia of speech, phonological disorders, stuttering, acquired aphasia, apraxia of speech and dysarthria, craniofacial anomalies, and voice disorders. Required for majors; open to nonmajors. Prerequisite: SPHSC 302; SPHSC 304; SPHSC 320. Offered: A.

SPHSC 308 Social-Cultural Aspects of Communication (3) I&S P. DOWDEN Introduction to human communication in context. Exploration of ways communication is influenced by context, including situational, social/interpersonal, and cultural variables. Studies systems and cultural practices as they influence communication. Required for majors; open to nonmajors. Offered: WS.

SPHSC 320 Anatomy and Physiology of Speech (5) NW M. BURNS Anatomy and physiology of the speech and swallowing mechanism, including the respiratory, phonatory, and resonatory systems and the neural control. Examples and laboratory work are directed toward clinical issues in speech-language pathology. Required for majors; open to nonmajors. Offered: Sp.

SPHSC 371 Hearing Disorders (3) I&S/NW K. TREMBLAY Introduction to abnormal hearing. Pathologies of the ear and their treatments. Audiometric correlates, communicative and social consequences of hearing loss. Overview of management of children and adults. Required for majors; open to nonmajors. Offered: AS.

SPHSC 405 Diagnosis of Speech and Language Disorders (3) NW J. THORNE Principles and procedures for the diagnosis of speech and language disorders. Required for majors. Prerequisite: SPHSC 305. Offered: W.

SPHSC 406 Treatment of Speech and Language Disorders (4) NW C. BAYLOR Principles and procedures for planning, implementing, and evaluating treatment for speech and language disorders. Required for majors. Prerequisite: SPHSC 405. Offered: SpS.

SPHSC 411 Perceptual Development (5) I&S/NW Meltzoff Origins and development of perception in human infancy. Object, face, and speech perception; cross-modal relations between touch, vision, audition. Prerequisite: minimum 2.0 grade in either PSYCH 206, PSYCH 306, or PSYCH 414. Offered: jointly with PSYCH 411.

SPHSC 425 Speech, Language, Hearing, and the Brain (4) I&S/NW Addresses the neural bases of topics in speech, language, and hearing with an emphasis on the normal aspects of central nervous system anatomy, physiology, and function. Gives attention to issues relevant to understanding disordered systems and to points of contemporary debate among neuroscientists. May not be repeated. Offered: W.

SPHSC 445 Models of Speech Processing (3) NW Examines models and basic issues concerning how spoken language is processed. Presents current issues, theories, and research relative to the levels of processing entailed in producing and comprehending speech. Required for majors; open to nonmajors. Recommended: SPHSC 302; SPHSC 303; SPHSC 320; SPHSC 425.

SPHSC 449 Special Studies in Speech Pathology and Audiology (*, max. 30) M. BURNS Selected special problems in speech pathology and audiology. Offered: S.

SPHSC 461 Introduction to Hearing Science (5) NW L. WERNER Basic aspects of hearing and the ear and auditory nervous system. How the auditory system constructs an image of the acoustic environment. How attention and memory influence hearing. Effects of damage to the auditory system. Prerequisite: either SPHSC 261 or PSYCH 333. Offered: Sp.

SPHSC 462 Hearing Development (3) NW L. WERNER Description of the changes that occur in human hearing during development. Consideration of the possible explanations for early immaturity. Prerequisite: SPHSC 461; may not be repeated. Offered: A, odd years.

SPHSC 471 Basic Audiometry (5) NW R. FOLSOM Theory and practice of the assessment of hearing function, includ-

ing standard pure-tone audiometry, speech audiometry, and basic impedance audiometry. Required for majors. Prerequisite: SPHSC 371; SPHSC 461; may not be repeated. Offered: A.

SPHSC 481 Management of Hearing Loss (4) NW J. SULLIVAN Introduction to methods of communicative rehabilitation of person with hearing loss. Remediation principles of auditory and visual perception, amplification, communication strategies, and information counseling. Required for majors. Prerequisite: SPHSC 471; may not be repeated. Offered: W.

SPHSC 491 Audiology Practicum in Schools (2) R. FOLSOM Special projects in clinical audiology practicum, offered only in the school setting. Provides an opportunity for students to extend audiology practicum experiences into the school environment. Prerequisite: SPHSC 371. Credit/no-credit only. Offered: AS.

SPHSC 498 Undergraduate Honors Research ([1-5]-, max. 15) Faculty supervised, undergraduate Honors research project. Includes design and implementation, culminating in written thesis and oral presentation. SPHSC Honors Program students only. Offered: AWSpS.

SPHSC 499 Undergraduate Research ([1-5]-, max. 15) Offered: AWSpS.

SPHSC 500 Clinical Methodology for Documenting Change (4) P. DOWDEN Introduction to clinical methodology for conducting efficacious assessment and treatment of individuals with communication problems. Students consider nature of intervention designed to alter communication disorders and types of accountability questions that need to be raised. They learn methodology for collecting and analyzing data for making informed clinical decisions. Offered: A.

SPHSC 501 Neural Bases of Speech, Language, and Hearing (4) Burns, Miller Neuroanatomical and neurophysiological bases of language, hearing, sensory, and motor function. Special emphasis given to brain behavior correlates and behavioral consequences to speech, language, and hearing as a result of neurologic injury or disease. Offered: A.

SPHSC 503 Current Issues in Speech and Hearing Sciences (3) Application of experimental methods to research in speech and hearing sciences. Offered: S.

SPHSC 504 Research Methods in Speech and Hearing Sciences (3) S. KOVER Introduction to empirical methods in the speech and hearing sciences. Offered: W.

SPHSC 506 Research Methods in Speech-Language Pathology (3) S. KOVER Examines empirical methods in speech-language pathology research. Includes evaluation and design of different types of research such as descriptive (e.g., case study, developmental, qualitative, surveys), exploratory (e.g., correlational, differential), and experimental (e.g., single-subject designs, randomized control trials, treatment efficacy studies). Offered: W.

SPHSC 507 Evidence Based Practice (3) P. DOWDEN Prepares students to conduct evaluation and treatment in speech-language pathology according to Evidence-Based Practice (EBP) principles. Examines integration of "internal" and "external" evidence in the context of clinical practice. Prerequisite: graduate status in SPHSC or permission of instructor. Offered: Sp.

SPHSC 509 Advanced Hearing Science (3) Consideration of physiological acoustics and psychoacoustics, the pertinent literature, and the experimental techniques related to study in these areas. Offered: A.

SPHSC 510 Physiological Acoustics (3) Study of pertinent literature and experimental techniques incident to the physiology of the normal and abnormal auditory system. Prerequisite: SPHSC 461 or permission of instructor.

SPHSC 511 Psychoacoustics (3) Review of significant literature and theory pertinent to normal auditory sensitivity,

pitch, loudness, and other attributes of auditory sensation. Prerequisite: SPHSC 461; permission of instructor.

SPHSC 514 Speech Physiology (3) Study of the physiological parameters of acoustic speech production. Prerequisite: SPHSC 320; SPHSC 461.

SPHSC 518 Seminar in Speech and Hearing Sciences (2, max. 50) L. MAX Reviews selected research area and methods in the speech and hearing sciences. Discusses topics related to developing a career in research or academics. Credit/no-credit only. Offered: AWSp.

SPHSC 519 Seminar in Speech Science (2, max. 50)

SPHSC 520 Advanced Instrumentation for Speech and Hearing Sciences (3) Design and use of electronic and electroacoustic devices in the speech and hearing sciences. Four hours of laboratory required each week.

SPHSC 521 Instrumentation for Audiology (4) Introduction to basic instrumentation used in audiology and hearing science; detailed instruction in audiometer calibration including a review of current national and international standards pertinent to audiology; emphasis on use rather than theory. Prerequisite: permission of instructor. Offered: A.

SPHSC 522 Hearing Instrument Modification/Repair (1) M. HARNEY Minor repair and modification of hearing aids, earmolds and associated accessories. Includes operation of hand tools and small power tools used in repair and earmold modification. Familiarity with different materials used to make or repair hearing aids/accessories. Troubleshooting damaged, malfunctioning, or inoperative instruments. Interpreting acoustic and electroacoustic test results to aid in troubleshooting or repair. Credit/no-credit only. Offered: W.

SPHSC 523 Special Topics in Audiology (3, max. 12) K. TREMBLAY Applied and theoretical issues related to audiology. Weekly seminar includes guest speakers discussing current and future trends in science that relate to hearing and the practice of audiology. Offered: W, even years.

SPHSC 525 Speech Signal Processing (3) Theory, evaluation, and use of speech signal processing algorithms such as sampling, filtering, spectral analysis, autocorrelation, and speech synthesis. Laboratory assignments develop skills in using signal analysis and synthesis software applied to normal and pathological speech.

SPHSC 526 Assessment and Treatment of Literacy Disorders (3) L. SNOW Examines the principles and procedures used in the assessment and treatment of literacy disorders with an emphasis on childhood literacy disorders as well as the relationship between verbal language impairment and literacy skills. Prerequisite: SPHSC 536. Offered: S.

SPHSC 529 Assessment and Treatment of Birth-to-4 Communication Disorders (4) T. COGGINS Examination of measurement concepts, standardized reference measures, and non-standardized assessment tools for communication and related skills in young children. Presents theoretical and empirical bases of prelinguistics and early language interventions. Offered: W.

SPHSC 531 Neurogenic Motor Speech Disorders (4) K. SPENCER Examines the nature, assessment, and management of the dysarthrias, acquired apraxia or speech, and childhood apraxia of speech. Prerequisite: SPHSC 501 or permission of instructor. Offered: Sp.

SPHSC 532 Assessment and Treatment of Neurogenic Language Disorders (3) D. KENDALL Provides an overview of the nature, evaluation, and management of acquired disorders of language in adults. Specifically, students learn about language assessment principles and procedures; the nature and treatment of aphasia, alexia, and agraphia; and the systems that support language (e.g. attention, verbal working memory). Prerequisite: SPHSC 501 or permission of instructor. Offered: W.

SPHSC 533 Medical Speech Pathology (3) Nature of speech pathology practiced in medical settings. Prerequisite:

site: SPHSC 501, SPHSC 531, and SPHSC 532, or permission of instructor. Offered: S.

SPHSC 534 Assessment and Treatment of Dysphagia (4) Anatomophysiology bases of function and dysfunction associated with speech-language disorders. Mastication and swallowing problems, their causes, assessments, and management. Prerequisite: SPHSC 501 or permission of instructor. Offered: Sp.

SPHSC 535 Assessment and Treatment of Voice Disorders (4) T. EADIE Physiology, acoustics, and perception of voice quality and speech resonance. Etiology, evaluation, and treatment of voice and resonance disorders. Offered: W.

SPHSC 536 Assessment and Treatment of School-Age Communication Disorders (4) S. KOVER Examines the principles and procedures used in the assessment and treatment of school-aged speech-and-language disorders. Offered: Sp.

SPHSC 537 Fluency Disorders (4) L. MAX Characteristics of fluent speech and the nature and treatment of stuttering in children and adults are studied in relation to normal speech production processes, human learning, principal explanations of stuttering, and treatment systems. Offered: A.

SPHSC 538 Assessment and Treatment of Cognitive-Communication Disorders (3) K. SPENCER Studies right brain injury, dementia, and traumatic brain injury for understanding of the underlying neuropathologies, techniques for assessment, and evidence-based interventions. Offered: A.

SPHSC 539 Childhood Speech and Phonological Disorders (4) Examines patterns of normal speech and phonological development and the nature, assessment, and treatment of speech and phonological disorders of childhood. Offered: A.

SPHSC 540 Augmentative and Alternative Communication Foundations (4) P. DOWDEN Overview of evaluation and intervention for children and adults with severe congenital speech and language impairments, with primary emphasis on individuals with congenital impairments. Overview of the features of multi-modal strategies, including output, selection set, access, and rate enhancement. Prerequisite: graduate SPHSC, REHAB, or EDSPE students, or permission of instructor. Offered: S.

SPHSC 541 Augmentative and Alternative Communication in the Medical Setting (2) P. DOWDEN Evaluation and intervention for severe acquired speech/language impairments. Covers decision-making and treatment for individuals who sustained a CVI, traumatic brain injury, or have degenerative diseases. Solutions include multi-modal strategies, from books to voice output systems. Prerequisite: SPHSC 540 or permission of instructor. Offered: Sp.

SPHSC 542 Counseling and Interactive Skills for Speech-Language Pathologists and Audiologists (3) L. ILLICH Introduction to counseling theory and practice in speech-language pathology, audiology, and related fields. Provides opportunities for learning and practicing counseling skills. Addresses key counseling issues, including professional boundaries, intense emotions, and counselor's feelings and reactions. Prerequisite: graduate standing in SPHSC or permission of instructor. Offered: S.

SPHSC 543 Assessment and Treatment of Pediatric Dysphagia (2) J. DUNLAP Examines principles and procedure used in the assessment and treatment of pediatric swallowing and feeding disorders. Covers clinical and instrumental assessment techniques and evidenced-based intervention strategies applicable to the infant/child across different pediatric practice settings. Prerequisite: SPHSC 501; SPHSC 534; or permission of instructor. Offered: W.

SPHSC 545 Assessment and Treatment of Voice Disorders in Medical Settings (2) T. EADIE, M. NEVDAHL Examines the principles and procedures used in assessment and treatment of voice disorders typically seen in medical settings, with a focus on instrumentation such as use of inter-

pretation of laryngeal imaging, acoustics, and perceptual measures. Prerequisite: SPHSC 535. Offered: A.

SPHSC 546 Advanced Neurological Language Disorders (2) D. KENDALL Advanced study in the nature, assessment, and treatment of acquired language and cognitive-communication disorders. Prerequisite: SPHSC 501; SPHSC 532; or permission of instructor. Offered: W.

SPHSC 548 Traumatic Brain Injury Seminar (2) K. SPENCER Advanced study in the nature, assessment, and management of individuals with traumatic brain injury across the lifespan. Prerequisite: SPHSC 501; SPHSC 538, or permission of instructor. Offered: Sp.

SPHSC 549 Clinical Forum in Speech-Language Pathology (2, max. 50) Study and application of pertinent clinical issues and trends related to the practice of speech-language pathology. Prerequisite: successful completion of all required didactic and clinical practica coursework in the first two years of the medical speech-language pathology graduate program. Credit/no-credit only. Offered: Sp.

SPHSC 550 Public School Speech-Language Pathology and Audiology (3) K. KRINGS Explores administrative, legal, ethical, and clinical issues encountered in implementing programs to remediate communication disorders in the school-aged population in the public school setting. Open to non-matriculated students with permission of instructor. Prerequisite: graduate student status in speech and hearing sciences or permission of instructor. Offered: W.

SPHSC 551 Advanced Practicum in Speech Pathology Evaluation (1-10, max. 50) Laboratory experience in the evaluation of speech and language disorders. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

SPHSC 552 Advanced Practicum in Speech Pathology Management (1-10, max. 50) Laboratory experience in the management of speech and language disorders. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

SPHSC 553 Advanced Practicum in Speech-Language Pathology (2-4, max. 50) Clinical practicum experience, completed under the supervision of UW Speech and Hearing Clinic professionals, focused on the evaluation and treatment of speech, language, cognitive-communication, and swallowing disorders. Offered: AWSpS.

SPHSC 554 Advanced Offsite Practicum in Speech-Language Pathology (2-12, max. 50) Offsite clinical practicum experience, completed under the supervision of community-based clinical professionals, focused on the evaluation and treatment of speech, language, cognitive-communication, and swallowing disorders. Prerequisite: SPHSC 553. Offered: AWSpS.

SPHSC 555 Pre-Internship in Speech and Hearing Sciences (1-10, max. 50) Practicum in speech pathology or audiology designed to teach the clinical regimen of a participating professional center prior to assuming a full internship assignment. Credit/no-credit only. Offered: AWSpS.

SPHSC 556 Advanced Aural Rehabilitation (2, max. 4) J. SULLIVAN Advanced study of auditory rehabilitation and training, including psychosocial issues of individuals with hearing loss. Merges research theories with clinical practice and provides experience with applied auditory training in a community setting. Offered: A.

SPHSC 559 Special Topics in Speech, Language, and Hearing (1-5, max. 30) Guided opportunity for study and advanced discussions in specific areas of speech, language, and hearing science research, theory, and clinical practice. Offered: AWSpS.

SPHSC 560 Speech Science (3) Examines contemporary models and research paradigms in speech science and disorders. Topics include respiratory physiology, laryngeal physiology, aerodynamics of speech production, articulatory dynamics, speech acoustics, and speech perception. Offered: W, odd years.

SPHSC 561 Studies in Hearing Sciences and Disorders (3) Examines contemporary models and research paradigms in the area of hearing science and disorders. Topics include psychoacoustics; amplification; electrophysiological evaluation; physiological acoustics; and perceptual consequences of hearing loss. Offered: A, even years.

SPHSC 562 Studies in Language Science and Disorders (3) Examines research in the area of language science and disorders including word recognition and production; storage of retrieval of word form and meaning; comprehension and production of sentences and discourse; and language in social context. Topics examined relative to development, language impairments, and normal language processing. Offered: Sp, odd years.

SPHSC 563 Instructional Development Forum (1, max. 50) Emphasizes instructional techniques and issues as they relate to teaching in the discipline of communication sciences and its disorders. Topics include course development, grading, student-faculty relations, teaching methods, and diversity. Prerequisite: graduate standing in Speech and Hearing Sciences. Credit/no-credit only. Offered: AW.

SPHSC 564 Teaching Practicum (1-5, max. 50) Provides experience in preparing and giving lectures, leading discussions, preparing and grading assignments and tests, and working directly with undergraduate and graduate students. Prerequisite: doctoral student standing in SPHSC and permission of instructor. Credit/no-credit only. Offered: AWSpS.

SPHSC 565 Speech and Language Pathology Proseminar (1-3, max. 50) Consideration of professional issues and student and faculty research. Credit/no-credit only. Offered: AWSpS.

SPHSC 567 Research Seminar in Speech and Hearing Sciences (1, max. 50) A platform for the presentation and exchange of scientific information (research data, new hardware and hardware development, scientific papers) resulting from ongoing research projects by graduate students and faculty within the Speech and Hearing Sciences Department. Credit/no-credit only. Offered: AWSpS.

SPHSC 568 Grant Writing in Hearing, Language, and Speech Science (3) L. WERNER Design and writing of grant proposals in speech, language, and hearing sciences and disorders. Explanation of the funding process at various agencies, particularly the National Institutes of Health. Students prepare a proposal and review the proposals of their peers. Prerequisite: Enrollment in PhD degree program and permission of instructor. Credit/no-credit only. Offered: W.

SPHSC 570 Assessment of Auditory Dysfunction I (4-) Strategies and procedures in the auditory evaluation of hearing-impaired adults. Use of diagnostic tests in the evaluation of auditory pathologies. Laboratory required. Prerequisite: SPHSC 471 or equivalent. Offered: A.

SPHSC 571 Assessment of Auditory Dysfunction II (-4) Strategies and procedures in the auditory evaluation of hearing-impaired adults. Use of diagnostic tests in the evaluation of auditory pathologies. Laboratory required. Prerequisite: SPHSC 570. Offered: W.

SPHSC 572 Pediatric Audiology (4) L. MANCL Assessment of auditory disorders in infants and young children. Emphasis on behavioral and electrophysiologic techniques and on the role of the audiologist in the clinical management of the young hearing-impaired child. Prerequisite: SPHSC 570 or equivalent. Offered: W.

SPHSC 574 Assessment of Balance Function (4) Examines normal anatomy and physiology of the peripheral and central vestibular system. Reviews peripheral and central vestibular disorders and treatment protocols. Major focus of assessment on electronystagmography with associated lab. Provides overview of rotational and posturography measures of balance function. Prerequisite: SPHSC 571 or permission of instructor. Offered: S.

SPHSC 575 Medical Backgrounds in Audiology (3) Diseases and injuries of the ear resulting in reduced audition.

Prerequisite: SPHSC 571 or permission of instructor. Offered: S.

SPHSC 576 Otoacoustic Emissions (2) *R. FOLSOM* Consideration of otoacoustic emissions and the physiologic techniques used to record them. Includes interpretation of responses in both the normal and disordered auditory system as well as clinical application of emissions in both adult and infant populations. Laboratory required. Prerequisite: SPHSC 571, SPHSC 572, and SPHSC 592, or permission of instructor. Offered: A.

SPHSC 577 Industrial and Community Hearing Conservation (2) Psychophysiological effects of environmental noise on man. Techniques of noise measurement and attenuation, including the planning of hearing conservation programs in industry and in the community. Prerequisite: SPHSC 571 or permission of instructor. Offered: S, odd years.

SPHSC 578 Hearing Screening (2) Consideration of hearing screening programs and the statistical techniques used to evaluate them. Includes history, rationale, and technical aspects of hearing screening as well as current models for developing neonatal, school-age, and adult hearing screening programs. Prerequisite: SPHSC 572, SPHSC 576, and SPHSC 592, or permission of instructor. Offered: S, even years.

SPHSC 579 Geriatric Audiology (2) *S. ANDERSON* Examines the biological, psychological, and social aspects of the aging process. Emphasizes the identification and diagnosis of hearing problems associated with the aging process and its rehabilitation. Prerequisite: SPHSC 571. Offered: Sp.

SPHSC 580 Rehabilitative Audiology (3) *L. ILLICH* Explores technology to enhance communication effectiveness of hearing impaired persons. Selection and training in the use of assistive systems and cochlear implants. Advanced perception assessment and training methodology. Discussion and application of aural rehabilitation in different settings. Explores the Americans with Disabilities Act and assistive listening devices. Prerequisite: SPHSC 571 and SPHSC 583. Offered: W.

SPHSC 581 Management of Hearing-Impaired Children (3) *J. SULLIVAN* Studies pediatric habilitation available for children with hearing impairment and the impact of new technologies on therapy, education, and audiological treatment. Offered: Sp.

SPHSC 582 Hearing Aid Amplification (4) *C. MILLER* Acoustic amplification and methods of determining electroacoustic characteristics. Includes earmold technology. Prerequisite: SPHSC 471 and SPHSC 570 or permission of instructor. Offered: W.

SPHSC 583 Hearing Aid Selection (4) *C. MILLER* Consideration of strategies utilized in selecting and fitting acoustic amplification for the hearing impaired, including review of pertinent research literature. Prerequisite: SPHSC 582 or permission of instructor. Offered: Sp.

SPHSC 584 Advanced Amplification (3) *C. MILLER* Current topics in hearing aids and amplification technology; review of pertinent research articles. Prerequisite: SPHSC 582; SPHSC 583. Offered: A, even years.

SPHSC 585 Pediatric Amplification (2) *L. MANCL* Selection, verification and validation of amplification for infants and children. Consideration of hearing aids and hearing assistance technology including review of pertinent research literature. Prerequisite: SPHSC 582 or permission of instructor. Offered: A.

SPHSC 586 Cochlear Implants (5) *J. BIERER* Covers the history, function, and application of cochlear implants as a clinical tool to enhance or restore human hearing, including fitting procedures, outcomes, and rehabilitation for children and adults. Prerequisite: permission of instructor. Offered: Sp.

SPHSC 587 Ethics (3) Analysis and discussion of ethical considerations in the clinic, and in research, for speech

and hearing professionals. Covers codes of professional organizations.

SPHSC 588 Audiology Proseminar (1, max. 3) *M. HARNEY* Consideration of professional issues, practice management, and externship preparation. Credit/no-credit only. Offered: AWSp.

SPHSC 591 Advanced Practicum in Audiology (1-10, max. 75) Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

SPHSC 592 Electrophysiologic Assessment I (4) *R. FOLSOM, K. TREMBLAY* Consideration of physiologic techniques that may be used to evaluate the normal and disordered auditory system. Outside laboratory required. Prerequisite: SPHSC 461 or equivalent, SPHSC 571. Offered: Sp.

SPHSC 593 Electrophysiologic Assessment II (3) *R. FOLSOM, K. TREMBLAY* Examines event-related potentials including recording techniques, neurophysiological mechanisms, and applications to clinical populations. Prerequisite: SPHSC 592. Offered: W, odd years.

SPHSC 594 Capturing Brain Dynamics: A Combined Neuroscience and Engineering Approach (4) *A. LEE* Introduces methods for capturing brain dynamics using an emerging neuroimaging technique known as magnetoencephalography (MEG). Uses techniques to examine perception and cognitive processes and their implications for future brain-computer-interface (BCI) design. Prepare students for interdisciplinary research in neuroscience and engineering. Offered: jointly with LING 582; W.

SPHSC 599 Research Practicum (*, max. 50) Supervised laboratory experience in experimental approach to problems in speech and hearing sciences. Prerequisite: permission of instructor. Offered: AWSpS.

SPHSC 600 Independent Study or Research (*-) Prerequisite: permission of instructor. Offered: AWSpS.

SPHSC 601 Internship ([1-10]-, max. 50) Supervised field experiences in settings other than public schools. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

SPHSC 602 Internship in the Schools ([3-10]-, max. 50) Supervised field experience in a public school setting. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

SPHSC 700 Master's Thesis (*-) Offered: AWSpS.

SPHSC 800 Doctoral Dissertation (*-) Offered: AWSpS.

SPHSC 801 Practice Doctorate Project/Capstone ([1-12]-, max. 50) Supervised research experience in the field of audiology that culminates in a final research paper and oral defense. Offered: AWSpS.

Statistics

B309 Padelford

Probability provides the conceptual foundation and mathematical language for the logic of uncertainty and induction. Statistics is concerned with procedures for the acquisition, management, exploration, and use of information in order to learn from experience in situations of uncertainty and to make decisions under risk. Statistical practice includes design of experiments and of sampling surveys; exploration, summarization, and display of observational data; drawing inferences, and assessing their uncertainty; and building mathematical models for systems with stochastic components.

Instruction is enriched through academic contacts with the Foster School of Business; the College of Engineering; the departments of Applied Mathematics, Atmospheric Sciences, Biology, Cardiology, Computer Science, Earth and Space Sciences, Economics, Genetics, Mathematics, Psychology, Radiology, and Sociology; the Quantitative

Ecology and Resource Management program; the Center for Statistics and the Social Sciences; the Applied Physics Laboratory; the Applied Statistics Division of the Boeing Company; Microsoft Research; and Insightful Corporation. The department has an especially close relationship with the Department of Biostatistics; for example, the two departments are jointly developing new curricula in statistical genetics.

UNDERGRADUATE PROGRAM

Adviser

B309 Padelford, Box 354322

(206) 543-8296

The Department of Statistics offers the following programs of study:

- The Bachelor of Science degree with a major in statistics
- In conjunction with the departments of Applied Mathematics, Computer Science and Engineering, and Mathematics, the Bachelor of Science degree with a major in applied and computational mathematical sciences (ACMS).
- A minor in statistics

Bachelor of Science

Suggested First- and Second-Year College Courses: CSE 142; MATH 307, MATH 308, STAT 302 (recommended) or CSE 143, STAT 311. Additional courses in the sciences and quantitative methods add strength to this major.

Department Admission Requirements

Application to the BS degree program in statistics is competitive. Completion of minimum requirements described below does not guarantee admission. All applicants have the right to petition and appeal the department's admission decision. Applications are considered once each academic year and are due on the first Friday of September.

Minimum course requirements for admission applications as follows:

1. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
2. One of STAT 311 (highly recommended), STAT 390, or an approved substitute. See website for approved list.
3. At least two additional courses from CSE 142, either STAT 302 (recommended) or CSE 143, MATH 307, MATH 308
4. Factors in the admission decision include but are not limited to academic performance as measured by GPA in courses listed above and any additional advanced quantitative courses presented for application consideration.
5. Admission is competitive. Successful applicants typically have a cumulative GPA higher than 3.00 in courses listed above under course requirements, with no individual course grade lower than 2.5.

Major Requirements

Minimum 70 credits, as follows:

1. *Mathematics (30 credits):* Either MATH 124, MATH 125, MATH 126, MATH 300, MATH 307, MATH 308, MATH 327, and MATH 328; or the Honors sequence MATH 134, MATH 135, MATH 136, MATH 334, MATH 335, and MATH 336.
2. *Computing (7-9 credits):* CSE 142; either STAT 302 (recommended), CSE 143, or an approved substitute
3. *Statistics (24-27 credits):* STAT 311 (highly recommended), or STAT 390, or an approved substitute (STAT 220, STAT 221, or STAT 301 which is seldom allowed); either

STAT 340 (highly recommended) or both STAT 394/MATH 394 and STAT 395/MATH 395. (Note that both STAT 394/MATH 394 and STAT 395/MATH 395 are required to replace STAT 340 as a prerequisite for STAT 341.) STAT 341, STAT 342, STAT 421, STAT 423. (Note that STAT 342 is required for enrollment in STAT 421 or STAT 423 by a statistics major; STAT 390 is not sufficient for a statistics major.)

4. *Electives:* At least three courses for a total of at least 9 credits. All elective choices require prior approval by the Statistics undergraduate adviser.
5. Minimum 2.0 grade in all courses used to satisfy major requirements.
6. Minimum 2.50 cumulative GPA for all courses used to satisfy major requirements.

A "Majors Factsheet" is available from the Statistics department.

Minor

Minor Requirements: 26 credits, as follows:

1. MATH 126 or MATH 136 (5 credits)
2. STAT 302, STAT 390/MATH 390, STAT 394/MATH 394, STAT 395/MATH 395 (13 credits)
3. either STAT 425/BIOST 425 or STAT 396/MATH 396 (3 credits)
4. Minimum 5 credits of approved electives. See adviser for approved list.
5. Minimum grade of 2.0 in each course used to satisfy minor requirements
6. At most 5 credits used to satisfy the statistics minor may be applied to a student's major.
7. At least 20 credits used to satisfy the statistics minor must be taken at the UW.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Statistics emphasizes decision making in the face of uncertainty. Tools developed by the major include probability theory, mathematical statistics, experience with data analysis, and use of statistical tools via the computer. Graduates have pursued careers in actuarial science, financial planning, drug development, statistical consulting, teaching, public health, military science, aerospace, computer technology, and forest resources.
- *Instructional and Research Facilities:* Computer workstations are available on a drop-in basis through the College of Arts & Sciences Instructional Computing Laboratory. Tutoring in a set of introductory statistics courses is currently available at the Statistics Tutor and Study Center.
- *Honors Options Available:* For Interdisciplinary Honors, see University Honors Program.
- *Research, Internships, and Service Learning:* A special seminar series for undergraduates is offered in conjunction with the ACMS program.
- *Department Scholarships:* None offered.
- *Student Organizations/Associations:* The Actuary Club at the University of Washington

GRADUATE PROGRAM

Graduate Program Coordinator

B309 Padelford, Box 354322

(206) 685-7306

The graduate programs emphasize both the theory and application of statistics, including probability theory, mathematical statistics, data analysis, statistical computing, and scientific applications. Computing facilities in the De-

partment of Statistics rank among the best of any statistics programs in the country and reflect the department's expertise in the field of statistical computing. An ongoing statistical consulting program provides the students with practical experience in using statistics and in communicating with clients. Under faculty supervision, participants in the program assist members of the University community in applying statistical methodology. The department offers Master of Science and Doctor of Philosophy degrees.

Admission Requirements

Background in mathematics, statistics, or a quantitative field, with 30 or more quarter credits in mathematics and statistics, to include a year of advanced (second-year) calculus, one course in linear algebra, and one course in probability theory; Graduate Record Examination scores (the Advanced Mathematics subject test is encouraged but not required); and three letters of recommendation from appropriate former or current faculty.

Master of Science

Degree Requirements (36-51 credits)

Part-time/Concurrent Track (minimum 36 credits)

In addition to Graduate School requirements, at least twelve approved courses numbered 400 or above with a value of 36 credits or more; of these, at least six courses must be numbered in the 500 series (exclusive of STAT 512, STAT 513) with a value of 18 credits or more, and with a coherent theme. Approved proficiency in statistical computing. Satisfactory participation in statistical consulting and the departmental seminar. Passage of an appropriate final master's examination or successful completion of a master's thesis which can count as up to three courses worth 9 credits but cannot replace any of the six courses in the 500 series mentioned above. All programs must be approved in advance by the departmental Graduate Program Coordinator.

Advanced Methods and Data Analysis Track (minimum 51 credits)

1. *Core Courses:* STAT 502, STAT 504, STAT 512, STAT 513, STAT 534, STAT 536, STAT 570, STAT 571
2. Statistics capstone data analysis: STAT 528
3. Satisfactory participation in at least one quarter of the departmental seminar
4. Passage of the first year MS theory examination

Doctor of Philosophy

Degree Requirements

Minimum 90 credits, to include:

1. In addition to Graduate School requirements, appropriate training in statistics and related sciences.
2. Appropriate general examinations of basic graduate-level knowledge in statistics and probability (including two preliminary examinations).
3. Satisfactory performance in MATH 574, MATH 575, MATH 576.
4. Satisfactory performance in three approved core-course sequences chosen from STAT 570, STAT 571, STAT 572; STAT 581, STAT 582, STAT 583; STAT 521, STAT 522, STAT 523; STAT 534, STAT 535, STAT 538; and STAT 516, STAT 517, STAT 518. (In some circumstances, other graduate-level mathematical science courses may be used as a substitute.)
5. Approved performance in statistical consulting (typically STAT 598 and STAT 599)
6. Demonstration of proficiency in computing
7. 1 credit of STAT 590 per quarter
8. Final examination

The graduation requirements for the PhD tracks in statistical genetics and statistics in the social sciences may replace or be in addition to some of the requirements listed above.

Financial Aid

The department annually awards a limited number of teaching and research assistantships and fellowships for the support of new and continuing graduate students on the basis of academic promise.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

STAT 100 Numbers and Reason (5) QSR Bookstein Surveys the standard ways in which "arithmetic turns into understanding" across examples from the natural and the social sciences. Main concepts include abduction (inference to the best explanation), consilience (numerical agreement across multiple measurement levels), bell curves, linear models, and the likelihood of hypothesis. Offered: A.

STAT 111 Lectures in Applied Statistics (1) NW Weekly lectures illustrating the importance of statisticians in a variety of fields, including medicine and the biological, physical, and social sciences. Credit/no-credit only. Offered: jointly with BIOST 111; Sp.

STAT 220 Principles of Statistical Reasoning (5) NW, QSR Introduces statistical reasoning. Focuses primarily on the what and why rather than the how. Helps students gain an understanding of the rationale behind many statistical methods, as well as an appreciation of the use and misuse of statistics. Encourages and requires critical thinking. (Students may receive credit for only one of STAT 220, STAT 221/CS&SS 221/SOC 221, STAT 311, and ECON 311.) Offered: AWSpS.

STAT 221 Statistical Concepts and Methods for the Social Sciences (5) NW, QSR Develops statistical literacy. Examines objectives and pitfalls of statistical studies; study designs, data analysis, inference; graphical and numerical summaries of numerical and categorical data; correlation and regression; and estimation, confidence intervals, and significance tests. Emphasizes social science examples and cases. (Students may receive credit for only one of STAT 220, STAT 221, STAT 311, STAT 221/CS&SS 221/SOC 221, and ECON 311.) Offered: jointly with CS&SS 221/SOC 221; AWSpS.

STAT 302 Statistical Software and Its Applications (3) NW Introduction to data structures and basics of implementing procedures in statistical computing packages, selected from but not limited to R, SAS, STATA, MATLAB, SPSS, and Minitab. Provides a foundation in computation components of data analysis. Prerequisite: either STAT 311/ECON 311 or STAT 390/MATH 390. Offered: W.

STAT 311 Elements of Statistical Methods (5) NW, QSR Elementary concepts of probability and sampling; binomial and normal distributions. Basic concepts of hypothesis testing, estimation, and confidence intervals; t-tests and chi-square tests. Linear regression theory and the analysis of variance. (Students may receive credit for only one of STAT 220, STAT 221, STAT 311, and ECON 311.) Prerequisite: either MATH 111, MATH 120, MATH 124, MATH 127, or MATH 144. Offered: AWSpS.

STAT 316 Design of Experiments and Regression Analysis (4) NW Kapur Introduction to the analysis of data from planned experiments. Analysis of variance for multiple factors and applications of orthogonal arrays and linear graphs for fractional factorial designs to product and process design optimization. Regression analysis with applications in engineering. Prerequisite: IND E 315. Offered: jointly with IND E 316; W.

STAT 320 Evaluating Social Science Evidence (5) I&S, QSR

A critical introduction to the methods used to collect data in social science: surveys, archival research, experiments, and participant observation. Evaluates “facts and findings” by understanding the strengths and weaknesses of the methods that produce them. Case based. Offered: jointly with CS&SS 320/SOC 320.

STAT 321 Case-Based Social Statistics I (5) I&S, QSR

Introduction to statistical reasoning for social scientists. Built around cases representing in-depth investigations into the nature and content of statistical and social-science principles and practice. Hands-on approach: weekly data-analysis laboratory. Fundamental statistical topics: measurement, exploratory data analysis, probabilistic concepts, distributions, assessment of statistical evidence. Offered: jointly with CS&SS 321/SOC 321; W.

STAT 322 Case-Based Social Statistics II (5) I&S, QSR

Continuation of CS&SS 321/SOC 321/STAT 321. Progresses to questions of assessing the weight of evidence and more sophisticated models including regression-based methods. Built around cases investigating the nature and content of statistical principles and practice. Hands-on approach: weekly data analysis laboratory. Prerequisite: CS&SS 321/SOC 321/STAT 321, or permission of instructor. Offered: jointly with CS&SS 322/SOC 322; Sp.

STAT 340 Introduction to Probability and Mathematical Statistics I (4) QSR

Covers the fundamentals of probability and mathematical statistics; axioms of probability, conditional and joint probability, random variables, univariate and multivariate distributions and densities, and moments; binomial, negative binomial, geometric, Poisson, normal, exponential distributions, and central limit theorem; and basic estimation and hypothesis testing theory. Prerequisite: either STAT 311/ECON 311 or STAT 390/MATH 390; either a minimum grade of 2.5 in MATH 327 or MATH 136. Offered: A.

STAT 341 Introduction to Probability and Statistical Inference I (4) NW

Brief review of: sample spaces, random variables, probability. Distribution: binomial, normal, Poisson, geometric. Followed by: expectation, variance, central limit theorem. Basic concepts of estimation, testing, and confidence intervals. Maximum likelihood estimators and likelihood ratio tests, efficiency. Introduction to regression. Prerequisite: either STAT 340 or STAT/MATH 394 and STAT/MATH 395; either STAT/ECON 311 or STAT/MATH 390; either a minimum grade of 2.5 in MATH 136 or MATH 327. Offered: W.

STAT 342 Introduction to Probability and Statistical Inference II (4) NW

Brief review of: sample spaces, random variables, probability. Distribution: binomial, normal, Poisson, geometric. Followed by: expectation, variance, central limit theorem. Basic concepts of estimation, testing, and confidence intervals. Maximum likelihood estimators and likelihood ratio tests, efficiency. Introduction to regression. Prerequisite: STAT 341. Offered: Sp.

STAT 390 Statistical Methods in Engineering and Science (4) NW

Concepts of probability and statistics. Conditional probability, independence, random variables, distribution functions. Descriptive statistics, transformations, sampling errors, confidence intervals, least squares and maximum likelihood. Exploratory data analysis and interactive computing. Students may receive credit for only one of STAT 390, STAT 481/ECON 481, and ECON 580. Prerequisite: either MATH 126 or MATH 136. Offered: jointly with MATH 390; AWSpS.

STAT 391 Probability and Statistics for Computer Science (4) NW

Fundamentals of probability and statistics from the perspective of the computer scientist. Random variables, distributions and densities, conditional probability, independence. Maximum likelihood, density estimation, Markov chains, classification. Applications in computer science. Prerequisite: minimum grade of 2.5 in MATH 126; 2.5 in MATH 308; either CSE 326, CSE 332, CSE 373, CSE 417, or CSE 421. Offered: Sp.

STAT 394 Probability I (3) NW Sample spaces; basic axioms of probability; combinatorial probability; conditional probability and independence; binomial, Poisson, and normal distributions. Prerequisite: minimum grade of 2.0 in either MATH 126 or MATH 136; recommended: either MATH 324 or MATH 327. Offered: jointly with MATH 394; AWS.

STAT 395 Probability II (3) NW Random variables; expectation and variance; laws of large numbers; normal approximation and other limit theorems; multidimensional distributions and transformations. Prerequisite: minimum grade of 2.0 in STAT/MATH 394. Offered: jointly with MATH 395; WSpS.

STAT 396 Probability III (3) NW Characteristic functions and generating functions; recurrent events and renewal theory; random walk. Prerequisite: minimum grade of 2.0 in either MATH 395 or STAT 395. Offered: jointly with MATH 396; Sp.

STAT 403 Introduction to Resampling Inference (4) NW V.

MININ Introduction to computer-intensive data analysis for experimental and observational studies in empirical sciences. Students design, program, carry out, and report applications of bootstrap resampling, rerandomization, and subsampling of cases. Experience programming in R is beneficial. Credit allowed for STAT 403 or STAT 503 but not both. Prerequisite: either STAT 311/ECON 311, STAT 341, STAT 390/MATH 390, STAT 481/ECON 481, or Q SCI 381 and Q SCI 482; recommended: Q SCI 483, which may be taken concurrently. Offered: jointly with Q SCI 403; Sp.

STAT 421 Applied Statistics and Experimental Design (4) NW

Computer-aided data analyses using comparisons between batches, analysis of variance and regression. Evaluation of assumptions, data transformation, reliability of statistical measures (jackknife, bootstrap). Fisher-Gosset controversy. Prerequisite: either STAT 342 or STAT 481/ECON 481; recommended: MATH 308. Offered: A.

STAT 423 Applied Regression and Analysis of Variance (4) NW

Regression analysis. Problems in interpreting regression coefficients. Estimation, including two-stage least squares. Guided regression: building linear models, selecting carriers. Regression residuals. Analysis of variance. Nonparametric regression. Factorial designs, response surface methods. Prerequisite: either STAT 342, STAT 421, or STAT 481/ECON 481; recommended: MATH 308. Offered: W.

STAT 425 Introduction to Nonparametric Statistics (3) NW

Overview of nonparametric methods, such as rank tests, goodness of fit tests, 2 x 2 tables, nonparametric estimation. Useful for students with only a statistical methods course background. Prerequisite: STAT 390/MATH 390. Offered: jointly with BIOST 425.

STAT 427 Introduction to Analysis of Categorical Data (4) NW

Techniques for analysis of count data. Log-linear models, logistic regression, and analysis of ordered response categories. Illustrations from the behavioral and biological sciences. Computational procedures. Prerequisite: either STAT 342, STAT 362, or STAT 421.

STAT 428 Multivariate Analysis for the Social Sciences (4) NW

Multivariate techniques commonly used in the social and behavioral sciences. Linear models for dependence analysis (multivariate regression, MANOVA, and discriminant analysis) and for interdependence analysis (principal components and factor analysis). Techniques applied to social science data using computer statistical packages. Prerequisite: either STAT 342, STAT 362, or STAT 421.

STAT 480 Sampling Theory for Biologists (3) NW J. SKAL-

SKI Theory and applications of sampling finite populations including: simple random sampling, stratified random sampling, ratio estimates, regression estimates, systematic sampling, cluster sampling, sample size determinations, applications in fisheries and forestry. Other topics include sampling plant and animal populations, sampling distributions, estimation of parameters and statistical treatment

of data. Prerequisite: Q SCI 482; recommended: Q SCI 483. Offered: jointly with Q SCI 480; W, odd years.

STAT 486 Experimental Design (4) NW Emphasizes data modeling using structured means resulting from choice of experimental and treatment design. Examines experimental designs, including crossed, nested designs; block; split-plot designs; and covariance analysis. Also covers multiple comparisons, efficiency, power, sample size, and pseudo-replication. Prerequisite: Q SCI 482; recommended: Q SCI 483. Offered: jointly with Q SCI 486; W, even years.

STAT 491 Introduction to Stochastic Processes (3) NW

Random walks, Markov chains, branching processes, Poisson process, point processes, birth and death processes, queuing theory, stationary processes. Prerequisite: minimum grade of 2.0 in either MATH 395 or STAT 395. Offered: jointly with MATH 491; A.

STAT 492 Stochastic Calculus for Option Pricing (3) NW

Introductory stochastic calculus mathematical foundation for pricing options and derivatives. Basic stochastic analysis tools, including stochastic integrals, stochastic differential equations, Ito's formula, theorems of Girsanov and Feynman-Kac, Black-Scholes option pricing, American and exotic options, bond options. Prerequisite: either MATH 394 or STAT 394; either MATH 395 or STAT 395. Offered: jointly with MATH 492; W.

STAT 495 Service Learning: K-12 Tutoring Experience (1-5, max. 5) Morita

Tutoring mathematics in local K-12 schools. Offered: AWSp.

STAT 498 Special Topics (1-5, max. 15) NW Reading and lecture course intended for special needs of students.

STAT 499 Undergraduate Research (1-5, max. 15) Offered: AWSpS.

STAT 502 Design and Analysis of Experiments (4) Design of experiments covering concepts such as randomization, blocking, and confounding. Analysis of experiments using randomization tests, analysis of variance, and analysis of covariance. Prerequisite: either STAT 342, MATH 390/STAT 390, ECON 481/STAT 481, STAT 509/CS&SS 509/ECON 580 or equivalent; MATH 308 or equivalent. Offered: A.

STAT 503 Practical Methods for Data Analysis (4)

Basic exploratory data analysis with business examples. Data summaries, multivariate data, time series, multiway tables. Techniques include graphical display, transformation, outlier identification, cluster analysis, smoothing, regression, robustness. Departmental credit allowed for only one of 403 and 503. Prerequisite: B A 500 or QMETH 500 or equivalent or permission of instructor. Offered: jointly with QMETH 503.

STAT 504 Applied Regression (4)

Least squares estimation. Hypothesis testing. Interpretation of regression coefficients. Categorical independent variables. Interactions. Assumption violations: outliers, residuals, robust regression; nonlinearity, transformations, ACE, CART; nonconstant variance. Variable selection and model averaging. Prerequisite: either STAT 342, STAT 390/MATH 390, STAT 421, STAT 481/ECON 481, STAT 509/CS&SS 509/ECON 580, or SOC 425; recommended: MATH 308. Offered: jointly with CS&SS 504.

STAT 506 Applied Probability and Statistics (4)

Discrete and continuous random variables, independence and conditional probability, central limit theorem, elementary statistical estimation and inference, linear regression. Emphasis on physical applications. Prerequisite: some advanced calculus and linear algebra. Offered: jointly with AMATH 506.

STAT 509 Introduction to Mathematical Statistics: Econometrics I (5) NW

Examines methods, tools, and theory of mathematical statistics. Covers, probability densities, transformations, moment generating functions, conditional expectation. Bayesian analysis with conjugate priors, hypothesis tests, the Neyman-Pearson Lemma. Likelihood ratio tests, confidence intervals, maximum likelihood estimation, Central limit theorem, Slutsky Theorems, and the

delta-method. (Credit allowed for only one of STAT 390, STAT 481, and ECON 580.) Prerequisite: STAT 311/ECON 311; either MATH 136 or MATH 126 with either MATH 308 or MATH 309; recommended: MATH 324. Offered: jointly with CS&SS 509/ECON 580; A.

STAT 512 Statistical Inference (4) Review of random variables; transformations, conditional expectation, moment generating functions, convergence, limit theorems, estimation; Cramer-Rao lower bound, maximum likelihood estimation, sufficiency, ancillarity, completeness. Rao-Blackwell theorem. Hypothesis testing: Neyman-Pearson lemma, monotone likelihood ratio, likelihood-ratio tests, large-sample theory. Contingency tables, confidence intervals, invariance. Introduction to decision theory. Prerequisite: STAT 395 and STAT 421, STAT 423, STAT 504, or BIOST 512 (concurrent registration permitted for these three). Offered: A.

STAT 513 Statistical Inference (4) Review of random variables; transformations, conditional expectation, moment generating functions, convergence, limit theorems, estimation; Cramer-Rao lower bound, maximum likelihood estimation, sufficiency, ancillarity, completeness. Rao-Blackwell theorem. Hypothesis testing: Neyman-Pearson lemma, monotone likelihood ratio, likelihood-ratio tests, large-sample theory. Contingency tables, confidence intervals, invariance. Introduction to decision theory. Prerequisite: STAT 512. Offered: W.

STAT 516 Stochastic Modeling of Scientific Data (3-) Covers discrete-time Markov chain theory; inference for discrete-time Markov chains; Monte Carlo methods; missing data; hidden Markov models; and Gaussian Markov random fields. Prerequisite: either STAT 342 or STAT 396. Offered: A.

STAT 517 Stochastic Modeling of Scientific Data (-3) Covers Markov random fields; continuous-time Markov chains; birth-death and branching processes; and point processes and cluster models. Procedures for inference for these stochastic processes, including Likelihood methods and estimating equations. Prerequisite: STAT 516. Offered: W.

STAT 518 Stochastic Modeling Project (3) Student in-depth analyses, oral presentations, and discussion of selected research articles focusing on stochastic modeling of, and inference for, scientific data. Prerequisite: STAT 517 and permission of instructor. Offered: Sp.

STAT 519 Time Series Analysis (3) Descriptive techniques. Stationary and nonstationary processes, including ARIMA processes. Estimation of process mean and autocovariance function. Fitting ARIMA models to data. Statistical tests for white noise. Forecasting. State space models and the Kalman filter. Robust time series analysis. Regression analysis with correlated errors. Statistical properties of long memory processes. Prerequisite: STAT 513.

STAT 520 Spectral Analysis of Time Series (4) Estimation of spectral densities for single and multiple time series. Nonparametric estimation of spectral density, cross-spectral density, and coherency for stationary time series, real and complex spectrum techniques. Bispectrum. Digital filtering techniques. Aliasing, prewhitening. Choice of lag windows and data windows. Use of the fast Fourier transform. The parametric autoregressive spectral density estimate for single and multiple stationary time series. Spectral analysis of nonstationary random processes and for randomly sampled processes. Techniques of robust spectral analysis. Prerequisite: one of STAT 342, STAT 390, STAT 481, STAT 509/CS&SS 509/ECON 580, or IND E 315. Offered: jointly with E E 520.

STAT 521 Advanced Probability (3) Measure theory and integration, independence, laws of large numbers. Fourier analysis of distributions, central limit problem and infinitely divisible laws, conditional expectations, martingales. Prerequisite: either MATH 426 or MATH 576. Offered: jointly with MATH 521; A.

STAT 522 Advanced Probability (3) Measure theory and integration, independence, laws of large numbers. Fourier analysis of distributions, central limit problem and infinitely divisible laws, conditional expectations, martingales. Prerequisite: either MATH 426 or MATH 576. Offered: jointly with MATH 522; W.

STAT 523 Advanced Probability (3) Measure theory and integration, independence, laws of large numbers. Fourier analysis of distributions, central limit problem and infinitely divisible laws, conditional expectations, martingales. Prerequisite: either MATH 426 or MATH 576. Offered: jointly with MATH 523; Sp.

STAT 524 Design of Medical Studies (3) Design of medical studies, with emphasis on randomized controlled clinical trials. Bias elimination, controls, treatment assignment and randomization, precision, replication, power and sample size calculations, stratification, and ethics. Suitable for graduate students in biostatistics and for research-oriented graduate students in other scientific fields. Prerequisite: BIOST 511 or equivalent, and one of BIOST 513, BIOST 518, STAT 421, STAT 423, STAT 512, or EPI 512; or permission of instructor. Offered: jointly with BIOST 524; Sp.

STAT 527 Nonparametric Regression and Classification (3) *Minin, Raftery, Richardson, Wakefield* Covers techniques for smoothing and classification including spline models, kernel methods, generalized additive models, and the averaging of multiple models. Describes measures of predictive performance, along with methods for balancing bias and variance. Prerequisite: either STAT 502 and STAT 504 or BIOST 514 and BIOST 515. Offered: jointly with BIOST 527; Sp.

STAT 528 Applied Statistics Capstone (3) *McCormick, Sampson, Wakefield* Covers technical and non-technical aspects of applied statistics work, building on methods taught in prerequisite courses. Key elements include: study design, determining the aim of the analysis, choosing an appropriate method, and report writing. Prerequisite: STAT 502; STAT 504; STAT 536; STAT 570. Offered: W.

STAT 529 Sample Survey Techniques (3) Design and implementation of selection and estimation procedures. Emphasis on human populations. Simple, stratified, and cluster sampling; multistage and two-phase procedures; optimal allocation of resources; estimation theory; replicated designs; variance estimation; national samples and census materials. Prerequisite: either STAT 421, STAT 423, STAT 504, QMETH 500, BIOST 511, or BIOST 517, or equivalent; or permission of instructor. Offered: jointly with BIOST 529/CS&SS 529.

STAT 530 Wavelets: Data Analysis, Algorithms, and Theory (3) Review of spectral analysis. Theory of continuous and discrete wavelets. Multiresolution analysis. Computation of discrete wavelet transform. Time-scale analysis. Wavelet packets. Statistical properties of wavelet signal extraction and smoothers. Estimation of wavelet variance. Prerequisite: some Fourier theory and linear algebra; MATH 390/STAT 390, ECON 481 or STAT 481, STAT 509/CS&SS 509/ECON 580, STAT 513, or IND E 315. Offered: jointly with E E 530; Sp.

STAT 533 Theory of Linear Models (3) Examines model structure; least squares estimation; Gauss-Markov theorem; central limit theorems for linear regression; weighted and generalized least squares; fixed and random effects; analysis of variance; blocking and stratification; and applications in experimental design. Prerequisite: STAT 421 or STAT 423; and STAT 513, BIOST 515, and a course in matrix algebra. Offered: jointly with BIOST 533; Sp.

STAT 534 Statistical Computing (3) Introduction to scientific computing. Includes programming tools, modern programming methodologies, (modularization, object oriented design), design of data structures and algorithms, numerical computing and graphics. Uses C++ for several substantial scientific programming projects. Prerequisite: experience with programming in a high level language. Offered: jointly with BIOST 534; Sp.

STAT 535 Statistical Learning: Modeling, Prediction, and Computing (3) Covers statistical learning over discrete multivariate domains, exemplified by graphical probability models. Emphasizes the algorithmic and computational aspects of these models. Includes additional topics in probability and statistics of discrete structures, general purpose discrete optimization algorithms like dynamic programming and minimum spanning tree, and applications to data analysis. Prerequisite: experience with programming in a high level language. Offered: A.

STAT 536 Analysis of Categorical and Count Data (3) Analysis of categorical data in the social sciences. Binary, ordered, and multinomial outcomes, event counts, and contingency tables. Focuses on maximum likelihood estimations and interpretations of results. Prerequisite: SOC 504, SOC 505, SOC 506, or equivalent; recommended: CS&SS 505 and CS&SS 506, or equivalent. Offered: jointly with CS&SS 536/SOC 536; A.

STAT 538 Statistical Learning: Modeling, Prediction, and Computing (3) Reviews optimization and convex optimization in its relation to statistics. Covers the basics of unconstrained and constrained convex optimization, basics of clustering and classification, entropy, KL divergence and exponential family models, duality, modern learning algorithms like boosting, support vector machines, and variational approximations in inference. Prerequisite: experience with programming in a high level language. Offered: W.

STAT 539 Statistical Learning: Modeling, Prediction, and Computing (3) *Meila* Supervised, applied project in statistical modeling, prediction, and computing. Prerequisite: STAT 535; STAT 538; computer programming at intermediate level. Offered: Sp.

STAT 542 Multivariate Analysis (3) Multivariate normal distribution; partial and multiple correlation; Hotelling's T^2 ; Bartlett's decomposition; various likelihood ratio tests; discriminant analysis; principal components; graphical Markov models. Prerequisite: STAT 582 or permission of instructor.

STAT 544 Bayesian Statistical Methods (3) Statistical methods based on the idea of a probability distribution over the parameter space. Coherence and utility. Subjective probability. Likelihood principle. Conjugate families. Structure of Bayesian inference. Limit theory for posterior distributions. Sequential experiments. Exchangeability. Bayesian nonparametrics. Empirical Bayes methods. Prerequisite: STAT 513 or permission of instructor.

STAT 547 Options and Derivatives (4) Covers theory, computation, and statistics of options and derivatives pricing, including options on stocks, stock indices, futures, currencies, and interest rate derivatives. Prerequisite: STAT 506 or permission of instructor; recommended: ECON 424.

STAT 548 Machine Learning for Big Data (4) *Fox, Guestrin* Covers machine learning and statistical techniques for analyzing datasets of massive size and dimensionality. Representations include regularized linear models, graphical models, matrix factorization, sparsity, clustering, and latent factor models. Algorithms include sketching, random projections, hashing, fast nearest-neighbors, large-scale online learning, and parallel learning (Map-Reduce, GraphLab). Prerequisite: either STAT 535 or CSE 546. Offered: jointly with CSE 547; W.

STAT 549 Statistical Methods for Portfolios (4) Covers the fundamentals of modern statistical portfolio construction and risk measurement, including theoretical foundations, statistical methodology, and computational methods using modern object-oriented software for data analysis, statistical modeling, and numerical portfolio optimization. Prerequisite: ECON 424 or equivalent, or permission of instructor.

STAT 550 Statistical Genetics I: Mendelian Traits (3) Mendelian genetic traits. Population genetics; Hardy-Weinberg, allelic variation, subdivision. Likelihood inference, information and power; latent variables and EM algorithm. Pedit-

gree relationships and gene identity. Meiosis and recombination. Linkage detection. Multipoint linkage analysis. Prerequisite: STAT 390 and STAT 394, or permission of instructor. Offered: jointly with BIOST 550; Sp.

STAT 551 Statistical Genetics II: Quantitative Traits (3) Statistical basis for describing variation in quantitative traits. Decomposition of trait variation into components representing genes, environment and gene-environment interaction. Methods of mapping and characterizing quantitative trait loci. Prerequisite: STAT/BIOST 550; STAT 423 or BIOST 515; or permission of instructor. Offered: jointly with BIOST 551; A.

STAT 552 Statistical Genetics III: Design and Analysis (3) Overview of probability models, inheritance models, penetrance. Association and linkage. The lod score method. Affected sib method. Fitting complex inheritance models. Design mapping studies; multipoint, disequilibrium, and fine-scale mapping. Ascertainment. Prerequisite: STAT/BIOST 551; GENOME 371; or permission of instructor. Offered: jointly with BIOST 552; W.

STAT 560 Hierarchical Modeling for the Social Sciences (4) Explores ways in which data are hierarchically organized, such as voters nested within electoral districts that are in turn nested within states. Provides a basic theoretical understanding and practical knowledge of models for clustered data and a set of tools to help make accurate inferences. Prerequisite: SOC 504, SOC 505, SOC 506 or equivalent; recommended: CS&SS 505, CS&SS 506 or equivalent. Offered: jointly with CS&SS 560/SOC 560.

STAT 561 Special Topics in Applied Statistics (1-5, max. 15) Data analysis, spectral analysis or robust estimation. Prerequisite: permission of instructor.

STAT 562 Special Topics in Applied Statistics (1-5, max. 15) Data analysis, spectral analysis or robust estimation. Prerequisite: permission of instructor.

STAT 564 Bayesian Statistics for the Social Sciences (4) Statistical methods based on the idea of probability as a measure of uncertainty. Topics covered include subjective notion of probability, Bayes' Theorem, prior and posterior distributions, and data analysis techniques for statistical models. Prerequisite: SOC 504, SOC 505, SOC 506 or equivalent; recommended: CS&SS 505; CS&SS 506. Offered: jointly with CS&SS 564.

STAT 566 Causal Modeling (4) Construction of causal hypotheses. Theories of causation, counterfactuals, intervention vs. passive observation. Contexts for causal inference: randomized experiments; sequential randomization; partial compliance; natural experiments, passive observation. Path diagrams, conditional independence, and d-separation. Model equivalence and causal under-determination. Prerequisite: course in statistics, SOC 504, SOC 505, SOC 506, or equivalent; recommended: CS&SS 505, CS&SS 506, or equivalent. Offered: jointly with CS&SS 566.

STAT 567 Statistical Analysis of Social Networks (4) Statistical and mathematical descriptions of social networks. Topics include graphical and matrix representations of social networks, sampling methods, statistical analysis of network data, and applications. Prerequisite: SOC 504, SOC 505, SOC 506, or equivalent; recommended: CS&SS 505; CS&SS 506. Offered: jointly with CS&SS 567.

STAT 570 Advanced Regression Methods for Independent Data (3) Covers linear models, generalized linear and non-linear regression, and models. Includes interpretation of parameters, including collapsibility and non-collapsibility, estimating equations; likelihood; sandwich estimations; the bootstrap; Bayesian inference: prior specification, hypothesis testing, and computation; comparison of approaches; and diagnostics. Prerequisite: STAT 512 and STAT 513; BIOST/STAT 533 or STAT 421/STAT 502 and STAT 423/STAT 504; a course in matrix algebra. Offered: jointly with BIOST 570; A.

STAT 571 Advanced Regression Methods for Dependent Data (3) Covers longitudinal data models, generalized

linear and non-linear mixed models; marginal versus conditional models; generalized estimating equations, likelihood-based inference, REML, BLUP, and computation of integrals; Bayesian inference: Markov chain Monte Carlo; covariance models, including models for split plot designs; comparison of approaches; and diagnostics. Prerequisite: BIOST570/STAT 570. Offered: jointly with BIOST 571; W.

STAT 572 Advanced Regression Methods: Project (3) Student presentations and discussion on selected methodological research articles focusing on regression modeling. Prerequisite: STAT 571. Offered: jointly with BIOST 572; Sp.

STAT 576 Statistical Methods for Survival Data (3) Statistical methods for censored survival data arising from follow-up studies on human or animal populations. Parametric and nonparametric methods, Kaplan-Meier survival curve estimator, comparison of survival curves, log-rank test, regression models including the Cox proportional hazards model, competing risks. Prerequisite: STAT 581 and either BIOST 515, STAT 473, or equivalent. Offered: jointly with BIOST 576.

STAT 578 Special Topics in Advanced Biostatistics (*, max. 30) Advanced-level topics in biostatistics offered by regular and visiting faculty. Prerequisite: permission of instructor. Offered: jointly with BIOST 578; AWSpS.

STAT 579 Data Analysis and Reporting (2, max. 8) Analysis of real data to answer scientific questions. Common data-analytic problems. Sensible approaches to complex data. Graphical and tabular presentation of results. Writing reports for scientific journals, research collaborators, consulting clients. Graduate standing in statistics or biostatistics or permission of instructor. Offered: jointly with BIOST 579; AWSp.

STAT 581 Advanced Theory of Statistical Inference (3) Limit theorems, asymptotic methods, asymptotic efficiency and efficiency bounds for estimation, maximum likelihood estimation, Bayes methods, asymptotics via derivatives of functionals, sample-based estimates of variability: (bootstrap and jackknife); robustness; estimation for dependent data, nonparametric estimation and testing. Prerequisite: STAT 513; either MATH 426 or MATH 576. Offered: A.

STAT 582 Advanced Theory of Statistical Inference (3) Limit theorems, asymptotic methods, asymptotic efficiency and efficiency bounds for estimation, maximum likelihood estimation, Bayes methods, asymptotics via derivatives of functionals, sample-based estimates of variability: (bootstrap and jackknife); robustness; estimation for dependent data, nonparametric estimation and testing. Prerequisite: STAT 581. Offered: W.

STAT 583 Advanced Theory of Statistical Inference (3) Limit theorems, asymptotic methods, asymptotic efficiency and efficiency bounds for estimation, maximum likelihood estimation, Bayes methods, asymptotics via derivatives of functionals, sample-based estimates of variability: (bootstrap and jackknife); robustness; estimation for dependent data, nonparametric estimation and testing. Prerequisite: STAT 582. Offered: Sp.

STAT 590 Statistics Seminar (*, max. 15) Prerequisite: permission of graduate program coordinator. Credit/no-credit only. Offered: AWSp.

STAT 591 Special Topics in Statistics (1-5, max. 15) Distribution-free inference, game and decision theory, advanced theory of estimation (including sequential estimation), robustness, advanced probability theory, stochastic processes or empirical processes. Prerequisite: permission of instructor. Offered: A.

STAT 592 Special Topics in Statistics (1-5, max. 15) Distribution-free inference, game and decision theory, advanced theory of estimation (including sequential estimation), robustness, advanced probability theory, stochastic processes or empirical processes. Prerequisite: permission of instructor. Offered: W.

STAT 593 Special Topics in Statistics (1-5, max. 15) Distribution-free inference, game and decision theory, advanced

theory of estimation (including sequential estimation), robustness, advanced probability theory, stochastic processes or empirical processes. Prerequisite: permission of instructor. Offered: Sp.

STAT 598 Techniques of Statistical Consulting (1) Seminar series covering technical and non-technical aspects of statistical consulting, including skills for effective communication with clients, report writing, statistical tips and rules of thumb, issues in survey sampling, and issues in working as a statistical consultant in academic, industrial, and private-practice settings. Prerequisite: entry code. Offered: jointly with BIOST 598; ASp.

STAT 599 Statistical Consulting (*, max. 12) Consulting experience in data analysis, applied statistics. Student required to provide consulting services to students and faculty three hours per week. Prerequisite: permission of Graduate Program Coordinator. Credit/no-credit only. Offered: AWSpS.

STAT 600 Independent Study or Research (*-) Prerequisite: permission of Graduate Program Coordinator. Offered: AWSpS.

STAT 700 Master's Thesis (*-) Prerequisite: permission of Graduate Program Coordinator. Offered: AWSpS.

STAT 800 Doctoral Dissertation (*-) Prerequisite: permission of Graduate Program Coordinator. Offered: AWSpS.

College of Built Environments

224 Gould

Dean

John Schaufelberger

Associate Dean

Jeffrey Ochsner

www.be.washington.edu

The College of Built Environments (CBE) devotes its resources to the tangible improvement of built and natural environments. Four departments comprise the college: architecture, construction management, landscape architecture, and urban design and planning. Each prepares students for professional careers involving the design, planning, production, and sustainability of physical and natural environments, as well as addressing policies and programs that engage problems of urban growth and livable communities.

The College offers a variety of programs and degrees focusing on the environmental design and construction disciplines within a liberal arts education. The undergraduate programs of the Departments of Construction Management and Landscape Architecture lead to professional degrees that serve as the educational credentials for careers in their respective fields. Undergraduate programs in the Departments of Architecture and Urban Design and Planning offer students pre-professional undergraduate majors in Architectural Studies and in Community, Environment, and Planning respectively that prepares students for professional programs in the design and planning disciplines, as well as related leadership roles in society.

The College offers a variety of professional and post-professional Master's degrees: Master of Architecture; Master of Science in Architecture; Master of Science in Construction Management (evening degree); Master of Urban Planning; Master of Landscape Architecture; and Master of Science in Real Estate. Master's students may elect also to work toward the interdisciplinary Certificates in Urban Design and in Historic Preservation. The College offers two interdisciplinary doctoral degrees: the Ph.D. in the Built Environment and the Ph.D. in Urban Design and Planning. All program curricula encompass an appropriate level of design and technical understanding, and include broader social, economic, and cultural issues fundamental to understanding, preserving, and enriching our built and natural environments.

As a part of a major university and metropolis in the Pacific Northwest, the College directly engages this extraordinary setting as a laboratory for study. Faculty members in CBE departments and programs work closely with various professional communities to build curricula and offer experience attuned to the understanding and creation of appropriate built environments.

FACILITIES

Computing Facilities

Mark Baratta, Director

The College provides an extensive computing infrastructure to support student work. Students have easy access to high-speed wired and wireless networking in the College's buildings, computers in labs and studios, a comprehensive collection of software used in our disciplines, specialized hardware (large-format scanning and plotting, laser cut-

ters, 3D printer), an equipment loaner program (laptops, digital cameras (fixed-lens and SLR), camcorders, digital audio recorders, projectors), and consulting. Most classrooms and seminar rooms are equipped with projectors; several have interactive whiteboard displays.

Built Environments Library

Alan Michelson, Librarian

The Built Environments Library, 334 Gould, is the primary location for materials on architecture, landscape architecture, construction management, and urban design and planning. The collection contains 46,745 volumes, 7,500 microforms, and 163 currently-received serial subscriptions and 243 serial titles in total. Access to its collection is provided through the UW Libraries Information Gateway, a single World Wide Web location which encompasses all the library's print and electronic resources as well as tools, services, and the ability to search the library's catalog and a wide range of Internet resources. The Gateway is available in all UW libraries and on the Web at www.lib.washington.edu.

Photography Lab

John Stamets, Lecturer

A large photography laboratory is provided with studio and film darkroom facilities for use by photography classes, design-studio classes, special instruction, and independent activity.

Shop

Penny Maulden, Director

Fully staffed and well-equipped workshops provide students opportunities to design and make projects using wood, metals, concrete, plaster, plastics and other materials. A wide and deep selection of hand-tools, machine-tools and digital fabrication tools support the instructional use of the workshops and adjacent classroom. Coursework and research supported by the workshops include building design, design/build, furniture studios, structures, materials, and digital fabrication courses. Individual projects including thesis and research can also be accommodated.

Visual Resources Collection

Joshua Polansky, Director

The Visual Resources Collection consists of over 80,000 digital images covering architectural, landscape, design and planning, and construction subject matter, supporting the curricular and research needs of the College. They are accessible to students and faculty through an online image database. New materials for lectures and projects are continually added.

UNDERGRADUATE DEGREE PROGRAMS

The College of Built Environments offers the following professional and pre-professional undergraduate degree options and opportunities:

College Bachelor Degree Programs

- Bachelor of Arts in Architectural Studies
- Bachelor of Arts in Community, Environment, and Planning
- Bachelor of Landscape Architecture
- Bachelor of Science in Construction Management

Minors and Dual Degree Options

- Minor in Architecture
- Minor in Landscape Architecture

- Minor in Urban Design and Planning
- Dual Degree option combining the Bachelor of Arts in Architectural Studies with the Bachelor of Science in Construction Management

GRADUATE PROGRAM

The College of Built Environments offers the following professional, post-professional graduate degrees, and doctoral options and opportunities:

College Graduate Degree Programs

- Master of Architecture
- Master of Science in Construction Management
- Master of Landscape Architecture
- Master of Science in Real Estate
- Master of Urban Planning
- Distance Learning Master Program in Construction Engineering
- Distance Learning Master in Infrastructure Planning Management

Interdisciplinary PhD Degree Programs

- PhD in the Built Environment
- PhD in Urban Design and Planning

College-Wide Certificate Programs

Historic Preservation Certificate Program

The College of Built Environments offers education in historic preservation. This approach reflects a conscious choice to emphasize preservation within the context of the individual design professions. Thus, the curriculum offers an awareness and familiarity with issues involved in the identification, designation, interpretation, and preservation of historic places, as well as the restoration, adaptive reuse, and design of sympathetic new construction in historic contexts.

Program Coordinator

Box 355740

206-543-5996

hispres@uw.edu

www.be.washington.edu/certificates/hp.html

Admission Requirements

Open to students accepted into a professional or graduate program in the College of Built Environments, including the M.Arch., M.S. (Arch. History/Theory), B.L.A., M.L.A., M.U.P., and Ph.D. programs. Application is made first for admission to a degree program within the college. Once accepted, a separate "Statement of Interest" form is required. Application is made within the first two weeks of classes for two-year degree programs, and by the end of the first year for three-year programs.

Certificate Requirements

The certificate consists of courses required for the student's degree and an additional, complementary 12-15 credits of preservation study which may not overlap with courses required for students' degrees but which may fall into elective requirements and be part of the total credits required for the degree. We recommend students meet with the program coordinator and Preservation faculty to choose the courses that will best complement their degree program and academic interests in preservation.

1. *Track I:* Requirements for Students in the M.Arch. Degree Program

- a. *Courses Required from the M.Arch. Curriculum:* ARCH 500 (6), ARCH 590 (3), an advanced studio on preservation design or design in an historic context
 - b. *Core Certificate Courses:* ARCH 582 (3) if available; Case Studies, either ARCH 498 (3) or URBDP 587 (3); Preservation Planning, either URBDP 585 (3) or URBDP 586 (4) *Elective Course(s):* Additional electives in areas related to preservation in architecture, landscape architecture, planning, or related design.
 - c. *Thesis:* Thesis topic with content in the area of preservation design or related issues in historic preservation. Thesis committee chaired by a member of the Historic Preservation faculty.
2. *Track II: Requirements for Students in the B.L.A., M.L.A., M.S. (Arch), M.U.P., and Ph.D. Degree Programs*
 - a. *Courses Required from Degree Curriculum:* Any required or "selective" courses with preservation/historical content, and if the degree requires studio work (B.L.A., M.L.A., M.U.P.), choose a studio with preservation content.
 - b. *Core Certificate Courses:* URBDP 585 (3), URBDP 586 (4), one graduate seminar in preservation planning (3).
 - c. *Elective Course(s):* Additional electives in areas related to preservation in architecture, landscape architecture, planning, or related design.
 - d. *Thesis:* Thesis, professional paper, or dissertation topic with content in the area of preservation planning and design or related issues in historic preservation. Thesis must be chaired by a member of the Historic Preservation faculty.

Urban Design Certificate Program

The College of Built Environments offers an interdisciplinary program which leads to the Certificate of Achievement in Urban Design for students in the B.L.A., M.L.A., M.Arch., and M.U.P. professional degrees and to students in the Interdisciplinary Ph.D. in Urban Design and Planning or the Ph.D. in the Built Environment. It is designed to give students in these programs a broad and strong understanding of urban design that they may incorporate into their later professional and scholarly careers.

Program Coordinator

Box 355740

206-543-5996

ud@uw.edu

www.be.washington.edu/certificates/ud.html

Admission Requirements

Any student accepted into the degree programs listed above is eligible and may begin participate in the program by returning a Statement of Interest (this form may be obtained from the program office or the program website). We recommend that students in two-year programs apply at the beginning of their programs and that those in longer programs apply at the beginning of their second year. However, students must possess the necessary design abilities prior to enrollment in advanced studios. Such enrollment is determined by the studio in question (for example, advanced studios may require a prerequisite studio preparatory class and/or previous studios and/or the equivalent as evaluated by the studio instructor).

Certificate Requirements

The certificate consists of courses required for the student's degree and an additional, complementary 12-15 credits of urban design courses, which may not overlap with courses required for students' degrees but which may fall into elective requirements and be part of the total credits required for the degree.

These requirements vary with the students' degree requirements (for example, if a course listed below is required for the students' degree requirements, the student must meet the 12-15 credit requirement by choosing an additional course). We recommend students meet with the program coordinator and Urban Design Program faculty to choose the courses that will best complement their degree program and academic interests in urban design.

1. Core Curriculum

- a. *Introductory Course:* ARCH 590 (M.Arch. and M.L.A. students); L ARCH 362 (B.L.A. students); URBDP 470 (any program); URBDP 500 (M.U.P. students) URBDP 479
 - b. URBDP 580
 - c. Thesis prep as appropriate for students' degree programs
2. *Urban Design Studios:* Three required from ARCH 500-505, L ARCH 402-403, L ARCH 503-505, or URBDP 507-508 as designated by the program each quarter; students must take at least one studio either outside their home department or with a clear interdisciplinary focus) *Mandatory Course Areas*
 - a. *Urban Form and History:* One course from L ARCH 450, L ARCH 451, L ARCH 498 (when history of urban design), URBDP 564, URBDP 565, or others as appropriate
 - b. *Urban Design Methods:* Two courses from L ARCH 341, L ARCH 571, URBDP 474, URBDP 576, URBDP 598, or others as appropriate
 - c. *Urban Studies:* One course from PB AF 527, URBDP 422, URBDP 466, URBDP 500, URBDP 510, URBDP 520, URBDP 530, URBDP 560, URBDP 562, or others as appropriate
 - d. *Urban Development:* One course from URBDP 561, URBDP 552, URBDP 553, URBDP 554, URBDP 555, or others as appropriate
 3. *Thesis:* Students' theses, professional projects, or dissertations must have an urban design component and a member of the Urban Design Program faculty member as their committee chair.

Architecture

208 Gould

Architecture includes the study of building design, representation, computing, structures, construction materials, environmental control systems, history, theory, and professional practice. In its teaching, research, practice, and community engagement, the department addresses the traditions of architecture within the context of social and technological change, a legacy of craft in the making of architecture, an activist and community-based design process, and the principles of ethical action to address human and environmental concerns.

UNDERGRADUATE PROGRAM

Adviser

208 Gould Hall, Box 355720

(206) 543-3043

bainfo@uw.edu

Advising for the first two years of the program is done through the Undergraduate Gateway Center, 171 Mary Gates Hall.

The Department of Architecture offers the following programs of study:

- Bachelor of Arts degree with a major in architecture
- Bachelor of Arts degree with a major in architectural design
- A dual-degree program leading to the Bachelor of Arts degree with a major in architectural design and the Bachelor of Science degree in construction management
- A minor in architecture

The Bachelor of Arts (with a major in architecture) is a four-year, undergraduate degree program in architecture in which students explore the factors that shape our built environment. The program provides a liberal arts foundation in the discipline of architecture, which covers spatial reasoning, aesthetics, political and economic structures, socio-cultural influences, urbanism, landscape, and ecology, and gives students the opportunity to concentrate their studies through a sequence of courses investigating history and theory, materials and making, or sustainable technologies. Students in the Bachelor of Arts (with a major in architecture) program can prepare for graduate study in architecture and related fields such as construction management, landscape architecture, real estate, and urban planning, as well as careers in other fields.

The Bachelor of Arts (with a major in architecture) consists of two, two-year sequences. Years one and two include 14 credits of preparatory architectural coursework in addition to at least 76 credits devoted to satisfying the UW's general education requirements. These include coursework in the Visual, Literary, and Performing Arts (VLPA), Individuals and Societies (I&S), mathematics, science, and other areas of knowledge. The intent of these first two years is to help students build their skills in communication and critical thinking; gain broad exposure to other disciplines in order to make more informed academic and career decisions; and provide the broad academic foundation essential to successful study in architecture. All interested UW students are welcome to participate in this first two-year sequence.

The second two-year sequence begins in the junior year. Upper-division admission to the program requires the completion of architecture prerequisites and a minimum of 90 credits, and occurs through a selection process at the beginning of spring quarter of the sophomore year. Years three and four include 29 credits of required courses, including the capstone, 38 credits of discipline-specific selectives and electives, and 23 credits of upper-division electives. Students can focus their studies by choosing a concentration of history and theory, materials and making, or sustainable technologies, or a combination of these.

The Bachelor of Arts (with a major in architectural design) is a pre-professional degree that prepares candidates for admission with advanced standing to professional architectural programs. It is also good preparation for other roles in society that benefit from an understanding of and exposure to architectural design and problem solving such as government, development, management, planning, art, graphic design, and digital arts. Students develop visual literacy and complex problem solving through the design process, including researching historical precedents, analyzing theoretical texts, and on-site understanding of the physical built and natural environment. International study programs (Rome, Scandinavia, India, Mexico, Japan) provide further opportunities for students to engage built environments within global/local and contemporary/historical cultural contexts. A focus on sustainable technologies and the craft and making of architecture play an important role throughout the program.

The Bachelor of Arts (with a major in architectural design) is for students who are interested in the architecture profession and who may continue their studies by earning a graduate professional degree in architecture. The master's degree in architecture is a professional degree and generally takes two or more years to complete if the student

enters with the pre-professional Bachelor of Arts (with a major in architectural design).

The college also offers a design and construction concurrent degree (Bachelor of Arts with a major in architectural design, BS in construction management), awarded after completion of 227 credits. Students interested in this double degree must complete the prerequisites for the architectural design major, be admitted to architectural design, and then apply to construction management while completing the architectural design major. This is a five-year program. In addition, the College of Built Environments offers three other bachelor degrees: the BLA in landscape architecture, a five-year professional degree; the BS in Construction Management, a four-year professional degree; and the BA in Community, Environment, and Planning, a four-year interdisciplinary degree.

Bachelor of Arts (with a major in architecture)

Suggested First- and Second-Year College Courses: See Department Admission Requirements below.

Department Admission Requirements

Applicants are considered for autumn admission only. Admission is competitive. Admission groups are freshmen/sophomore admission (F/S A) and upper-division admission (UA). Consult department website for more information and application form.

Freshman Admission

The department enrolls freshman-year students directly out of high school, prior to their completion of any university-level prerequisites. All freshmen indicating architecture on their UW application are considered for freshman admission to the BA (with a major in architecture) program; no additional application materials are required. Students admitted as freshmen must complete all preparatory and general education requirements listed under upper-division admission as well as all major requirements in order to earn a degree.

Sophomore Admission

Application deadline is the first Monday of spring quarter. Admission decisions are based on an applicant's academic performance and potential, extent and quality of relevant experience, and personal motivation. Completion of prerequisite requirements does not guarantee admission. Students admitted as sophomores must complete all preparatory and general education requirements listed under upper-division admission as well as all major requirements in order to earn a degree.

Transfer Admission

Transfer students may apply for admission at the beginning of the sophomore year or the beginning of the junior year. Application deadlines are the same as for sophomore or upper-division admission. Admission decisions are based on an applicant's academic performance and potential, extent and quality of relevant experience, and personal motivation. Transfer students must also submit a separate application to the UW.

1. Sophomore-year transfer students must complete all preparatory architectural coursework and general education requirements listed under upper-division admission requirements, as well as all major requirements, in order to earn a degree.
2. Junior-year transfer students must complete all general education requirements and are strongly encouraged to complete all preparatory architectural coursework before entry into the program. These courses can be taken through UW Educational Outreach, on a non-matriculated basis, prior to admission to the UW. These, as well as all major requirements, must be completed in order for a student to earn a degree.

Upper-Division Admission Requirements (UA) Junior Standing (90 or more credits completed by the quarter of admission), to include the following:

- a. *Preparatory Architectural Coursework (19 credits):* ARCH 200, ARCH 231, ARCH 350, ARCH 351, ARCH 352
 - b. *General Education Requirements:* Visual, Literary, and Performing Arts (VLPA) (20 credits); Individuals and Societies (I&S) (20 credits); Natural World (NW) (20 credits), including 5 credits of mathematics (MATH 112, MATH 124); additional Areas of Knowledge (6 credits); electives (3 credits). Composition/writing (10 credits total) may be met by freshman English composition courses and/or other general education courses designated "W," with a minimum 2.0 grade for each course; diversity (5 credits) may be satisfied by general education courses designated DIV.
3. Minimum 2.80 college/university GPA
 4. Department Application (See department website) Transcripts of all college-level work. Unofficial transcripts are accepted.
 5. *Application Deadline:* First Monday of spring quarter. For enrolled UW students, all prerequisite requirements must be completed or under way by the application deadline, and all prerequisite requirements must be completed by the time the student enters the program in autumn quarter. Admission decisions are based on an applicant's academic performance and potential, extent and quality of relevant experience, and personal motivation. Completion of prerequisite requirements does not guarantee admission.

Major Requirements

1. *Coursework (91 or more credits completed during years three and four):* ARCH 331, ARCH 332, ARCH 361, ARCH 362, ARCH 468, ARCH 469. One history and theory selective course (3 credits), one craft and fabrication selective (3 credits), and one sustainable technologies selective (3 credits). Three Department of Architecture areas of knowledge courses (at least 9 credits), two approved electives offered with College of Built Environment programs (at least 6 credits), five approved Department of Architecture electives (at least 15 credits), and at least 23 credits of approved upper-division electives. Selective and areas of knowledge courses are chosen from approved lists maintained by the department.
2. Capstone (ARCH 469) completed in residence at the UW
3. Minimum 2.00 cumulative GPA for all courses presented for the major

Bachelor of Arts (with a major in architectural design)

Department Admission Requirements

1. 90 credits to include the following:
 - a. *Preparatory Architectural Coursework (17 credits):* ARCH 350, ARCH 351, ARCH 352 (9 credits); ARCH 210, ARCH 211 (8 credits). Note: These courses can be taken through UW Extension on a non-matriculated basis, prior to admission to the UW, or they can be taken in the sophomore year on campus.
 - b. *General Education Requirements (70 credits):* English composition (5 credits); Visual, Literary, and Performing Arts (VLPA) (20 credits); Individuals and Societies (I&S) (20 credits); Natural World (NW) (20 credits), including MATH 112, MATH 124, or MATH 145; additional Areas of Knowledge (5 credits).
 - c. Electives (3 credits) While the cumulative GPA is an important factor in the admission evaluation, the committee places emphasis on the evaluation of

performance in the preparatory architectural coursework the student has completed. It is to the student's advantage to take as many of these courses as possible before applying.

2. *Application Deadline:* May 15 for autumn quarter only. Prerequisite courses must be completed by the time the student enters the program in autumn quarter.

Major Requirements

90 credits as follows:

1. *Preprofessional Coursework (69 credits):* ARCH 300, ARCH 301, ARCH 302, ARCH 315, ARCH 320, ARCH 321, ARCH 322, ARCH 380, ARCH 400, ARCH 401, ARCH 402, ARCH 431, ARCH 460, CM 313. One selective course in each of the following areas: (1) graphics/media; (2) history/theory; (3) building science/materials. Selective courses to be chosen from approved lists maintained by the department.
2. 21 credits of approved upper-division electives.
3. The final 45 credits must be completed as a matriculated student in residence at the UW.
4. Minimum 2.50 cumulative GPA for all work done in residence.

Dual-Degree Program

Admission Requirements

Dual-degree majors first apply to the architectural design program and must meet architectural design admission requirements. Admitted architectural design students apply to the construction management program during spring quarter of their junior year (first year in the architecture program). For architectural design students, construction management prerequisites are waived, but such students must take CM 313 and CM 323 prior to the construction management application deadline, April 1.

Dual Degree Program Requirements

139 credits, as follows:

1. *Architecture Foundation Courses (60 credits):* ARCH 300, ARCH 301, ARCH 302, ARCH 315, ARCH 320, ARCH 321, ARCH 322, ARCH 380, ARCH 400, ARCH 401, ARCH 402, ARCH 431, ARCH 460
2. *Architecture Selectives (6 credits):* 3 credits of graphic/media selective chosen from among the following BIM-recommended courses: ARCH 316, ARCH 410, ARCH 412, ARCH 413, ARCH 415, ARCH 418, ARCH 478, ARCH 481, ARCH 482, ARCH 484, ARCH 485, ARCH 486, ARCH 498. 3 credits of history/theory selective from among the following courses: ARCH 441, ARCH 442, ARCH 450, ARCH 452, ARCH 455, ARCH 457
3. *Construction Management Courses (64 credits):* CM 310, CM 311, CM 312, CM 313, CM 321, CM 322, CM 323, CM 331, CM 332, CM 333, CM 334, CM 410, CM 411, CM 412, CM 421, CM 422, CM 423, CM 431 (capstone experience), CM 432, CM 433; either CM 301 or B CMU 301
4. *Construction/Construction Science Electives (6 credits):* Two of the following courses: CM 415, CM 420, CM 425, or ARCH 420
5. *Approved Electives (3 credits):* May be chosen from among CM or ARCH courses
6. Minimum 2.50 cumulative GPA for all work done in residence

Note: A minimum of 225 credits is required to complete a dual degree.

Minor

Minor Requirements: 25 credits to include a minimum of 20 credits in ARCH courses (at least 9 credits at the upper-

division level) and 5 additional upper-division credits from courses in the College of Built Environments.

Student Outcomes and Opportunities

• Learning Objectives and Expected Outcomes:

- The architecture program emphasizes a broad liberal arts foundation followed by a focus on architectural history and theory, materials and making, and sustainable technologies. Specific goals for student learning include an understanding of the sequences and history of human building activities; social, political, legal, and economic influences on design and construction; various architectural theories and current thought about the aesthetics of design; construction materials and their properties; relationships of buildings to their sites and ecological contexts; sustainable technologies used in building construction.
- The architectural design program emphasizes a broad liberal arts foundation followed by a focus on entry-level courses in architectural design, theory, the technology of building, and materials. Specific goals for student learning include an understanding of the organization of three-dimensional space in response to specific human needs; the sequences and history of human building activities; various architectural theories and current thought about the aesthetics of design; construction materials and their properties; building systems and their integration for human comfort; structural principles, relationships of buildings to their sites; social, political, legal, and economic influences of design and construction. Specific goals in the area of personal development include an ability to visualize three dimensions and think spatially; graphic, verbal, and written communication skills for design development and presentation; an ability to think critically and exercise self-criticism.
- **Honors Options Available:** For Interdisciplinary Honors, see University Honors Program.
- **Research, Internships, and Service Learning:** Internships are available and vary according to individual interests within the program. See adviser for details.
- **Department Scholarships:** A limited number of department scholarships are available to eligible students entering their final year of the major.
- **Student Organizations/Associations:** AIAS (American Institute of Architectural Students) *Of Special Note:* Most states require that an individual intending to become an architect hold an architecture degree accredited by the National Architectural Accrediting Board (NAAB). The NAAB accredits three types of degrees (1) the Bachelor of Architecture (BArch), which requires a minimum of five years of architectural study (this degree is not offered at the University of Washington), (2) the Master of Architecture (MArch), which requires a minimum of three years of study following an unrelated bachelor's degree or two years following a related pre-professional bachelor's degree, and (3) the Doctor of Architecture (this degree is not offered at the University of Washington). These professional degrees are structured to educate those who aspire to registration and licensure to practice as architects.

The UW's four-year, Bachelor of Arts degree in architectural design is a pre-professional degree and is not accredited by NAAB. The pre-professional degree is useful to those desiring a foundation in the field of architecture as preparation for either continued education in a professional degree program or for employment options in fields related to architecture.

Architectural education at the University of Washington requires a minimum of six or seven years of higher education to attain the first professional degree, the Master of

Architecture. The Curriculum is divided into three two-year segments of coursework with a pre-professional Bachelor of Arts degree (with a major in architectural design) awarded at the completion of the second two-year segment. The professional degree, Master of Architecture, is awarded only upon completion of the third segment. (Students with the Bachelor of Arts in Architecture or bachelor's degrees in unrelated fields take an additional year of coursework).

GRADUATE PROGRAM

Graduate Program Coordinator

208 Gould, Box 355720

(206) 543-4180

archinfo@uw.edu

The Department of Architecture offers two graduate level degrees: the Master of Architecture (MArch) and the Master of Science in architecture (MS Arch).

The MArch is a National Architectural Accrediting Board (NAAB)-accredited professional degree program that educates students already grounded in the sciences or liberal arts to become registered, licensed architects. Applicants interested in entering the profession of architecture should apply to the MArch program, which has three tracks:

- 2-year accredited MArch for candidates holding a BA or BS in architectural design
- 3-year accredited MArch for candidates holding a bachelor's degree in a discipline other than architecture
- Accredited dual degree, MArch/MLA, for candidates with or without prior architecture or landscape architecture degrees
- MArch in high performance building, a 1-year non-accredited post-professional program for candidates holding an accredited BArch or MArch

The MS Arch is a non-accredited advanced research-oriented degree for candidates who hold a bachelor's degree from a wide range of disciplinary backgrounds. The MS in Architecture has two distinct degree streams:

- MS Arch in design computing
- MS Arch in architectural history and theory

Master of Architecture

The MArch degree, accredited by the National Architectural Accrediting Board (NAAB), is the only professional degree offered by the University of Washington. Completion of the department's 2+year or 3+year MArch degree program satisfies the educational requirement for licensing (and registration as an architect

Candidates for the 2+year MArch degree usually complete seven full-time quarters of study including the master's thesis. This program requires 95 credits of coursework, including: 30 credits of design studio, 31 credits of core courses, 21 credits of electives, 4 credits of thesis preparation, and 9 credits of thesis. MArch students may choose to pursue one of three transcripted degree options: history, theory, and criticism; materials and fabrication; and sustainable systems and design. These options are integral to the 95 credits required for the MArch degree and involve 6 credits of studio, 6 credits of core courses, 9 credits of dedicated electives, and an option-related focus in the 4-credit thesis preparation course. Students may also choose to pursue certificate programs in the Department of Architecture and the College of Built Environments.

Candidates for the 3+year MArch degree begin the program with three quarters (51 credits) of preparatory coursework and an optional paid summer internship administered by the department. They then join the 2+year MArch group to complete the remaining 95 course credits for the degree, as described above.

Students in 2+ and 3+year MArch degree can also pursue a formal concurrent Master of Landscape Architecture (MLA); and can devise other informal concurrent degrees with departments in the College of Built Environments.

Candidates for the post-professional MArch degree in high-performance building usually complete three full-time quarters of study, including the master's thesis. This program requires 46 credits of coursework including: 6 credits of studio, 15 credits of core courses, 12 credits of electives, 4 credits of thesis preparation, and 9 credits of thesis.

Admission Requirements

1. Completed MArch application form
2. Transcripts from baccalaureate (or higher) degree(s). The admissions committee places primary emphasis on more recent and architecturally related coursework and expects a minimum 3.00 (B) (or higher) GPA in the last 90 graded quarter hours or last 60 semester hours.
3. GRE test scores from within the last five years
4. Portfolio of work in visual arts and/or design. The portfolio is of primary significance for all candidates.
5. Statement of purpose describing the candidate's professional aspirations and the extent to which the program can be expected to prepare him or her for those objectives
6. Written recommendations from three persons who can evaluate the applicant's past record and future promise of success in the program

Degree Requirements

95-146 credits, as follows:

1. **Preparatory-year requirements (for students in the 3+year MArch program only):** ARCH 303, ARCH 304, ARCH 305, ARCH 310, ARCH 311, ARCH 312, ARCH 323, ARCH 324, ARCH 331, ARCH 332, ARCH 350, ARCH 351, ARCH 352, ARCH 360
2. **First-year requirements:** ARCH 500, ARCH 501, ARCH 502, ARCH 521, ARCH 531, ARCH 533, ARCH 570, ARCH 590, ARCH 591, one architectural history and theory selective, elective.
3. **Second-year requirements:** ARCH 503, ARCH 504, ARCH 571, ARCH 595 or ARCH 599, one professional practice selective, electives.
4. **Final year requirement:** ARCH 700, and one elective

1-Year MArch in High Performance Building Degree Requirements

46 credits, as follows:

1. **Core Curriculum:** ARCH 503, ARCH 526, ARCH 530, ARCH 533
2. **Selectives:** 6 credits of building technology courses
3. **Electives:** 12 credits of electives
4. **Thesis:** 4 credits of ARCH 599; 9 credits of ARCH 700

Master of Science

The Master of Science (MS) in architecture program offers advanced, specialized study in two areas of specialization: design computing and architectural history and theory.

Candidates in the design computing stream pursue research in areas that include design methods, augmented and virtual environments, building simulation and analysis, digital fabrication, human computer interfaces for design, collaboration and community in design, and other related topics. Students work in the Design Machine Group (DMG), a collaborative research studio that fosters innovation and actively seeks ideas that shape the future of design and information technology. The 45 credits of coursework includes: 11 core credits, 21 credits of design computing

electives, 4 credits of thesis preparation, and 9 credits of thesis.

Candidates in the history and theory stream pursue advanced research on the history and theory of architecture applying a variety of historical and critical lenses. The program is broadly conceived to encompass the architectural, cultural and political forces that have shaped modernity in architecture, including all of its contemporary manifestations. The 45 credits of coursework include: 11 core credits, 21 credits of history and theory electives, 4 credits of thesis preparation, and 9 credits of thesis.

Admission Requirements

1. A completed MS in Architecture application form
2. Transcripts from baccalaureate (or higher) degree(s) with a minimum 3.00 (B) (or higher) GPA in the last 90 graded quarter hours or last 60 semester hours of coursework
3. GRE test scores taken within the last five years
4. A portfolio of work showing evidence of the applicant's preparation for study in design computing, or a writing sample that shows evidence of applicant's preparation for study in the history and theory of architecture.
5. A statement of purpose that clearly articulates the applicant's goals and the extent to which the program can be expected to prepare him or her for those objectives. The statement should also describe the applicant's background and experience appropriate to the program and must also include a proposed research focus.
6. Written recommendations from three persons who can evaluate the applicant's past record and future promise of success in the MS in Architecture program

Design Computing Stream Degree Requirements

45 credits, as follows:

1. *Core Curriculum*: ARCH 587, ARCH 588, ARCH 597
2. *Electives*: 21 credits to be chosen from design computing courses, or other approved courses.
3. *Thesis*: 4 credits of ARCH 599; 9 credits of ARCH 700

History and Theory Stream Degree Requirements

45 credits, as follows:

1. *Core Curriculum*: ARCH 560, ARCH 597, B E 552
2. *Electives*: 21 credits of architectural history and theory courses, or other approved courses.
3. *Thesis*: 4 credits of ARCH 599; 9 credits of ARCH 700

Certificate Programs

Two interdisciplinary certificate programs offered by the College of Built Environments are available to MArch students in the areas of historic preservation and urban design.

The department also offers certificates in design computing and lighting design.

International Studies

The department offers architecture in Rome, Italy, at the University of Washington Rome Center; architecture in Mexico City, Mexico; and architecture in Chandigarh, India. Other programs include travel to Scandinavia, Germany, Japan, and Australia.

Financial Aid

Each spring quarter the department awards scholarships and assistantships for the following academic year. These are more typically available to students already enrolled in the architecture program at the time of awarding, although some financial aid is offered to newly entering students.

Other financial aid and assistantship possibilities may be found through the Graduate School's Fellowships, Assistantships, and Awards and the Office of Student Financial Aid.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

ARCH 100 Introduction to Architecture Study (8) VLPA Introduces design studio instruction to students contemplating architecture as a field of study or career. Studio projects, informed by workshops, lectures, readings, field trips, and in-studio critiques introduce the history, theory, and practice of architecture. Includes instruction in basic design drawing and model making. Offered: S.

ARCH 150 Appreciation of Architecture I (2/3) VLPA Historical survey of the architecture of Western civilization. For nonmajors.

ARCH 151 Appreciation of Architecture II (2/3) VLPA Historical survey of the architecture of Western civilization. For nonmajors.

ARCH 200 Architectural Design and Representation I (5) VLPA Introduces architectural representation as fundamental medium for investigation, analysis, and documentation of objects, processes, and architectural space. Consists of a series of investigative projects that introduce orthographic projection, axonometric, and perspective drawing, through which students develop comprehensive skills in hand-drawing and digital media. Offered: A.

ARCH 201 Architectural Design and Representation II (5) VLPA Introduces the fundamentals of architectural design. Consists of a series of investigative projects that introduce principles of architectural design as well as concepts and skills in architectural and digital representation. Prerequisite: ARCH 200. Offered: W.

ARCH 251 World Architecture Non-Western Cultures (5) VLPA/I&S *Prakash* Introduction to historical and contemporary built environments of non-Judeo-Christian civilizations, primarily Hindu, Buddhist, Islamic, and Meso-American, as manifestations of cultural history and as responses to environmental determinants.

ARCH 300 Introduction to Architectural Design I (6) Studio problems to develop awareness, knowledge, and basic skills needed in the synthesis of building form. Prerequisite: ARCH 201. Offered: A.

ARCH 301 Introduction to Architectural Design II (6) Studio problems to develop awareness, knowledge, and basic skills needed in the synthesis of building form. Prerequisite: ARCH 300. Offered: W.

ARCH 302 Introduction to Architectural Design III (6) Studio problems to develop awareness, knowledge, and basic skills needed in the synthesis of building form. Prerequisite: ARCH 301. Offered: Sp.

ARCH 303 Introduction to Design Studio I (6) Studio problems to develop initial awareness, knowledge, and basic skills needed in synthesis of building form and integrative aspects of architectural design with emphasis on the dwelling place. Limited to students entering the graduate program in architecture with baccalaureate degrees in other fields. Offered: A.

ARCH 304 Introduction to Design Studio II (6) Studio problems to develop initial awareness, knowledge, and basic skills needed in synthesis of building form and integrative aspects of architectural design with emphasis on the dwelling place. Limited to students entering the graduate program in architecture with baccalaureate degrees in other fields. Prerequisite: ARCH 303. Offered: W.

ARCH 305 Introduction to Design Studio III (6) Studio problems to develop initial awareness, knowledge, and

basic skills needed in synthesis of building form and integrative aspects of architectural design with emphasis on the dwelling place. Limited to students entering the graduate program in architecture with baccalaureate degrees in other fields. Prerequisite: ARCH 304. Offered: Sp.

ARCH 310 Architectural Design Drawing I (3) Lectures, demonstrations, and exercises to develop skill in graphic visualization and representation as used in architecture. Concepts, conventions, and techniques of both freehand and technical drawing are used as a vital means to imagine, develop, and represent design ideas. Course material coordinated with ARCH 303 studio to integrate drawing in all phases of the design process. Offered: A.

ARCH 311 Architectural Design Drawing II (3) Lectures, demonstrations, and exercises to develop skill in graphic visualization and representation as used in architecture. Concepts, conventions, and techniques of both freehand and technical drawing are used as a vital means to imagine, develop, and represent design ideas. Course material coordinated with ARCH 304 studio to integrate drawing in all phases of the design process. Offered: W.

ARCH 312 Architectural Design Drawing III (3) Lectures, demonstrations, and exercises to develop skill in graphic visualization and representation as used in architecture. Concepts, conventions, and techniques of both freehand and technical drawing are used as a vital means to imagine, develop, and represent design ideas. Course material coordinated with ARCH 305 studio to integrate drawing in all phases of the design process. Offered: Sp.

ARCH 315 Design Drawing (2) Projects, lectures, demonstrations, and exercises coordinated with studio projects to integrate drawing in all phases of the design process. Lessons in diagramming of design concepts and planning and presenting design solutions. Prerequisite: ARCH 200; corequisite: ARCH 300.

ARCH 320 Introduction to Structures I (3) Static - Force analysis; the study of external forces and force systems and their analytical solutions as applied to bodies at rest (equilibrium). Topic areas include beams, trusses, determinate frames, and load tracing. Offered: A.

ARCH 321 Introduction to Structures II (3) Strength of materials; the study of the properties of materials and cross-sectional shapes of structural elements with respect to their effectiveness in resisting stresses. Topic areas include stress and strain, section properties, analysis and design of beams and columns. Prerequisite: ARCH 320. Offered: W.

ARCH 322 Introduction to Structures III (3) Elementary structural design; synthesis of the previous structures coursework with applications to design of determinate timber and steel structures. Examination of forces on buildings: snow, live loads, wind, and earthquake. An introduction to concept of continuity. Prerequisite: ARCH 321. Offered: Sp.

ARCH 323 Structures I (3) *K. SIMONEN* Covers the design of building structures utilizing the fundamental principles of statics and mechanics of materials. Includes the behavior of beams, trusses, arches, and frames; the structural performance of wood, steel, and concrete; and designing for gravity and lateral loads. First of a two-course sequence. Offered: W.

ARCH 324 Structures II (3) *K. SIMONEN* Covers the design of building structures utilizing the fundamental principles of statics and mechanics of materials. Includes the behavior of beams, trusses, arches, and frames; the structural performance of wood, steel, and concrete; and designing for gravity and lateral loads. Second of a two-course sequence. Prerequisite: ARCH 323. Offered: Sp.

ARCH 331 Energy and Environmental Systems (3) *NW* Describes principles and applications of climate, energy use, and comfort as determinants of architectural form; architectural methods for climate adaptation using non-mechanical means of ventilating, cooling, heating, and light-

ing; and design and performance predictions for passive approaches to solar heating, heat transfer mechanisms, and strategies for climate-responsive design.

ARCH 332 Making and Materials (3-5) VLPA

Introduces the cultures and realities of making and materials through the study of how tools, materials, and cultures interact to produce our built environment at all scales. Includes substantial hands-on physical interactions with real tools and materials.

ARCH 350 Architecture of the Ancient World (3/5) VLPA

Architectural history in the Western world from beginnings to AD 550. Offered: A.

ARCH 351 Romanesque, Gothic, and Renaissance Architecture (3/5) VLPA Architectural history in the Western world from AD 550 to 1750. Recommended: ARCH 350. Offered: W.

ARCH 352 History of Modern Architecture (3/5) VLPA Ochsner Architectural history in the Western world from 1750 to the present. Recommended: ARCH 351. Offered: Sp.

ARCH 360 Introduction to Architectural Theory (3) Function of architectural theory in comprehending and ordering various human purposes in architecture, types of architectural purpose, and types of theories. Current concerns. Offered: W.

ARCH 361 Architecture Colloquium (5) Introduces a wide range of perspectives on architecture, with an emphasis on history and theory, making and materials, and sustainable technologies. Emphasizes the skills of reading, analysis, communication, and writing in the discipline of architecture. Offered: A.

ARCH 380 Computers in Architecture (3) Laboratories, lecture, and demonstrations to introduce computing in environmental design and planning. Offered: Asp.

ARCH 400 Architectural Design IV (6) Offers studio problems in non-residential building design to advance the student's understanding of the ideas and technologies of architecture. Prerequisite: ARCH 302. Offered: A.

ARCH 401 Architectural Design V (6) Offers studio problems in non-residential building design to advance the student's understanding of the ideas and technologies of architecture. Prerequisite: ARCH 400. Offered: W.

ARCH 402 Architectural Design VI (6) Offers studio problems in non-residential building design to advance the student's understanding of the ideas and technologies of architecture. Prerequisite: ARCH 401. Offered: Sp.

ARCH 403 Architectural Problems (6) Offered: S.

ARCH 404 Integrated Design/Build Studio (6) C. DOSSICK Study of the design/build process with emphasis on the synthesis of design and construction considerations. Focuses on developing design and construction concepts to meet program requirements specified in case studies. Offered: jointly with CM 404; W.

ARCH 410 Introduction to Architectural Photography (3/5) VLPA Basic elements and processes of architectural photography to include camera controls, exposure technique, photo processing, and fundamental principles of photographing architecture. Student must provide own 35 mm (or larger) camera with manual operating controls.

ARCH 413 Architectural Photography Projects (3) Students develop in-depth photo essays relating to architecture, the urban movement, or landscape design. Lectures, seminar, and discussion. Prerequisite: ARCH 410.

ARCH 415 Architectural Sketching (3) Exercises in free-hand representational drawing using charcoal, graphite, and conte crayon with emphasis on line, proportion, values, and composition. Studies progress from geometric to nongeometric forms. Recommended: either ARCH 210 or ART 104.

ARCH 418 Watercolor Drawing (3) Introduction to the principles and practice of using transparent watercolor for the naturalistic representation of objects, people, and interior

and exterior space. Recommended: either ARCH 200 or ART 104.

ARCH 425 Life Cycle Assessment and Architecture (3) Explores use of life cycle assessment data and methods within design and construction practices to understand and reduce the environmental impact of buildings.

ARCH 426 Structural Unit Masonry (3) Tawresey Structural behavior and design of reinforced brick, tile, and unit concrete masonry structures. Prerequisite: CEE 377. Offered: jointly with CEE 455.

ARCH 430 Materials and Processes (3) Lectures, field trips, and laboratory sessions directed toward the nature, potentials, and limitations of a variety of materials (wood, metal, plastics, inorganic cementing materials, minerals, rocks, and clay) and the processes involved with their production, fabrication, and system compatibility.

ARCH 431 Environmental Control Principles (3) Daylighting of buildings, reducing noise and enhancing sound for communication, and regulating heat transfer for occupant thermal comfort; description of passive means for environmental control, including presentation of scientific explanations and design guidelines for utilizing these means; design guidelines are intended for use in the preliminary schematic design phase. Offered: AW.

ARCH 434 Color and Light (3) Lectures, demonstrations, exercises, and projects focusing on the use of color applied to the three-dimensional architectural context. Explores color theory with the multiple effects of changing light.

ARCH 435 Principles and Practices of Environmental Lighting (3) Perception-based approach to principles of natural and artificial lighting. Practical considerations of lighting involving environmental evaluations, calculations, and the use of lamps and fixtures. Sketch and model studies for applications. Impact of lighting design on energy conservation. Relation of lighting design process to architectural design concepts. Prerequisite: either ARCH 331 or ARCH 431.

ARCH 436 Building Acoustics (3) NW Description of principles and practices for manipulating and enhancing sound in buildings. Information about sound behavior and the organization of architectural elements (deployment of design features, including various geometries and materials) for the control of sound in enclosed spaces and between adjacent spaces.

ARCH 439 Architectural Lighting Design (3) Concentrates on the use of electric lighting and its effective integration in architecture and the built environment. Includes site visits, demonstrations, lectures, and projects. Prerequisite: ARCH 435.

ARCH 441 Visions of the Japanese House (3) Oshima Explores the origins, derivations, and permutations of the "Japanese house." Outlines underlying principles and paradigms of Japanese domesticity through history and traces its evolution through aspects ranging from the house's expression in media to its constructional materiality. Offered: A.

ARCH 442 Africa and Middle East Seminar (3) VLPA McLaren Advanced introduction to colonial and postcolonial architecture in Africa and the Middle East, beginning with the initial European colonization in the mid-nineteenth century. Provides a historical understanding of the formation of distinctive regional and/or national identities in the architecture of these regions. Offered: Sp.

ARCH 445 South Asian Architecture I (3) VLPA Prakash Advanced introduction to precolonial architecture and urbanism of South Asia. Using methodologies of culture studies, examines select Hindu, Buddhist, and Islamic case studies on a comparative genealogy.

ARCH 446 South Asian Architecture II (3) VLPA Prakash Advanced introduction to colonial and postcolonial architecture and urbanism of South Asia. Using methodologies

of culture studies, covers 1800 to present, emphasizing the years since India's independence in 1947.

ARCH 452 History of Architecture in Seattle and Environs (3) I&S Ochsner Historical development of architecture in Seattle and surrounding areas from the nineteenth century to the present, also touching on issues of urban design and historic preservation.

ARCH 453 Japanese Architecture (3) VLPA Survey of Japanese architecture from its origins to modern times. Although Shinto architecture, tea houses, gardens, and modern developments are discussed, the primary focus is on the development of Japanese Buddhist architecture. Recommended: some background in Japanese art, history, language, or literature. Offered: jointly with ART H 419.

ARCH 455 American Architecture (3) American architecture from indigenous Native American traditions to the present. Recommended: some background in the art, architecture, or history of the period. Offered: jointly with ART H 488.

ARCH 456 Nineteenth-Century Architecture (3) VLPA From late eighteenth century French rationalists, Neoclassicists, to fin de siècle Vienna and Paris. Includes theorists such as Ruskin, Viollet-le-Duc, and Semper; major movements, such as the Arts and Crafts, and the French Ecole des Beaux-Arts method of design. Recommended: some background in the art, architecture, or history of the period. Offered: jointly with ART H 490.

ARCH 457 Twentieth-Century Architecture (3) VLPA Architecture in the twentieth century, mainly in Europe and the United States. Traces roots of Modernism in Europe in the 1920s, its demise (largely in the United States) in the 1960s, and recent trends such as Post-Modernism and Deconstructivism. Recommended: some background in the art, architecture, or history of the period. Offered: jointly with ART H 491.

ARCH 458 Paris: Architecture and Urbanism (3/5) VLPA/I&S Spans the architectural history of Paris, from its Gallic, pre-Roman origins in the second century BCE through the work of twenty-first century architects. Focuses on changing patterns of the physical fabric of the city and its buildings, as seen within the context of the broader political, social, economic, and cultural history. Offered: jointly with ART H 494/JSIS A 433.

ARCH 459 Architecture Since 1945 (3) VLPA Theories and forms in architecture from the end of World War II to present. Includes new wave Japanese architects, recent Native American developments, and non-Western as well as Western trends. Recommended: some background in the art, architecture, or history of the period. Offered: jointly with ART H 493.

ARCH 460 Design Theory and Analysis (3) VLPA/I&S Problematical nature of philosophies of architecture; interaction of philosophical concepts and architectural form and expression. Fundamentals of architectural criticism.

ARCH 462 Spatial Composition in Architecture (3) Advanced introduction to compositional strategies in architecture. Drawing on a historical survey of the development of Western architecture, the seminar investigates different compositional strategies and their relationship to cultural values and systems of meaning. Intended as complement to the design studio.

ARCH 466 Gender and Architecture (3) VLPA/I&S Examines gender in the experience, practice, and theory of architecture and urban space with a focus on modern typologies: skyscraper, home, convent, bachelor pad, street, and closet. Draws from architectural and art history, social studies, design practice and theory, comparative literature, film studies, and queer theory. Offered: jointly with GWSS 466.

ARCH 468 Architecture Capstone Preparation (3) Preparation for the Architecture major capstone project. Offered: W.

ARCH 469 Architecture Capstone (6) Development of the capstone project for the Architecture major. Offered: Sp.

ARCH 475 Residential Architectural Practice (3) Lectures and exercises focused on the operation of a professional architectural practice specializing in residential and smaller-scale projects. Topics include: clients and program development, design strategies and space planning, site considerations, regulatory constraints, consultants, contractors, specialized construction methodology, and issues, ethics, and liability specific to residential project delivery.

ARCH 478 CAD and Working Drawings (4) Intensive introduction to computer-aided design systems for developing construction documentation (working drawings). Lectures and exercises focus on learning the methodology for using CAD to efficiently prepare working drawings, as well as discussions regarding industry-recognized standards and current technology used in the preparation of documentation. Prerequisite: ARCH 380; CM 313. Offered: ASpS.

ARCH 481 3D Modeling and Rendering (3) Lectures and weekly exercises focus on understanding and applying the underlying principles of 3D computer graphics and rendering software. Topics include user-interface, data creation and modeling, lighting models, smoothing, texture mapping, ray tracing, radiosity, animation, and solid modeling. Prerequisite: ARCH 380.

ARCH 482 Web Weaving (3) VLPA B. Johnson Examines the function, limitations, and uses of primary web technologies and fundamental website design and implementation. Participants develop hands-on design/build expertise for website design, implementation, and maintenance, using readily available tools and techniques. Looks beyond today and explores emerging Internet technologies. Offered: A.

ARCH 483 Design of Virtual Environments (3) Explores through a blend of technical exercises constructing computational artifacts, readings, and discussions of relevant literature, the possibilities of online virtual environments. Incorporates a term project or paper based on exercises and readings. Offered: W.

ARCH 484 Design Computing Seminar (3) Weekly colloquium and discussion forum. Discusses design computing research and report on ongoing project progress, with demonstrations and guest speakers. Explores design computing, design thinking and design process, and inventing new computer-aided tools for design. Offered: W.

ARCH 486 Algorithmic Geometry in Architectural Design (3) Introduction to design and implementation of parametric modeling of algorithmically generated geometries using computational elements and real-time computation. Introduces concepts related to computer programming, computational geometry, and 3D modeling with weekly exercises using 2D and 3D computer modeling frameworks, plus a term project. Requires significant amount of hands-on work.

ARCH 487 Fundamentals of Building Information Modeling (3) Introduces students to building information modeling and associated software tools. Students learn the fundamentals of working with BIM software by developing a project using both 3D parametric modeling and the 2D documentation skills essential to communicating ideas effectively in professional practice.

ARCH 489 Simulation Based Design (3) Focuses on computational simulation tools and techniques to evaluate the performance of a design or design alternatives, starting at earliest conceptual design phases to help architects make informed design decisions. Topics include solar, lighting, thermal, and acoustical analysis techniques and their applications.

ARCH 490 Architectural Studies Abroad - Special Topics (*, max. 24) Department-approved, systematic study offered as part of architectural study abroad programs.

ARCH 491 Architectural Studies Abroad - Representation (1-6, max. 12) VLPA Architectural sketching, drawing, mod-

eling, and other presentation techniques in contexts outside the United States.

ARCH 494 Architectural Studies Abroad - Culture (1-6, max. 12) VLPA Studies of language, art, food, music, and other activities that influence architectural and urban form in contexts outside the United States.

ARCH 495 Architectural Studies Abroad - History and Theory (1-6, max. 12) VLPA/I&S Examines history and theory of architecture in study abroad programs.

ARCH 496 Architectural Studies Abroad - Urban Fieldwork (1-6, max. 12) Analysis and interpretation of urban form and architectural contexts through direct observation in locations outside the United States.

ARCH 497 Architectural Studies Abroad - International Practice (1-6, max. 12) Observation and evaluation of architectural practices in contexts outside the United States through firm visits and guest presentations.

ARCH 498 Special Projects (1-12, max. 12) Instructor-initiated and department-approved systematic study and offering of specialized subject matter. Topics vary and are announced in preceding quarter.

ARCH 499 Undergraduate Research (1-6, max. 6)

ARCH 500 Architectural Design Studio I (6) Architectural design, with emphasis on development of professional skills in design synthesis; specifically the design of institutional buildings in response to a context significant for historical and urban characteristics. Analysis includes programming, typology, site and place, and influence of regulatory measures on building form. Concurrent with ARCH 590. Offered: A.

ARCH 501 Architectural Design Studio II (6) Architectural design, with emphasis on development of professional skills in design synthesis, specifically the unique qualities of materials, construction technology, and assembly details in the expression of architectural ideas. Analysis includes the influence of regulatory measures on building form. Concurrent with ARCH 570. Offered: W.

ARCH 502 Architectural Design Studio III (6) Architectural design, with emphasis on development of professional skills in design synthesis, specifically the comprehensive integration of building systems within an ordered design concept. Analysis includes the planning and integration of structural systems, building service systems, and building envelope design as an appropriate architectural expression. Concurrent with ARCH 591. Offered: Sp.

ARCH 503 Architectural Design Studio Options (6) Advanced architectural studios in general architectural design, in special projects examining particular architectural determinants, and in architectural research. Focus and format vary with instructor. Prerequisite: ARCH 502. Offered: AW.

ARCH 504 Architectural Design Studio Options (6) Advanced architectural studios in general architectural design, in special projects examining particular architectural determinants, and in architectural research. Focus and format vary with instructor. Prerequisite: ARCH 502. Offered: AWSp.

ARCH 506 Advanced Architectural Studies (6) Advanced experimental studies dealing with significant architectural relationships that involve scholarly investigation, development, and presentation of results. Offered: S.

ARCH 521 Structural System Design (3) Simonen Studies structural configuration and system selection for building design. Focuses on developing an understanding of structural material, element and system performance, and an ability to integrate structure and architecture to create efficient and elegant design solutions. Offered: A.

ARCH 525 Life Cycle Assessment and Architecture (3) Explores use of life cycle assessment data and methods within design and construction practices to understand and reduce the environmental impact of buildings.

ARCH 527 Introduction to Digital Design and Fabrication (3) Offers an introduction to digital design and manufacturing technologies, with an emphasis on developing appropriate strategies for their use in design and architecture. Students learn to use digital design software and digitally enhanced fabrication tools to support their design strategies. Offered: AW.

ARCH 528 Digital Design for Fabrication and Construction (3) Explores the rapid integration of fabrication, construction, and performance criteria early in the architectural design process, through the use of powerful digital tools. Students test advanced digital tools in architectural production and develop awareness and skills in integrated digital design, analysis, and prototyping. Offered: W.

ARCH 529 Advanced Digital Projects (3) Advanced topics for students who have completed one or more design computing courses and wish to develop a project further. Prerequisite: either ARCH 527 or ARCH 528.

ARCH 530 Integrated Building Systems (3) Miller

Discusses strategies for ordering separate and discreet building systems into integrated architectural schemes. Focuses on systems that affect architectural expression and resolution in buildings including: structural, environmental control, materials, and assembly with an emphasis on sustainable building design. Concurrent with ARCH 502. Offered: Sp.

ARCH 531 Active Control Systems for Building Operation (3) NW Heerwagen Electrical, mechanical (HVAC), plumbing, and fire safety systems for buildings. Descriptions of what these systems do, where they are used, how they are integrated into the overall building design; rules of thumb, design strategies, and short cuts for anticipating system design and use. Prerequisite: either ARCH 331 or ARCH 431. Offered: WSp.

ARCH 532 Construction Materials and Assemblies II (3) Lectures and readings pertaining to a survey of materials, assemblies, and techniques of assembly of concrete and steel frame, commercial exterior envelope, and interior partitioning building construction systems. Prerequisite: either ARCH 332 or CM 313. Offered: A.

ARCH 533 Advanced Environmental Systems (3) Focuses on computational simulation tools and techniques to evaluate the performance of a design or design alternatives, starting at earliest conceptual design phases to help architects make informed design decisions. Topics include solar, lighting, thermal, and acoustical analysis techniques and their applications. Offered: WSp.

ARCH 534 Green Technology (3) Heerwagen Examination and application of various resource-conserving building technologies, particularly within the context of the LEED Rating System. Principles and practices associated with the inclusion of these technologies in buildings.

ARCH 535 Daylighting Design Seminar (3) Focuses on theoretical and applied daylighting principles in conjunction with physical and digital analytical tools. Includes field assessment of constructed buildings and individual projects involving research and design for lighting and daylighting.

ARCH 536 Designing with Living Systems (3) Investigates an integrated approach to urban agriculture and building systems; looks at cyclical ecosystems intrinsically interconnected with buildings, urban infrastructure, and the constructed environment; establishes a thorough understanding of these productive, living systems, which are indispensable for architects and landscape architects in their pursuit of more sustainable design practices.

ARCH 537 Traditional Building Methods: New Adaptations (3) Explores recent developments in traditional building techniques, a resurgence of interest in handmade buildings, and the use of local materials in building construction. Also examines why these materials and methods are becoming critical to communities around the world, and how they can be optimized to meet twenty-first century requirements.

ARCH 538 Building Reuse Seminar: Investigating the Value of Existing Buildings (3) Investigates the repurposing of buildings as a resource and energy conservation strategy and as an alternative to demolition of existing buildings; discusses case study strategies for sustainable retrofits. Students critically observe, record, and analyze structures and discuss building reuse design in the context of sustainable environments.

ARCH 555 Seminar in American Architecture (5) *Clausen* Topics vary. Offered: jointly with ART H 592.

ARCH 556 The Arts and Crafts Movement and Its Legacies (3) *Ochsner* Historical development of the arts and crafts movement focusing primarily on its influence on American architecture from 1870 to the present.

ARCH 558 Seminar in Twentieth-Century Architecture (3/5) Specific focus changes from quarter to quarter. Prerequisite: graduate standing with background in art history, architecture, architectural history, or permission of instructor. Offered: jointly with ART H 591.

ARCH 559 American Utilitarian Architecture (3) Significant American environmental design efforts arising from utilitarian needs, e.g., factories, bridges, skyscrapers, and associated technical building innovations.

ARCH 560 Seminar on Architectural Theories (3) Recent developments in architectural theory, urban design theory, criticism, and the methodology of criticism.

ARCH 561 Urban Design Theory (3) Study of development of nineteenth- and twentieth-century urban design theories and parallel developments in architecture and urban planning. Theoretical premises are related to current practices of urban design in various sociopolitical contexts, European as well as American. Evolutionary nature of theory emphasized. Prerequisite: URBDP 479 or permission of instructor.

ARCH 563 Seminar in Architecture and Cultural Theory (3) Study of contemporary cultural studies and postcolonial writings in terms of their impact on architectural theory and practice. Topical seminar based on reading and individual research.

ARCH 564 Environmental Design and Well-Being (3) Analyzes how environmental design can promote well-being in natural systems and human life worlds. Explores current knowledge about climate change and organism-environment dynamics, theories of health and complexity, ideological barriers and the power of images, new materials, and "high-tech"/"low-tech" alternatives for ecological design and planning.

ARCH 567 Qualitative Research Methods (3) Qualitative research methods covering both the theoretical foundations and practical methodologies of traditional and innovative approaches, including cognitive mapping, open-ended interviews, ethnographic observation, hermeneutics, phenomenology, critical theory, communicative action, grass-roots empowerment, post-structuralism, and self-organization. Offered: jointly with URBDP 519.

ARCH 570 Design Development (3) *Miller* Lectures and case studies emphasizing the design development phase of architectural practice. Concurrent with ARCH 501.

ARCH 571 Professional Practice (4) Introduces the business and ethics of architectural design and building construction, while helping students explore their professional identities and make intentional choices about their career paths. Compares fundamentals of architectural practice against historical evolution of the field and speculation about its future. Offered: AW.

ARCH 574 Design and Construction Law (3) Legal issues arising from design and construction services, focusing on risk management and liability awareness. Topical areas include basic legal doctrines, the design professional/client relationship, contractor selection, the construction process, and professional practice problems. Emphasis on Washington State law. Offered: jointly with CM 500; A.

ARCH 578 Case Studies in Contemporary Architectural Practice (3) Presentations and discussions by local architectural firms examining the issues that influence building design and project delivery in contemporary architectural practice. Focuses on understanding the issues as opportunities rather than impediments to good design. Class visits a different architectural firm each week for an in-depth review of current projects.

ARCH 579 Technical Issues in Preservation Design (3) Issues, practices, and procedures involved in preservation and reuse of old and historic buildings. Technical and esthetic means by which practicing professionals approach the analysis, interpretation, and resolution of problems such work raises. Emphasis on recent and local projects and related experiences.

ARCH 581 Advanced Rendering (3) Provides an in-depth discussion and hands-on experience with technical and qualitative features of computer rendering. Students learn to generate digital images that can mimic the physical world and predict the final appearance of a design.

ARCH 582 Computational Lighting Design (3) Addresses the recent developments in lighting simulation, visualization, and per-pixel measurement techniques. Provides an understanding of the theoretical aspects of computer applications in lighting design; and the practical knowledge of tools that enhance the integration of the lighting analysis into architectural design processes.

ARCH 587 Theory of Design Computing (3) Examines the relationship between theory of design and computational tools for practice. Explores how the emergence of computers as a mainstream tool in design has already changed architectural practice. Discusses how, as with other technologies that revolutionized the practice of architecture, information technologies carry hidden implications about design process and products. Offered: A.

ARCH 588 Research Practice (3) Provides the opportunity for a guided preliminary exploration and refinement of a research topic, prior to thesis proposal. Weekly seminar meetings focus on student work with regular presentations and discussions. Offered: W.

ARCH 590 Urban and Preservation Issues in Design (3) Introduction to recent theory and practice in the fields of urban design and historic preservation primarily in North American urban contexts, including examples of recent projects presented by practicing professionals. Concurrent with ARCH 500.

ARCH 591 Architecture and Landscape (3) Advanced introduction to the relationships between buildings and places in the landscape with an emphasis on Western concepts of nature. A taxonomy of place as nature is developed. Explores ways in which the architect can design places that landscape taxonomy. Concurrent with ARCH 502.

ARCH 595 Thesis Research and Preparation (4) Develops skills for conducting master's thesis research, including writing a major portion of the thesis document. Engages students as a community of peers sharing ideas and resources for completing thesis work. Required for admission to the master's thesis design studio. Credit/no-credit only. Offered: Sp.

ARCH 596 Fieldwork in Professional Practice (*, max. 9) On-location study under the supervision of a practicing professional involved in an aspect of environmental design.

ARCH 597 Research Practicum (5) *Johnson, McLaren* Provides a mentored research opportunity where students apply their research and writing skills and knowledge of methods and theory to an advanced research topic. Offered: Sp.

ARCH 598 Special Topics for Graduate Students (1-6, max. 6) Systematic study and offering of specialized subject matter. Topics vary and are announced in the preceding quarter.

ARCH 599 Independent Thesis Research and Preparation (4) Participants identify a master's thesis research area,

articulate a specific question within the research area, find relevant literature and prepare an annotated bibliography, establish a research method and timetable, pursue preparatory research and analysis for the thesis project, and write, present, and defend a thesis proposal. Credit/no-credit only.

ARCH 600 Independent Study or Research (*-)

ARCH 700 Master's Thesis (*-)

Built Environment

410 Gould Hall

The PhD in Built Environment is a College-wide, interdisciplinary degree program housed within the College of Built Environments. The PhD program provides students a common core of substantial, integrated knowledge concerning the multi-faceted built environment and then offers areas of specialization in three discrete fields of knowledge and practice:

- Sustainable Systems and Prototypes (across a range of scales, from building elements and assemblages, to buildings, site, and neighborhood context, city, and region)
- Computational Design and Research (covering the spectrum of design, planning, and construction processes, practices, and pedagogy)
- History, Theory, and Representation studies (focusing on issues of regional-global modernity)

GRADUATE PROGRAM

Graduate Program Coordinator

410 Gould Hall, Box 355740

(206) 543-5996

bephd@uw.edu

Doctor of Philosophy

Admission Requirements

1. Three letters of recommendation (Please use the downloadable form.)
2. Curriculum vitae
3. An exhibit of work which best illustrates the applicant's interests and abilities in areas related to the built environment. This may be an essay, a paper, a publication, a report, or a project for which the applicant has had major responsibility. The exhibit is not returned and should fit in letter-size files.
4. Statement of Purpose
5. Graduate Record Exam (GRE) scores

Prospective international, immigrant, and permanent resident students whose native language is other than English and who have not received a bachelor's or master's degree from an accredited institution where the native language is English must submit a satisfactory TOEFL (Test of English as a Foreign Language) score. The minimum allowable TOEFL score is 500. Students admitted with scores below 580 are tested for English proficiency upon arrival and are required to complete any assigned ESL courses along with their regular academic program.

Program Requirements

90 credits minimum, to include:

1. Core courses (21 credits):
2. B E 551 (3), B E 552 (3), B E 553 (3)
3. B E 550 (6 quarters at 1 credit each)

4. Research methods and design: choice of 6 credits from list, including both qualitative and quantitative coursework
5. Specialization (minimum 30 credits): One of three fundamental areas (sustainable systems and prototypes; computational design and research; history, theory, and representation). Each student selects one of these areas, within which she or he takes advanced and specialized coursework and, eventually, conducts the dissertation research project. Each student must take 30 credits in the chosen area of specialization during the first several years in the program, before undertaking qualifying examinations. A broad selection of courses, both within the College of Architecture and Urban Planning and in other UW units, is available.
6. Examinations: The qualifying examination consists of written responses to three questions, followed by an oral examination on the material. The written and oral examinations are composed, conducted, and evaluated by the student's formally appointed dissertation committee.
7. Dissertation (30 credits): Involves 30 credits and concludes with a final oral defense.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

B E 498 Special Projects (1-12, max. 12)

B E 550 Colloquium-Practicum on Research-Practice and Teaching-Learning (1, max. 6) A synthetic and interdisciplinary forum for the presentation and peer critique of faculty and student research and practice projects, and a venue for pedagogical issues and skills for effective teaching and learning.

B E 551 The Contemporary Built Environment (3) Covers major or landmark cases of complex built environment projects, emphasizing the multiple dimensions involved and their interconnections.

B E 552 Theories of Knowledge and the Built Environment (3) Systematic examination of alternative epistemological frameworks applicable to studying the built environment; examinations of their differences and similarities and of the possibility of a comprehensive, pluralistic approach.

B E 553 Ethics in Practice, Research, and Teaching (3) Preparation for ethical challenges facing professional practice, research, and teaching in the built environment. Coverage of general and professional ethics, and examination of principles and rules and application through case studies.

B E 597 Directed Readings (*, max. 30) Intensive reading in the literature of the built environment, directed by members of doctoral Supervisory Committee. Credit/no-credit only. Offered: AWSpS.

B E 598 Special Topics (1-6, max. 15) Systematic study of specialized subject matter. Topics vary depending on current interest and needs, and are announced in the preceding quarter.

B E 600 Independent Study or Research (*) Offered: AWSpS.

B E 800 Doctoral Dissertation (*-) Offered: AWSpS.

Construction Management

120 Architecture

Construction management is a diverse discipline focused on the delivery of projects that compose the world's built environment. Included are the determination of project

requirements, management of design, procurement of materials, and management of the construction of the project within cost, time, and design parameters. In terms of dollar value output, the construction industry is the largest single production activity in the U. S. economy -- accounting for almost 10 percent of the gross national product. The construction industry is heterogeneous and enormously complex. The major classifications of construction differ markedly from one another: residential, commercial, industrial, and infrastructure, as well as specialties such as electrical, mechanical, framing, excavation, and roofing. Construction management is the study of how projects are conceived, designed, and built; the types of materials and methods used; techniques for estimating the cost of construction; design and contract law; construction accounting; oral and written communications; safety requirements; project planning and project management.

UNDERGRADUATE PROGRAM

Adviser

120 Architecture, Box 351610

(206) 543-6377

uwcm@uw.edu

The Department of Construction Management offers the following program of study:

- The Bachelor of Science in Construction Management degree

Students take the first two years of study as an undeclared major in the College of Arts and Sciences or a community college, completing program prerequisite requirements. Upon admission to the major, students take the prescribed curriculum shown below.

Bachelor of Science

Suggested First-and Second-Year Courses: M E 123; PHYS 114, PHYS 115, PHYS 117, and PHYS 118; 10 credits of economics; ENGL 131, ENGL 281; ESS 101; MATH 112 or MATH 124; ACCTG 215 and ACCTG 225, CM 250, COM 220, MGMT 200, QMETH 201; chemistry or environmental-science courses.

Department Admission Requirements

Applicants are considered for autumn admission only. Admission is competitive. There are three admission groups: Freshmen Direct, Early Admission (EA), and Upper-Division Admission (UA). Consult department website for more information.

Freshman Direct Admission

The department enrolls a small number of students each year directly out of high school, prior to their completion of any university-level prerequisites. Freshman applicants to the University listing construction management as their intended major are automatically considered. Admission is offered to students with exceptionally competitive academic records, including but not limited to high school GPA and SAT or ACT scores. Freshman Direct students work with the construction management adviser to plan their first two years of coursework before beginning the standard curriculum. Such students are eligible to join the construction management student organizations, apply for scholarships, and participate in student competitions.

Students admitted under the Freshman Direct Admission program must complete all prerequisite course requirements listed under Upper-Division Admission as well as all major requirements to earn their degrees.

Early Admission (EA)

Students may also apply to the department in spring of their freshman year to enter as part of the Early Admission (EA) group in their sophomore year. This admission path is open to students who began their studies at UW as freshmen, have been enrolled no more than three quarters, and have completed at least 27 credits at UW (25 of the 27 UW credits must be numerically graded). Courses completed prior to applying must include: MATH 112 (or MATH 124 or Q SCI 291), PHYS 114 and PHYS 117 (or PHYS 121), and ECON 200. Other courses from the list of upper division prerequisites may be taken to complete the minimum 27 credits.

Application deadline for Early Admission is April 1. Admission decisions are based on an applicant's academic performance and potential, extent and quality of relevant experience, apparent attitude, and personal motivation. Completion of prerequisite requirements does not guarantee admission and all prerequisite requirements must be completed by the April 1 deadline.

Students admitted under the Early Admission program must complete all prerequisite course requirements listed under Upper-Division Admission as well as all major requirements in order to earn their degrees.

Upper Division Admission (UA)

Prerequisite courses: Minimum 88 credits in the following categories (courses must be completed by the beginning of autumn quarter for admission that quarter):

1. Construction Science: M E 123.
2. Business and Management: ACCTG 215 and ACCTG 225; MGMT 200.
3. Individuals & Societies (I&S): 10 credits of economics; 5 additional I&S credits from UW Areas of Knowledge list (CM 250 recommended).
4. Natural World (NW): PHYS 114 and PHYS 117 (or PHYS 121), and PHYS 115 and PHYS 118 (or PHYS 122); MATH 112 (or MATH 124 or Q SCI 291); ESS 101; QMETH 201 (or STAT 220 or STAT 311); 10 additional NW credits from UW Areas of Knowledge list (chemistry or environmental studies recommended).
5. Language Skills: 5 credits from English composition list; 5 credits from "W" courses or English composition list (ENGL 131 and ENGL 281 recommended).
6. Visual, Literary & Performing Arts (VLPA): COM 220; 5 additional VLPA credits (from UW Areas of Knowledge list).

Admission to the major is competitive. Admission decisions are based on an applicant's academic performance and potential, extent and quality of relevant experience, apparent attitude, and personal motivation. Completion of prerequisite requirements does not guarantee admission. Completion of prerequisite requirements is not required in order to apply, but is required prior to being admitted in autumn quarter.

Departmental application deadline: April 1, for the following autumn quarter. Selection for acceptance into the program is made by early May, and all applicants are notified shortly thereafter. Because each application is valid only once, a student whose application for admission is denied must reapply if consideration is desired in any subsequent year.

Major Requirements

92 credits as follows:

1. Foundation Courses (77 credits): ARCH 320, ARCH 321, ARCH 322; MGMT 300; CM 310, CM 311, CM 312, CM 313, CM 321, CM 322, CM 323, CM 331, CM 332, CM 333, CM 334, CM 410, CM 411, CM 412, CM 421, CM 422, CM 423, CM 432, and CM 433

2. Construction/Construction Science Electives (6 credits): Two of the following: CM 404, CM 414, CM 415, CM 420, CM 425, CM 430, or ARCH 420
3. Approved Electives (4 credits): Upper-division construction-related courses. Courses offered by the College of Built Environment or by the Foster School of Business are preferred. Courses not in these two colleges require adviser approval. (CM 413 recommended.)
4. Capstone Experience (5 credits): Minimum 2.0 in CM 431.
5. Additional Degree Requirement: Minimum 2.50 cumulative GPA in upper-division college courses completed in the College of Built Environments

Dual-Degree Program

For requirements of the dual-degree program in architectural studies and construction management, see the Architecture section.

Continuation Policy

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

Student Outcomes and Opportunities

- **Learning Objectives and Expected Outcomes:** The study of construction management involves an interdisciplinary curriculum that contains a mix of technical, managerial, and business courses to provide graduates the essential skills needed to be successful in the construction industry. Oral and written communication skills are strengthened through written requirements and oral presentations. Construction management skill sets include the ability to read and interpret construction contract documents; the ability to determine appropriate methods for project construction and the proper sequence for each associated construction task; the ability to estimate project costs and time requirements; the ability to evaluate project site safety hazards and take action to minimize the potential for accidents occurring; an understanding of the legal framework associated with contract construction; and the ability to manage the myriad activities associated with constructing a project. Graduates pursue careers with construction companies, design firms, public agencies, homebuilders, consulting firms, real estate developers, and construction material suppliers.
- **Instructional and Research Facilities:** The Built Environments library (located on the third floor of Gould Hall) houses construction management books and periodicals. Additional materials are located in the Engineering Library and the Foster Library (Business School). College resources include a 30-work-station computer laboratory in the basement of Gould Hall.
- **Honors Options Available:** For Interdisciplinary Honors, see University Honors Program.
- **Research, Internships, and Service Learning:** An internship is required for completion of the degree program. Every student is encouraged to seek summer employment in the construction industry, to provide a taste of real-world experience and an opportunity to work for a construction firm. While the department seeks to identify opportunities for internship positions, the responsibility for securing a position rests with each student.
- **Department Scholarships:** A limited number of scholarships are available to eligible students.
- **Student Organizations/Associations:**
 - *Sigma Lambda Chi* is a national student honor society for recognition of outstanding students majoring in construction management. Membership is offered

only to those students in the top twentieth percentile of their class. Each year the student chapter conducts community service activities.

- *Associated Students in Construction (ASIC)* is an umbrella organization for several student chapters of national organizations: Associated General Contractors of America, National Association of Home Builders, Mechanical Contractors Association of America, and the National Electrical Contractors Association. Activities include professional guest lectures, field trips, attendance at professional meetings and seminars, and community service.

GRADUATE PROGRAM

Graduate Program Coordinator

120 Architecture Hall, Box 351610

(206) 616-1917

Master of Science in Construction Management

Admission Requirements

1. Baccalaureate degree (BS or BA) in civil engineering, construction management, building technology, architecture, or similar field from an accredited college or university in the United States, or its equivalent from a foreign institution. Students with undergraduate degrees in an area other than construction management or building technology must demonstrate an understanding of estimating, project planning and control, and project management either by transcript, validation examination, or successful completion of the following courses: CM 410; CM 411; CM 421.
2. Minimum 3.00 GPA, based on last 60 graded semester hours or last 90 graded quarter hours of undergraduate and graduate study.
3. Graduate Record Examination (GRE) scores
4. Statement of goals and objectives
5. Letters of recommendation
6. International applicants whose first language is not English must submit a valid Test of English as a Foreign Language (TOEFL) or Michigan Language Test (MLT) score. A minimum score of 580 (TOEFL) or 237 (TOEFLC) or 90 (MLT) is required for admission.

Degree Requirements

45 credits, as follows:

1. Core Courses (9 credits): CM 500 (3), CM 535 (3), CM 575 (3)
2. Construction Management Elective Courses (15-21 credits): 15 to 21 credits of the following: CM 505 (3), CM 510 (3), CM 515 (3), CM 520 (3), CM 525 (3), CM 530 (3), CM 540 (3), CM 545 (3), CM 550 (3), CM 555 (3), CM 565 (3), CM 570 (3), CM 580 (3), CM 582 (3), CM 584 (3), CM 586 (3), CM 588 (3), CM 590 (2), CM 598, B E 551 (3), B E 552 (3), B E 553 (3)
3. General Elective Courses (12 credits): Other graduate-level courses approved by adviser.
4. Thesis or Research Paper (3 or 9 credits): Research paper -- CM 600 (3); thesis -- CM 700 (9)

Graduate Program in Construction Engineering

Students who complete this online program earn either a Master of Science in Construction Management or a Master of Science in Civil Engineering.

Admission Requirements

1. For construction management, a BS degree in construction management or civil engineering, or other degree with appropriate courses.
2. 3.00 GPA, based on last 60 graded semester or 90 graded quarter credits of undergraduate and graduate study.
3. GRE scores.
4. Statement of goals and objectives.
5. Letters of recommendation. International applicants must demonstrate English language proficiency.

Degree Requirements

45 credits, as follows:

1. Heavy Construction Project Management (12 credits): CM 520, CM 580, CM 582, CM 588
2. Infrastructure Construction (12 credits): CM 584, CM 586, CEE 595, CM 596
3. Other Required Courses (17 credits): CM 500, CM 525, CM 590, CEE 552, CEE 592, CEE 594
4. Graduate Research Report (4 credits)

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

CM 250 Construction and Culture (5) I&S A. *HOLM* Evolution of modern building construction with emphasis on the relationship between the projects built over time and the people who built them. Focuses on the development of building technology, equipment, and materials used by Western civilizations. Offered: W.

CM 301 Construction Communications (4) Applies business writing to the construction industry. Focuses on planning, writing, and editing documents most critical to a construction manager's professional success. Offered: AW.

CM 310 Introduction to the Construction Industry (3) G. *MIGLIACCIO* Introduction to the construction process, including general overview of organization, relationships, practices, terminology, project types, procurement methods, industry standards, contract documents, and career opportunities. Offered: A.

CM 311 Construction Documents (2) Introduction to construction plans and specifications with emphasis on reading and interpreting them. Focuses on architectural/engineering drawings and associated specifications used in building construction. Prerequisite: CM 310; CM 313, which may be taken concurrently. Offered: A.

CM 312 Construction Accounting (3) Introduction to accounting for the contractor, placing emphasis on the analysis and use of financial statements and a job cost accounting system. Offered: A.

CM 313 Construction Methods and Materials I (4) Introduction to basic building materials, with emphasis on techniques for assembly and utilization in residential and light construction, including materials such as concrete, brick, and wood. Offered: AS.

CM 320 Construction Contract Documents (3) Introduction to working drawings, specifications, and other documents designed to enable the student to read and interpret complete set of contract documents for residential and light commercial projects. Emphasis on the organization and uses of architectural/engineering drawings and specifications in the construction process. Offered: S.

CM 321 Mechanical Systems in Buildings (3) Introduction to building heating, cooling, plumbing, and fire protection systems including aspects of design, construction, estimating, and problem solving. Offered: W.

CM 322 Electrical Systems in Buildings (3) Introduction to electrical construction including electrical distribution from generation to consumption, terminology, equipment and applications, electrical contract documents and estimating, and electrical project management theory and practice. Offered: W.

CM 323 Construction Methods and Materials II (5) Analysis of building methods for structural, non-structural, and design and use of temporary structures including method selection, sequencing, and coordination of specialty trades in commercial and industrial construction. Offered: W.

CM 331 Construction Estimating I (4) Introduction to the principles and techniques of estimating construction costs, with emphasis on quantity take-off and pricing elements of work. Prerequisite: CM 323. Offered: Sp.

CM 332 Construction Equipment Management (3) G. MIGLIACCIO Study of the basic principles, practices, and techniques used in the construction industry for selecting and managing construction equipment. Focuses on understanding the time value of money, estimating equipment ownership and operating costs, selecting the proper equipment for specific construction tasks, and estimating equipment production. Offered: Sp.

CM 333 Construction Safety (3) K. LIN Explanation of requirements of the Occupational Safety and Health Act and other related federal and state legislation as applied to the building construction industry. Standards for accident prevention, hazard identification, and responsibility for compliance emphasized. Offered: A.

CM 334 Construction Surveying (2) D. JACOBSON Introduction to construction surveying including layout of construction features, distance and elevation measurement, and use and care of surveying equipment. Offered: Sp.

CM 340 Sustainable Building Design and Construction Practices (3) Examines sustainable standards for design and construction of commercial and institutional buildings focusing on environmental, economic, and social benefits of sustainable buildings. Offered: W.

CM 404 Integrated Design/Build Studio (6) C. DOSSICK Study of the design/build process with emphasis on the synthesis of design and construction considerations. Focuses on developing design and construction concepts to meet program requirements specified in case studies. Offered: jointly with ARCH 404; W.

CM 410 Construction Estimating II (5) Principles and techniques for estimating commercial construction projects including a mock bid day exercise on a commercial construction project. Prerequisite: CM 331; CM 332. Offered: A.

CM 411 Project Planning and Control (3) A. ABDEL AZIZ Introduction to the basic principles, techniques, and practices used as tools by contractors to plan, schedule, and control costs on building construction projects. Prerequisite: CM 331. Offered: A.

CM 412 Construction Practice (3) J. SHAIMAN Introduction to challenges of managing a construction organization. Focuses on ethical behavior, organizational behavior, human resources management, marketing, financial management, and risk management. Prerequisite: CM 421. Offered: Sp.

CM 413 Competitive Business Presentations (1) C. DOSSICK Study and development of skills needed to develop and deliver professional construction management presentations. Includes a series of workshops and practical exercises in construction presentation skills, teamwork, and leadership. Offered: A.

CM 414 Virtual Construction (3) C. DOSSICK Examines the use of building information models for managing the construction process and facilitating collaboration among project participants. Offered: A.

CM 415 Heavy Construction Practices (3) J. SCHAUFELBERGER Introduction to heavy construction with emphasis on highway and bridge construction. Topics include: con-

tract analysis, work breakdown, equipment selection, unit-price cost estimating, site logistics planning, and project scheduling. Prerequisite: CM 332. Offered: A.

CM 416 Residential Project Development (3) Studies the financial, technical, and managerial activities as well as the environmental impact regulations and studies associated with the development of residential projects, including the business and construction practices and marketing strategies needed for a successful project. Offered: A.

CM 420 Temporary Structures (3) S. DANIALI Study of temporary structures used to support construction operations such as concrete formwork, scaffolding systems, shoring systems, cofferdams, underpinning, slurry walls, and construction dewatering systems. Prerequisite: ARCH 322. Offered: Sp.

CM 421 Project Management I (3) Introduction to the organization, management, and administrative functions on construction projects including a hands-on and extensive case study of a commercial construction project, cost control, and introduction to the concepts of Value Engineering, partnering, and Total Quality Management. Prerequisite: CM 410; CM 411. Offered: W.

CM 422 Computer Applications in Construction (2) A. ABDEL AZIZ Introduction to the use of automated programs for planning, scheduling, and controlling construction projects. Focuses on the use of Primavera Project Planner software. Prerequisite: CM 411. Offered: W.

CM 423 Construction Law (3) A. TRAMOUNTANAS Legal issues arising from design and construction services, focusing on risk management and liability awareness. Topical areas include basic legal doctrines, the design professional/client relationship, contractor selection, the construction process, and professional practice problems. Emphasizes Washington state law. Prerequisite: CM 421. Offered: Sp.

CM 425 Concrete Technology (3) K. NEMATI Introduction to the properties and behavior of concrete. Focuses on uses of concrete as a building material and new techniques for concrete construction. Offered: W.

CM 430 Building Code and Environmental Regulations (3) Introduction to the permit process, life-safety requirements, and environmental regulations for designs and construction of buildings as established by the national and local jurisdictions. Prerequisite: ARCH 322. Offered: Sp.

CM 431 Project Management II (5) Capstone project using case studies to apply skills, knowledge, techniques, and concepts developed in prior courses. Emphasis on the concept of integrated project management, including cost estimating and bidding, scheduling, cost control, safety, project organization, and documentation. Prerequisite: CM 421. Offered: Sp.

CM 432 Soils and Foundations (3) S. DANIALI Origin, classification, and physical properties of soil as used in engineering and construction applications, together with loads and stresses of soil on, and from, the more common types of engineering structures. Prerequisite: ARCH 322; CM 323. Offered: W.

CM 433 Construction Labor Relations (3) E. KOMMERS Introduction to construction labor topics, including labor-management organization, legislation, and regulation, collective bargaining, and job site administration. Offered: W.

CM 450 Construction Project Management (5) A. ABDEL AZIZ Examines management of construction projects focusing on construction contracting, cost estimating, project scheduling, and resource management. Offered: S.

CM 481 Facility Life Cycle 1: Planning (3) Introduction to facility management. First in sequence of three built around the principle of the facility life cycle. Defines key terms. Examines topics such as ethics, business context, budgets, cost analysis, and strategic planning. Students work in online teams to develop a course-final project.

CM 482 Facility Life Cycle 2: Design and Construction (5) Second in sequence of three built around the principle of

the facility life cycle. Covers design basics, cost estimates, building materials, project management, and construction administration. Students establish a mentor relationship with a professional facility manager and interview three guest speakers, experts in their fields. Offered: A.

CM 483 Facility Life Cycle 3: Relocation and Operational Issues (4) Final in sequence of three built around the principle of the facility life cycle. Provides an overview of issues related to facility operations and maintenance, including occupancy and start up, inventory and staff management, relocation, disaster planning, emergency preparedness, and security. Offered: W.

CM 498 Special Topics (1-10, max. 12)

CM 499 Undergraduate Research (*, max. 12) Individual or small-group studies. Students may select topics with approval of faculty sponsor and department.

CM 500 Design and Construction Law (3) Legal issues arising from design and construction services, focusing on risk management and liability awareness. Topical areas include basic legal doctrines, the design professional/client relationship, contractor selection, the construction process, and professional practice problems. Emphasis on Washington State law. Offered: jointly with ARCH 574; A.

CM 510 Advanced Construction Techniques (3) C. NEMATI Study of techniques and practices used in complex construction projects, including industrial and high-rise structures, building renovation, and tenant improvements. Offered: A.

CM 515 Innovative Project Management Concepts (3) C. DOSSICK Examination of innovative techniques for planning and managing construction projects including use of time-phased, three-dimensional Building Information Models; sustainable construction techniques; and web-based project management tools. Offered: W.

CM 518 Lean Construction (3) Y. KIM Examines the application of lean production management concepts to the management of construction projects. Offered: Sp.

CM 520 Construction Procurement Systems (3) Study of the different methods used in the procurement and delivery of projects in the construction industry including lump sum, unit price, cost-plus, design-build, and construction management contracts. Offered: A.

CM 525 Cost Analysis and Management (3) Y. KIM Study of cost management procedures applicable to the building process from the conceptual phase through owner operations, including conceptual estimating, project cost analysis and control, and value engineering and life-cycle costing. Offered: W.

CM 530 Project Economics and Risk Analysis (3) A. ABDEL AZIZ Studies the process for delivery of public-private infrastructure projects and risk analysis techniques used in economic/financial project studies. Focuses on understanding public-private project delivery systems, feasibility studies, project financial and economic modeling, and quantitative risk analysis techniques. Offered: Sp.

CM 535 Research Methods in Construction (3) K. LIN

Examination of research methods used in construction studies. Includes an overview of the research process, planning of a successful research endeavor, literature review, qualitative and quantitative research, ethics in research and publishing, and various research methodologies. Offered: W.

CM 540 Sustainable Construction (3) W. BENDER

Study of sustainable construction techniques and best practices. Focuses on use of U.S. Green Building Council's Leadership in Energy and Environmental Design standards to evaluate alternatives and select techniques for constructing sustainable projects. Offered: W.

CM 545 Real Estate Development (3) A. HOLM

A study of the technical issues involved in developing real-estate projects. Tracks project development from initial

conception through closing of the sale. Emphasizes the steps and processes involved in pursuing, analyzing, and closing a real-estate purchase. Offered: S.

CM 550 Residential Project Development (3) Study of the financial, technical, and management activities and environmental impact regulations and studies associated with the development of residential projects, including business and construction practices and marketing strategies for continued profitable operation of a residential construction firm. Offered: S.

CM 555 Construction Firm Management (3) Management of construction company including organization, corporate structure, operation procedures, marketing, and human resources management. Emphasis on safety and loss prevention management, insurance and risk management, financing, accounting, marketing construction services, and bonding requirements for construction company. Other topics include individual and corporate planning and process of strategic planning. Offered: W.

CM 560 Design-Build Project Management (3) Examines the design-build process used for the delivery of construction projects. Involves analysis of project owner requirements and development of a written proposal for design and construction. Offered: Sp.

CM 565 Managing International Projects (3) *K. LIN* Study of processes involved in the selection, acquisition, and management of international construction projects. Emphasis is placed on examining common problems associated with managing construction projects outside the United States, identifying risks involved, and discussing possible solutions. Offered: S.

CM 570 Facilities Management (3) *B. EMAM* Major issues involved in facilities management: facilities planning, financial planning, real estate management, interior space planning and management, facilities operation and maintenance, and emergency preparedness. Offered: Sp.

CM 575 Leadership in Construction (3) *A. HOLM* Studies leadership principles applicable to the construction industry. Addresses both organizational leadership and leadership of construction processes. Offered: A.

CM 580 Temporary Structures (3) *K. NEMATI* Study of materials, methods, and techniques associated with temporary structures used in various construction operations, such as concrete formwork, scaffolding, underpinning, cofferdams, slurry trenches, earth-retaining structures, and dewatering systems. Offered: Sp.

CM 582 Heavy Construction Estimating (3) *A. ABDEL AZIZ* Study of the principles used in developing cost estimates for heavy construction projects. Includes interpretation of contract documents, quantity take-off, pricing, and preparation of unit-price bid documents. Emphasizes developing cost estimates for highway projects. Offered: S.

CM 584 Marine Construction (3) *S. DANIALI* Study of the materials, methods and techniques associated with construction of projects in marine environments, including the impact of site conditions on the selection of appropriate construction techniques. Emphasizes equipment and crew selection, productivity and cost estimation, and construction sequencing. Offered: A.

CM 586 Utility Systems Construction (3) *W. BENDER* Study of the materials, methods, and techniques associated with construction of major utility systems, such as water, sewer, communications, electrical or natural gas. Includes construction of central utility plants as well as major distribution and collection systems. Offered: Sp.

CM 588 Construction Operations and Productivity (3) Study of heavy construction operations with emphasis on productivity enhancement focusing on an integrated approach to planning, modeling, analysis, and design of construction operations, and the use of simulation models and other analytical tools. Offered: W.

CM 590 Research Methods in Construction Engineering (2) *J. SCHAUFELBERGER* Study of the academic research process. Includes development of a research proposal, review of relevant literature, selection of research methodology, collection of data, data analysis, and preparation of research report. Offered: W.

CM 598 Special Topics (1-6, max. 6) Systematic study and offering of specialized subject matter. Offered: AWSpS.

CM 600 Independent Study or Research (*-) An in-depth independent investigation of some facet of construction management. Offered: AWSpS.

CM 700 Master's Thesis (*-) Offered: AWSpS.

Landscape Architecture

348 Gould

Landscape architecture is a professional design discipline that addresses both the built and natural environments. It focuses on the design, analysis, and planning of outdoor spaces across a wide range of scales, with the intent of creating places that are both meaningful and functional. Landscape architects design everything from infrastructure elements, such as roadways, drainage systems, and parks, to prominent cultural monuments and gardens for public and private housing units. The education of a landscape architect includes aesthetic design skills, the development of social and environmental ethics, technical design skills, knowledge of a wide range of natural processes, an awareness of design history, and skills for working with other people. At the University of Washington, the focus is on urban ecological design education, which allows students to make a difference in the future of cities and urban regions all over the world.

UNDERGRADUATE PROGRAM

Adviser

348 Gould, Box 355734

(206) 543-9240, (206) 685-4486

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The Department of Landscape Architecture offers the following programs of study:

- The Bachelor of Landscape Architecture (BLA) degree
- A minor in urban ecological design
- Certificates in Urban Design and Historic Preservation (see College of Built Environments)

Bachelor of Landscape Architecture

Department Admission Requirements

Core courses within the department form a seven-quarter curriculum designed to start autumn quarter of the junior year. Students take a sequence of seven studios, other sequential skills-based courses, theory courses, and directed electives. Admission is competitive. Completion of the requirements listed below does not guarantee admission. Admission is based on academic record, a portfolio of creative work, three letters of recommendation, and other application materials. Refer to the department's website, <http://larchwp.be.washington.edu/> to select "undergraduate program" link from the "admissions" bar for application materials and detailed information on admission, prerequisites, and required coursework.

1. Minimum 70 credits to include:

- a. Departmental Pre-professional Requirements (16 credits): L ARCH 300* (usually offered autumn and summer quarters), L ARCH 352 (autumn quarter), L ARCH 353 (winter quarter)

- *Transfer students: These three courses are available and may be taken through the University's Professional and Continuing Education unit prior to admission to the UW.

b. General Education Coursework: minimum 60 credits to include 5 credits of English composition; 4-5 credits of Quantitative and Symbolic Reasoning; and 50-51 credits selected within the following Areas of Knowledge: Visual, Literary, & Performing Arts (20 credits); Individuals & Societies (20 credits); Natural World (20 credits), of which one course must fulfill prerequisite requirement for ESS 315/ENVIR 313 or ESS 301; plant biology class recommended.

- *L ARCH 300 can be counted toward General Education requirements. Other L ARCH courses which are not required within the BLA program or as admission requirements also may be counted for General Education requirements. Students planning to complete the degree in seven quarters should complete all departmental General Education requirements prior to starting the degree.

2. Application Deadline: Complete applications are due by 5 p.m. on the first day of spring quarter for the following autumn quarter. Students are not admitted at other times. Applications must include the BLA application materials. Students should apply during their second year to make satisfactory progress toward the degree.

Program Requirements

Minimum 182-183 credits, to include:

General Education Requirements (69-70 credits): L ARCH 300 and other L ARCH courses which are not requirements either within the BLA program or as prerequisites may count toward I&S/NW/VLPA requirements.

1. Written and Oral Communication (5 credits): one 5-credit English composition course from the University list. 10 additional writing credits are required, but can be met by major core courses.
2. Visual, Literary, and Performing Arts (VLPA) (20 credits): L ARCH 300; 14 additional VLPA credits; drawing class recommended
3. Individuals & Societies (I&S) (20 credits)
4. Natural World (20 credits): one course listed as prerequisite requirement for either ESS315/ENVIR 313 or ESS 301; additional NW credits to total 20 credits; plant biology class recommended
5. Quantitative and Symbolic Reasoning (4-5 credits)

Major requirements (minimum 113 credits)

1. Studio Classes: L ARCH 301, L ARCH 302, L ARCH 303, L ARCH 402, L ARCH 403, L ARCH 474, L ARCH 475
2. Planting Design: L ARCH 424
3. History: L ARCH 352 and L ARCH 353
4. Theory: L ARCH 341, L ARCH 361, L ARCH 363
5. Graphics: L ARCH 411, L ARCH 440, L ARCH 441
6. Professional Practice: L ARCH 473
7. Construction: L ARCH 331, L ARCH 332, L ARCH 433
8. Soils: L ARCH 432 or other course chosen from approved list maintained by department
9. Plant Identification: either BIOL 331/ESRM 331, BIOL 317, or equivalent course approved by department
10. Managing Plants: either ESRM 473, ESRM 479, or ESRM 480
11. Geology: Either ESS 301 or ESS 315/ENVIR 313
12. Directed Electives to bring major total to 113 credits, chosen from approved lists maintained by the department in the following areas: 3-5 credit course in environmental history; two 3-5 credit courses in ecology and forestry; 3-5 credit course in legislation; 3-5 credit

course in soils; 3-5 credit course in urban design and planning

Minor

Minor Requirements: Minimum 25 credits, consisting of 20 credits of L ARCH courses open to non-majors; 5 credits of courses 200 level and above from within the College of Built Environments or from ESRM or GEOG courses; 2.0 minimum grade in all courses counted toward the minor

Student Outcomes and Opportunities

- **Learning Objectives and Expected Outcomes:** The BLA program provides a professional, accredited degree which enables graduates to practice successfully in design firms, nonprofit organizations, and public agencies. Building from a liberal arts foundation, the program focuses on developing design knowledge, skills, and abilities through a sequence of nine environmental- and community-based design studios.

The goals of the program are to provide students with a broad academic and professional exposure to landscape architecture and design so their creative potential and professional growth are realized, and so they may become leaders in the field. The education includes learning to conceptualize and design through practice on studio projects; fostering creativity; developing graphic, written, and verbal communication skills; facilitating cognitive abilities; and developing applicable computer skills in the design process. Studios use individual, team-oriented, and interdisciplinary projects to develop strong interactive and evaluative skills. Studio education applies knowledge gained in lecture courses which include historic and contemporary concepts in landscape architecture, design theory, site planning, construction, and communications, as well as elective courses in allied disciplines. The studio sequence addresses projects from detailed to neighborhood scales, varied contexts, and with diverse cultures. Overall, the program focuses on the application of ecological design strategies to urban and urbanizing areas, which characterizes the department's focus on urban ecological design.

- **Instructional and Research Facilities:** The Bachelor of Landscape Architecture degree is structured around studio classes augmented by lecture and skills-oriented courses. The program affords some opportunities for independent studies and work in professional settings, beyond the minimum requirements for the major. Departmental courses are complemented by elective courses from other areas, including urban horticulture, soils, geology, urban design and planning, botany, and ecology.

Landscape architecture studio classes are led by departmental faculty or members of the professional community. Studio classes may be taught jointly with faculty from other disciplines. Studio classes address specific areas of inquiry including basic design principles and processes, planting design, materials and craftsmanship, landscape planning for parks or natural areas, neighborhood and civic-space design, urban landscape design, ecological restoration, and culturally-based design. A capstone studio requires students to integrate their knowledge of design theory, practice, and construction in a design-build project for a local community. The department regularly offers Study Abroad programs as well as opportunities to work with local communities and public agencies.

- **Honors Options Available:** For Interdisciplinary Honors, see University Honors Program.
- **Research, Internships, and Service Learning:** Departmental lecture courses address the functioning of natural systems, site planning issues, computer applications, and cultural and sociological forces that influence the profession's work. Advanced studio courses,

including the capstone studio, typically provide service learning experiences in a particular community context. In addition to required coursework, the program encourages students to pursue personal interests through directed and independent study within and beyond the department. Students are encouraged to gain real-world experience through a practicum with professional firms, organizations, or agencies.

- **Department Scholarships:** Limited availability.
- **Student Organizations/Associations:** Student chapter, Washington Chapter of the American Society of Landscape Architects

GRADUATE PROGRAM

Graduate Program Coordinator

348 Gould Hall, Box 355734

(206) 543-9420

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Master of Landscape Architecture

The Master of Landscape Architecture program, accredited by the American Society of Landscape Architects, is a professional program that offers training in design and inquiry. The design studios form the core of this program, which is supported by rigorous independent investigation in seminars and in a thesis project. Students are expected to develop a specialty within the discipline, under the professional guidance of the faculty. The curriculum emphasizes the following:

Urban Ecological Design. The rapidly changing environment of the Pacific Northwest offers an excellent opportunity for courses and thesis projects to explore the connections between culture and nature and to test ideas for how social and spatial conflicts between development and conservation might be addressed. Faculty are particularly interested in the changing roles of familiar urban and suburban landscapes, as these areas are increasingly expected to function as part of an ecological infrastructure. At the same time, diverse human cultural communities have developed with differing perceptions of and values for these changing landscapes. The department offers students the opportunity to study the rich cultural resources of these human communities as they develop new relationships to their environments, and to participate in this overlap between natural and cultural processes. The department currently offers study abroad programs in Canada, Mexico, Guatemala, Europe, and East Asia as well as opportunities to work with local communities and public agencies.

Design Leadership. The faculty is committed to training students to be leaders in design practice and education. This includes the education of both children and adults to understand the consequences of human transactions with the natural environment. Courses are offered and research is being conducted on designing outdoor educational environments. Graduate students are also encouraged to develop independent leadership skills which provide them with self-confidence and adaptability in a rapidly changing professional world. The primary areas in which students are encouraged to develop leadership abilities are in the definition and practice of design as a basis for interdisciplinary work, environmental education and the application of ecological concepts to urban design, the use of communication technology to develop creative solutions to cultural and environmental conflicts, and international design-build projects in which students confront the global nature of contemporary development issues.

The graduate program considers applicants with and without previous design education, and encourages applications from persons with diverse academic and professional backgrounds. The faculty is experienced in teaching mature students and seeks to admit those with a range of ages, backgrounds, and interests. Students are encour-

aged to benefit from the location of the department within a broad and excellent research university by adding elective courses in other disciplines to their core curriculum. In addition, graduate students may elect to participate in College-wide certificate programs in Urban Design, and Preservation Planning and Design. See program descriptions in the College of Built Environments section.

Admission Requirements

1. Candidates applying to the Master of Landscape Architecture program must apply both to the Graduate Admissions Office and to the Department of Landscape Architecture by January 15 to be considered for admission the following autumn quarter.
2. Admission to the Graduate School requires (1) a baccalaureate degree from an accredited U.S. college or university, or the equivalent from a foreign institution, (2) a GPA of 3.00 or higher in the last 90 graded quarter hours or the last 60 graded semester hours, and (3) a Graduate Record Examination (GRE) score taken within the past three years.
3. Admission is competitive and priority is given to applicants whose abilities, as determined by the department's admissions committee, enable them to complete the program expeditiously and with a high level of achievement. Contact the department for additional information.

Program Requirements

Minimum 72 credits

Specific program requirements are arranged to fit each student's background. Seminar and field courses help students achieve their educational goals and develop a credible specialty area within landscape architecture. Students with a previous degree in landscape architecture begin coursework with the required graduate curriculum studios, while students from other educational backgrounds begin with the basic core design studios. The required graduate curriculum includes 72 approved credits. In addition, a specialization is developed in the area of a student's individual interests (12 credits), thus encouraging students to deepen their knowledge in a particular area, while maintaining substantial flexibility for each individual.

A thesis is required. This independent project is advised by a committee of faculty, but allows the student to develop greater intellectual maturity and satisfaction by pursuing a topic she or he has selected out of personal interest. The thesis also allows students to demonstrate a professional level of mastery of a specialized subject area. Students complete either a written and graphic product or a purely written product for the thesis, depending on the thesis model they choose to follow. Four models are available: the professional project thesis, the design critique thesis, the research thesis, and the design thesis. Students make choices about the type of thesis and the methods they will use in conjunction with their faculty adviser and committee members.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

L ARCH 200 Landscape Architecture Field Trips (2) VLPA/I&S Five field trips introduce typical landscape architecture projects and demonstrate scope of the landscape architecture field. Visits to major projects in the Puget Sound region include city and county parks, river parks, harbors, downtown redevelopments, streetscapes, campus headquarters, and others. Open to nonmajors.

L ARCH 212 Designing the Future (3) VLPA Johnson, Robertson Investigates design perspectives and trends for the future. Explores the design of physical, social and ecologi-

cal systems and examines design values. Surveys contemporary design and applies integrative and synthetic thinking towards designing the future. Offered: Sp.

L ARCH 300 Introductory Landscape Architecture Design Studio (6) VLPA Introduction to history and environmental influences in field while developing design and graphic skills. Site analyses and drawing to convey design concepts. Relationship of visual perception to drawing, role of values in design, verbal communication, and behavioral analysis of design process. Required for admission to Bachelor of Landscape Architecture program.

L ARCH 301 Design Foundations Studio (6) Introduces site planning and design process, principles, and skills through experiential learning. Examines and applies landscape elements used to design, including plants. Activities foster skill in design process, shaping landscape form and space, creativity, communication, group dynamics, and organization. Includes required fieldtrips. Majors only.

L ARCH 302 Urban Sites Studio (6) Explores application of design ideas and principles to urban sites. Applies theory and research informing the design of human environments and lessons from urban and ecological design precedents to the design of urban places. Includes design across scales to detailed site design studies, including planting design. Majors only. Offered: W.

L ARCH 303 Ecological Systems Studio (6) Project design studies related to ecological systems. Emphasizes the innovative use of ecological processes and patterns in design development to improve designed landscape's performance. Both biophysical and social criteria are used to define performance. Introduces computer-mapping applications. Majors only.

L ARCH 310 Landscape Architecture Field Sketching (2) Introductory level sketching of landscape subjects: natural and urban sites, plants, animals, architectural elements. Emphasis on perspective. Various media, including pencil, charcoal, markers, ink wash, water color.

L ARCH 311 Introduction to Design Graphics (2) Introduction to communication techniques for various phases of the design process. Many techniques are introduced and their suitability and appropriateness for different purposes explored.

L ARCH 322 Introduction to Planting Design (3) VLPA Traditional ways plants are used in landscape design. Composition and design characteristics of plant materials. Technical considerations for selection, climate, cultural suitability, availability, costs, and maintenance. Open to nonmajors.

L ARCH 323 Topics in Planting Design I (1) Explores planting design topics that relate specifically to site, program, and design issues addressed in concurrent studio projects. Identifies and describes native and ornamental trees and shrubs on the UW campus and vicinity. Utilizes tree canopy layers, shrub masses, and ground plane layers as space forms in studio project designs. Concurrent with L ARCH 301.

L ARCH 324 Topics in Planting Design II (1) Explores planting design topics that relate specifically to site, program, and design issues addressed in concurrent studio projects. Utilizes trees, shrubs, and herbaceous plants as space forms in urban contexts. Utilizes plant characteristics of color, texture, and form in studio project design. Considers design principles of unity/diversity, complexity/simplicity, and pattern in studio project design. Concurrent with L ARCH 302.

L ARCH 325 Topics in Planting Design III (1) Explores planting design topics that relate specifically to site, program, and design issues addressed in concurrent studio projects. Considers trees, shrubs, and herbaceous plants of natural and ecosystems human-made plant communities. Considers plant community dynamics and changes over time. Concurrent with L ARCH 303.

L ARCH 331 Landform Grading and Drainage (3) Introduces the concepts and methods behind grading and drainage and how they are used as design and problem-solving tools. Covers the relationship between grading and drainage plan graphics and their actual three-dimensional applications. Presents basic design principles. Considers the ecological and artistic approaches to grading and drainage. Majors only. Offered: Sp.

L ARCH 332 Materials, Craft, and Construction (3) Materials and structures in landscape construction. Design criteria and construction techniques for detail elements of landscape architecture. Working drawings, specifications, cost estimates, and procedures.

L ARCH 341 Site Design and Planning (3) Introduces urban ecological design issues for good site-planning processes, principles, and methods. Linked with L ARCH 301. Addresses planning for people, natural systems in place-making, design for movement with carried land uses. Includes readings, discussions, presentations, campus walks, case studies, graphic and written assignments.

L ARCH 352 History of Landscape Architecture (5) VLPA/I&S Survey of the development of landscape architecture as an art form from Mesopotamia to the present. Relationships to physical landscape, climate, culture, religion, and other arts. Open to non-majors. Offered: A.

L ARCH 353 History of Modern Landscape Architecture (5) VLPA/I&S Development of profession and art of landscape architecture in the United States, Europe, South America, and Japan in relation to prevailing social, economic, political, and cultural factors. Relationships with other professions, especially architecture and urban planning, and other arts, such as painting and sculpture. Open to non-majors. Offered: W.

L ARCH 361 The Human Experience of Place (3) VLPA/I&S Interdisciplinary approaches to exploring the reciprocal relationship between people and the landscapes of everyday life. Through readings, discussion, in-class activities and mini-projects, students study place attachment, relationships to nature, environmental attitudes and perception, personal space, territoriality, urban public space, diversity, participation, and the politics of space. Open to nonmajors.

L ARCH 362 Design of Cities (3) VLPA Introduction to the discourses and debates in the contemporary design of cities. Provides an overview of design theories and examples of historic and contemporary work. Includes discussion of the contesting urban processes: visions and paradigms of city; discourses of nature and the city; contemporary urban changes; public and community process; and everyday place making.

L ARCH 363 Ecological Design and Planning (3) NW Introduction to landscape ecological theory applied to urban environments. Comparison of different vocabularies used to describe landscape structure and function, from the fields of landscape design, urban design, and biology. Discussion of design theories that have sought to re-center landscape planning and design around the goal of achieving ecological sustainability.

L ARCH 401 Urban Recreation Design (1-6, max. 6) VLPA/I&S Special studies in metropolitan, urban, and neighborhood recreation areas; the design, policies, and behavioral studies of existing parks, playgrounds, public places, and commercial areas. Design projects dealing with the play environment for all ages. Open to nonmajors.

L ARCH 402 Neighborhood Design Studio (1-6, max. 6) Studio at neighborhood and site scales, mixed use. Incorporates urban design theory, precedents, neighborhood/project issues, and community clients. Skills in neighborhood and site analysis, programming. Designs are developed in groups and individually. Methods include readings, research, critiques, field studies, and graphic, written, and verbal presentations.

L ARCH 403 Cultural Landscape Studio (1-6, max. 6) Studies of the landscape at various scales and in diversified

contexts. Offers better understanding of visual components of landscapes, designer's capacity to evaluate and change these components, and resultant interaction with, and effect on, landscape user.

L ARCH 406 Individual Design Studio (6) Senior projects in landscape architecture; projects vary according to the student's particular emphasis and needs.

L ARCH 411 Landscape Representation I (3) Introduces fundamental graphic and representation conventions, hand-drawing techniques, and media used in landscape architecture and environmental design. Emphasizes drawing and media skills that support design ability development. Includes lectures, demonstrations, display of examples, drawing from slides, and in-class workshops. Credit/no-credit only.

L ARCH 412 Landscape Representation II (2) Development of advanced skills of visual representation to communicate students' visions for urban ecological design including techniques used during the design process and for presentation.

L ARCH 423 Planting Design Studio (3) Utilization of plants as design elements to manipulate space and modify the landscape for various activities and resolutions of site problems. Factors that determine the appropriate use and arrangement of plant materials in an urban context. Composition, plant selection, planting techniques, and maintenance requirements are major components of this class.

L ARCH 424 Advanced Planting Design Seminar (3) Introduces and investigates the ecological and social functions behind planting design. Introduces conceptual methods to planting design using various 'lenses'. Discusses the relationship between planting plan graphics and their actual three-dimensional applications. Focuses on combining plants into a cohesive, artistic, and ecologically responsible design that responds appropriately to site conditions.

L ARCH 425 Advanced Planting Design Studio (1-6, max. 6) Advanced seminar/studio in planting design. Provides opportunity to explore ecological, technical, and esthetic principles for selecting plants to meet specific site conditions. Project types include historical sites, multifamily housing projects, plazas, landfills, and reclamation sites.

L ARCH 432 Urban Soils and Hydrology (3) Develops basic understanding and skills related to soil properties and their specification for use in horticulture and hydrological performance, and knowledge and skills needed by landscape architects to implement design solutions that manipulate urban hydrological conditions. Majors only. Prerequisite: L ARCH 331. Offered: W.

L ARCH 433 Design Implementation (3) 8L ARCH 440 Digital Media I in Landscape (1-3, max. 3) Spencer Introduces digital applications and methodologies useful in landscape architectures' interpretive, iterative design, production, and presentation processes. Focuses on skills in 2D CAD, 3D visualization, graphic representation, and the integration of manual and digital techniques. Credit/no-credit only.

L ARCH 441 Digital Media II in Landscape (3) Explores Computer Aided Design as a powerful tool in landscape design, analysis, and visualization. Consists of four core units: 2D CAD drafting; digital terrain modeling; 3D solids and surface modeling; and visualization.

L ARCH 450 History of Environmental Design in the Pacific Northwest (3) VLPA Development of landscape architecture, architecture, and urban planning in the Pacific Northwest from nineteenth century to the present, with major emphasis on twentieth century. Open to nonmajors.

L ARCH 451 History of Environmental Design on the West Coast (3) VLPA Development of the environmental arts of landscape architecture, architecture, and urban planning from the eighteenth century to the present, with major emphasis on the twentieth century. Open to nonmajors.

L ARCH 454 History of Urban Landscapes and Environments (5) Explores the history and historiography of urban landscapes and the design of cities with an emphasis on North America in the context of the broader study of cities in China, Japan, and in the Western world from the pre-classical through twentieth centuries in Europe. Offered: S.

L ARCH 463 Urban Recreational Design (3) VLPA/I&S Special recreational studies in metropolitan, urban, and neighborhood areas; the design, policies, and behavioral studies of existing parks, playgrounds, public places, and commercial areas. Design projects dealing with the play environment for all ages. Open to nonmajors.

L ARCH 470 Landscape Architecture Tutorial (2, max. 6) Various aspects of project organization, programming, scheduling of workloads, graphic and verbal communication problems, data collection methods and interpretation, methodologies for landscape planting and design.

L ARCH 473 Professional Practice (3) Professional practice in private office, academic institutions, and public agencies. Evolution of landscape architecture as a profession, possible scenarios for future, variety of practice types and their relationships, ethical and legal/contractual responsibilities of a professional.

L ARCH 474 Advanced Design Studio (1-6, max. 6) Detailed design studies of small-to-medium-scale projects. General focus on public landscape areas and social/psychological uses of site. Specific focus on design development and professional office presentation. Offered: W.

L ARCH 475 Community Design/Build Studio (1-6, max. 6) *Winterbottom* Students design and construct a community based project, synthesizing prior course instruction by going through the design process from concept to schematic design, creating construction documents, and implementing what they have designed. Offered: Sp.

L ARCH 476 Professional Operations (3-6, max. 6) Practicum course for landscape architecture majors for internship and exposure to the profession with working experiences at various levels of professional endeavor. Student apprenticeship in selected private offices and public agencies. Credit/no-credit only.

L ARCH 477 Landscape Architecture Consultancy Studio (3-6, max. 6) Simulation of the professional relationship of the landscape architect as a consultant to University students in other design planning and management disciplines. Focus on site analysis, master planning, schematic designs and detailed design, working drawings, and planting plans associated with student projects.

L ARCH 481 Planning Urban Green Infrastructure Networks for Healthy Cities (5) Explores the planning of green infrastructures to maximize ecosystems services and support more compact and livable communities. Credit/no-credit only.

L ARCH 482 Designing High Performance Landscapes (5) Looks at ways to design 'high performance landscapes' that integrate ecological realities and urban infrastructural needs while expressing an aesthetic of performance. From site analysis to final design, provides hands-on experience in creating green infrastructure assets in the urban environment. Credit/no-credit only.

L ARCH 495 Landscape Architectural Studies Abroad (1-10, max. 30) Studies conducted under faculty supervision in various locations outside the United States.

L ARCH 498 Special Projects (1-10, max. 30) Special projects as arranged. Open to nonmajors.

L ARCH 499 Undergraduate Research (1-9, max. 9) Individual or small-group studies pertaining to special problems, theories, or issues of landscape architecture and environmental issues.

L ARCH 501 Ecological Urbanism Studio I (1-6, max. 6) *Rottle* Applies landscape ecological and urban design theory to multi-scalar urban environments. Focuses on the strategic design of urban green infrastructure, includ-

ing pedestrian and active transport environments, green space and habitat, and integration with natural drainage systems. Credit/no-credit only.

L ARCH 503 Community Design Studio (1-6, max. 6) Methods and techniques for developing physical design solutions and implementation strategies in neighborhoods and small communities. Social, economic, political, and individual forces affecting community development and growth. Comparison of several communities, identifying pertinent landscape issues, potential design solutions, and methods for achieving design goals through the political process.

L ARCH 504 Regional Landscape Planning (1-6, max. 6) Application of landscape ecological theory to the design of urban environments. Focuses on the strategic design of urban infrastructure, including underground drainage systems, roads, parks, transit systems, and on understanding the cumulative performance of urban sites.

L ARCH 505 Landscape Planning Studio (1-6, max. 6) *Yocom* Examines the theory and techniques of landscape planning across a wide range of spatial scales and contexts in the design process. Explores the application of planning techniques and technologies by a specific design or planning project. Offered: A.

L ARCH 506 Landscape Visual Resources (1-6, max. 6) Survey of existing theory/techniques and the generation of new methods to analyze, evaluate, plan, design, and manage the visual resources of the landscape.

L ARCH 507 Art and Landscape Studio (1-6, max. 6) Public art placed in, or developed for, specific landscape settings. Various aspects and benefits of public art, including materials, technologies, philosophies of landscape imagery and meaning. General planning criteria for location for maximum public benefit and identification of objectives for a specific site and artwork.

L ARCH 511 Visual Learning (3) Seminar/laboratory to develop visual learning processes and skills for applying these processes to landscape architecture. Related visualization concepts.

L ARCH 523 Landscape Technology (1-6, max. 6) Studio on rehabilitation of stressed urban landscapes. Focus varies but often deals with an analysis of the potentials in urban watershed and the study of alternative site designs for enhancing a range of landscape functions related to water quality. Taught by an interdisciplinary team.

L ARCH 552 History of Landscape Architecture (5) Surveys the development of landscape architecture as an art form and a practice across diverse cultures and places in the context of developing historiographical approaches and frameworks.

L ARCH 553 History of Modern Landscape Architecture (5) Focuses on building an historic and critical overview of modernism and modernist designs in the practice and discipline of landscape architecture. Focuses on critical readings of historical narratives to explore the emergence of theory in practice.

L ARCH 561 The Human Experience of Place (3) *Manzo* Uses interdisciplinary approaches to explore the reciprocal relationship between people and the landscapes of everyday life. Studies place attachment, relationships to nature, environmental attitudes and perception, personal space, territoriality, urban public space, diversity, participation, and the politics of space. Offered: A.

L ARCH 562 Landscape Art (2) Process of developing and placing artwork in specific landscape settings. Types of artwork and landscape settings; ways for artist and site designer to interpret, alter, and incorporate factors of landscape; viewer's perception and experience; examples of public and private support.

L ARCH 563 Ecological Design and Planning (3) *Yocom* Explores the contemporary theory supporting the practice of ecological design and planning. Examines the potential relationships between ecological theory and design ap-

plications, particularly in urban environments. Topics are supported by a diverse collection of examples and case studies. Offered: Sp.

L ARCH 564 Sustainable Urban Landscapes (2) *Rottle* Introduces contemporary literature on urban sustainability and provides a forum for discussion about theories, applications, and practices towards the planning and design of sustainable and ecological urban environments. Offered: A.

L ARCH 570 Landscape Architecture Theory and Scholarship (3) Covers the nature of scholarship and theory building in landscape architecture. Investigates scholarship related to the design process, design critique, research, and practice. Includes consideration of capstone project topics. Offered: W.

L ARCH 571 Landscape Architecture Research Methods (3) Introduction to and exploration of selected research methods employed in landscape architecture research. Emphasizes how to apply research methods to a research question or problem. Includes exploration of data analysis and interpretation of research results.

L ARCH 590 Seminar in Landscape Architecture (1-3, max. 12) Advanced topics in landscape architecture with focus on unpublished areas of research.

L ARCH 598 Special Topics (1-6, max. 9) Systematic study of specialized regional landscape subject matter, including history, technology, implementation, and other topics depending on current interest/needs. Topics vary and are announced in the preceding quarter.

L ARCH 600 Independent Study or Research (*-)

L ARCH 601 Internship (3-9, max. 9)

L ARCH 700 Master's Thesis (*-)

L ARCH 701 Thesis Studio (1-6, max. 6) Studio designed to support students' independent thesis research and design process by providing a structured framework for regular meetings, studio reviews, peer/committee/guest critiques, and process reflections.

L ARCH 702 Capstone Project Studio (1-6, max. 6) Way Capstone group project studio. Offered: W.

Urban Design and Planning

410 Gould

Urban design and planning deals with critical issues of human settlement and urban development. It provides communities an informed basis for coordinated public- and private-sector action. Urban design and planning constitutes a professional field of growing complexity, responding to the urban complexities of this century. The Department of Urban Design and Planning fosters an integrative approach to education and research in planning the physical environment. The academic program includes the social, behavioral, and cultural relationships between people and the form and quality of their built and natural environment; the financial, administrative, political, and participatory dimensions of planning, design, and development; and the informational base for making deliberate decisions to shape urban areas and regions, bringing analysis together with vision.

Departmental faculty are active participants in interdisciplinary research units, including the Institute for Hazard Mitigation Planning and Research, the Urban Form Laboratory, the Urban Ecology Research Laboratory, the Runstad Center for Real Estate Studies, and the Northwest Center for Livable Communities.

The department is committed to public service and has strong connections to the region and beyond. The approach to urban development is driven by the values of sus-

tainability, livability, economic vitality, and social justice. The department is committed to developing a leading edge urban planning practice with a strong participatory ethos.

UNDERGRADUATE PROGRAM

Urban Design and Planning offers the following programs of study:

- The Bachelor of Arts degree with a major in community, environment, and planning
- A minor in urban design and planning

Community, Environment, and Planning

208Q Gould

Community, Environment, and Planning (CEP) is an interdisciplinary bachelor of arts degree program offered through the College of Built Environments as one of the University's interdisciplinary undergraduate programs. CEP has gained distinction as a model for a highly personalized, collaborative, and active educational experience within a large research institution. CEP students draw liberally from the entire range of courses, faculty, and programs at the UW.

Bachelor of Arts

Suggested First- and Second-Year College Courses: CEP 200.

Department Admission Requirements

1. Minimum 90 credits completed when student begins the program and at least 80 percent of general education requirements fulfilled
2. Minimum 2.50 GPA with additional emphasis on a written essay, demonstration of relevant extracurricular activities, and a final interview
3. Admission is once a year, for autumn quarter. Early admission deadline is February 15. Additional application dates vary each year. See CEP's website for specific dates.

Graduation Requirements

General Education Requirements

1. Written Communication (15 credits): 5 credits English composition; 10 credits additional composition or W courses. W courses, if applicable, may also be counted toward Areas of Knowledge or major requirements.
2. Quantitative or Symbolic Reasoning (4-5 credits): The QSR course, if applicable, may also be counted toward an Area of Knowledge or major requirement.
3. Areas of Knowledge (60 credits): 20 credits Visual, Literary, & Performing Arts (VLPA); 20 credits Individuals & Societies (I & S); 20 credits Natural World (NW). Required CEP courses and other non-CEP courses used to satisfy major requirements may also be counted toward Areas of Knowledge requirements, if applicable.

Major Requirements

77 credits as follows:

1. Core Seminars (30 credits): CEP 301, CEP 302, CEP 303, CEP 460, CEP 461, CEP 462.
2. Methods Courses (25 credits): Upper-division courses within the University, with no more than 15 credits from one department; chosen with guidance and approved by CEP staff and faculty.
3. Diversity Course (5 credits): One course that critically analyzes and addresses social constructs and/or issues from a different perspective than that of our dominant culture. Must be approved by the program adviser
4. Leadership Retreats (4 credits): CEP 300, autumn and spring
5. Governance Practicum (6 credits): CEP 400, quarterly

6. Internship (5 credits): CEP 446, 120- to 150-hour internship
7. Senior Project Capstone (2-6 credits): CEP 490 and CEP 491, autumn and winter
8. Electives to complete minimum 180 credits for degree; varies, depending on how many general education courses apply to more than one requirement.

Continuation Policy

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

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:*
 - A CEP education is founded on the following: students start where they are; articulate and embrace a vision of how they intend to make a difference in the world; construct a plan (with guidance from faculty and peers) of CEP seminars, cross-disciplinary courses, and field experiences; move deliberately with this plan in the final two years of undergraduate education; through first-hand experience and in the context of the CEP community of learners, become acquainted with effective ways for working constructively together to anticipate and address critical issues facing the complex communities and world we inhabit.
 - A CEP education is fully lived, not passively taken. CEP students actively make their education in community with others. CEP class cohorts range from 25-30 students. This group comprises a community of mutual learning that requires commitment, personal investment, and strong teamwork strategies for two years. Through six interconnected, quarterly seminars students engage the core content of the major: community, environment, and planning. These contemporary academic fields and areas of research include the study of community as subject and practice, exploration of the ecological context of all societal life, and an investigation of the potentials of planning for developing strategies for positive change.
 - CEP students have gone on to careers in a variety of interdisciplinary fields such as community planning and organization, urban development, communications, work in for-profit and nonprofit sectors, public administration, education, community and environmental activism, ecology, and government/community relations.

• *Instructional and Research Facilities:* See College of Built Environments section.

• *Honors Options Available:* For Interdisciplinary Honors, see University Honors Program.

• *Research, Internships, and Service Learning:* See College of Built Environments section.

• *Department Scholarships:* Department and program offer specific scholarships. Contact program adviser for details.

• *Student Organizations/Associations:* See College of Built Environments section.

Minor

Minor Requirements: 30 credits to include URBDP 300 (5 credits); minimum 13 additional credits in URBDP-prefix courses; and 12 additional credits in planning-related courses with Urban Design and Planning adviser approval. A 2.0 minimum grade is required for each course counted toward the minor. See departmental adviser for recommended courses.

GRADUATE PROGRAM

Graduate Program Coordinator

410 Gould, Box 355740

(206) 543-4190

udp@uw.edu

The department offers the Master of Urban Planning (MUP) and the Master of Science in Real Estate (MSRE) degrees and its faculty participate in the interdisciplinary Doctor of Philosophy (PhD) in Urban Design and Planning. The MUP is the professional degree for urban planners, and the MSRE is a two-year professional degree that provides students the core and advanced training necessary for successful careers and leadership positions in the real estate industry. The PhD is for persons who desire careers in urban design and planning, primarily in academic research and teaching or advanced professional work.

Master of Urban Planning

The primary objective is to educate professional planners with a broad range of competence in planning and design; a second objective is to provide opportunities for individual studies in selected professional areas.

The Master of Urban Planning program focuses on planning the physical environment and its socioeconomic and political determinants. Advanced students are encouraged to conduct research and studies in one of the following specializations:

- Urban design dealing with physical form, character, and quality issues
- Real estate, designed to provide students a deep foundation and specialized skills to help launch or enhance professional careers in real estate
- Historic preservation, focusing on the specialized skills needed actively to protect historic districts, buildings, and landscapes
- Land-use and infrastructure planning, including its environmental, socioeconomic, legal, information systems, and administrative aspects
- Environmental planning, addressing the interactions between urban systems and natural processes

The Master of Urban Planning degree is the usual educational qualification for professional practice of city and regional planning, including generalist planning, research, urban design, and administrative positions in a wide variety of public agencies and private consulting firms. It is a two-year, or six-quarter, program.

Admission Requirements

Requirements for graduate-level study include a satisfactory academic record and a bachelor's degree from an accredited college or university in one of a variety of disciplines, including urban planning and environmental design or in other appropriate fields, such as geography, economics, or other social sciences; English and other humanities; civil engineering and environmental studies; or architecture and landscape architecture. Students planning to enter the program should have completed at least one college-level course in each of the following areas: micro-economics, mathematics, statistics, and cultural diversity. Students without sufficient background must take these prerequisite courses concurrently with their graduate studies.

Students are admitted to the MUP program primarily in autumn quarter and all application material should be received by the department no later than the preceding January 15 (November 15 for international applicants). Along with the Application for Admission form, the Graduate Record Examination general test scores, three letters of rec-

ommendation, official transcripts for all previous collegiate courses or programs attended, resume, supplemental information form, and a statement of purpose are required. An optional work sample may also be submitted. TOEFL is required for most applicants whose native language is not English. (See the Graduate School's application information page for more details).

Degree Requirements

Minimum 72 credits

Core course requirements include

1. 33 credits covering the history and theory of planning and urban design, urban form, communication methods, quantitative methods, processes and methods of land use planning, comprehensive planning, planning law, research methods, and a planning studio.
2. 14 credits of restricted electives, including courses in advanced methods and advanced studio (both may be in an area of specialization); and courses in urban development economics, and in history/theory of planning.
3. 9-credit thesis or professional project required upon completion of all other degree coursework
4. 16 credits in open electives

The core provides a foundation in urban design and planning for all students. An internship is encouraged for those without previous professional experience. A specialization in one area of planning is required. Five major specialized areas offered in the department include land-use and infrastructure planning, real estate, urban design, historic preservation, and environmental planning.

See program website at urbdp.be.washington.edu/mup.html.

Master in Infrastructure Planning and Management (MIPM)

The Master of Infrastructure Planning and Management (MIPM) program is a two-year, eight-quarter, fully accredited online program degree. The infrastructure systems that underpin our society and ensure our quality of life are constantly at risk. Further, these systems are expanding with growth and technology advances, requiring a new level of professional management. The MIPM program teaches professionals to master the methods and core knowledge required to sustain and ensure resiliency of major infrastructures against both man-made and natural disasters. For further information, see program website at <http://www.infrastructure-management.uw.edu/mipm/>.

Admission Requirements

Satisfactory academic record and bachelor's degree from an accredited college or university in one of a variety of disciplines, including urban planning and environmental design, or in other appropriate fields such as geography, economics, or other social sciences; English and other humanities; civil engineering and environmental studies; or law or criminal justice. Applicants should have completed at least one college-level course in mathematics. A GIS introductory course is recommended for students without experience in that discipline.

Admission is for autumn quarter and all application materials should be received by the department no later than the preceding July 15. Beginning mid-March, applications are reviewed and given an email response within a few weeks. TOEFL is required for most applicants whose native language is not English. (See Graduate School application information page for more details)

Degree Requirements

45 credits. Students take two courses per quarter. The curriculum is broken down into 16 courses. Of these, students take 15, as follows:

1. Four required core courses introduce key concepts about infrastructure, systems thinking, financial planning, and the fundamental aspects of policy making. In addition, students explore the impacts of climate change on infrastructures.
2. Four required methods courses focus on processes related to planning and monitoring infrastructures, general management, and leadership. These processes include advanced geospatial analysis, epidemiology, emergency management, and business continuity planning.
3. Six systems courses focus on components and characteristics that make up infrastructure systems for food, energy, communications, transportation, and more. Students gain a working knowledge of these systems, the hazards confronting them, and preventive measures. Students select five of these six courses.
4. Two required capstone courses help students synthesize knowledge learned across the program and then apply it to a real-world project, conduct research, and develop a case study.

Master of Science in Real Estate

The Master of Science in Real Estate provides students basic knowledge, core skills, and advanced understanding necessary for graduates to assume leadership positions in the real estate industry. The objective is to develop skills in students necessary to create sustainable, market-based real estate solutions that optimize the utilization of scarce resources for balanced public benefit and private gain. An overarching emphasis on interdisciplinary study provides the basis for graduates to engage in collaborative efforts among many fields and to address the complex problem of achieving sustainable cities that balance the immediate needs of current users with those of future generations.

Admission Requirements

Competitive candidates for the MSRE program possess undergraduate or previous graduate degrees in a range of appropriate disciplines, including architecture, business, construction, engineering, geography, public policy, law, or urban planning. Experience working directly in real estate or some closely related field is highly valued. The Runstad Center seeks to admit students whose objectives align with those of the program, which are to

- Apply broad business leadership skills to solve real world problems
- Understand how spatial and capital markets affect creation of value
- Examine the effects of place-bound, three dimensional built forms on cities
- Explore how behavior of decision makers impacts sustainable real estate

Students are admitted to the MSRE program for autumn quarter. Deadline for application is February 1; international applicants are strongly encouraged to submit all application materials by November 1 to allow sufficient time for review. Applicants must submit an application form, resume, statement of purpose, personal history statement, official transcripts from each college or university attended, three letters of reference, official GRE or GMAT scores, and TOEFL scores for international students.

Degree Requirements

Minimum 72 credits

The Master of Science in Real Estate degree, a demanding, interdisciplinary program, combines business management skills with an understanding of how real estate markets work and how the three-dimensional, place-bound attributes of real estate products affect their performance. Overarching these three interdisciplinary areas of study is a focus on how behaviors of those involved in making deci-

sions about real estate investment and development affect desired outcomes.

The curriculum provides basic knowledge, core skills, and advanced understanding necessary for graduates to assume positions of leadership in the real estate industry of tomorrow. Learning leadership skills is integral to everything a student does throughout the two years in the program. Interdisciplinary study provides understanding of techniques and tools used in a broad range of fields essential to real estate, enabling graduates to lead collaborative efforts to solve complex problems of creating sustainable urban environments. The limits imposed by the physical characteristics of real estate have put a premium on understanding behaviors of people involved in creating and managing real estate projects. People make the decisions that drive values of property types. Students explore ethical behaviors leading toward emphasis on using technology to support classroom and case learning and in applying the knowledge and leadership skills learned throughout the program. For curriculum details, see the program website at <http://runstad.be.washington.edu>.

Doctor of Philosophy

Many departmental faculty are part of an interdisciplinary faculty group which offers doctoral study in urban design and planning. The program is located administratively within the Graduate School. For a description of the program, see the Interdisciplinary Graduate Degree Programs section of the catalog.

Certificate Programs

Graduate students may elect to participate in the College-wide certificate programs in urban design and historic preservation. (See program descriptions in the College of Architecture and Urban Planning section).

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsclat/

Community, Environment, and Planning

CEP 200 Introduction to Community and Environmental Planning (5) I&S Campbell Introduction to central themes of major. Opportunities to engage in community action and planning process, while developing ecological literacy. Lectures, discussions, and critical writing exercises combine to increase knowledge and interest in these fields. Emphasis on developing community of learners in and out of classroom setting. Offered: AW.

CEP 300 CEP Retreat (1, max. 4) Focuses on planning analysis assessment and development of the major. Opportunities for community building and all-major policy deliberation and decisions. Workshops for skill building in consensus, facilitation, and for major-specific activities such as developing individual study plans and study abroad experiences. Prerequisite: Majors only. Credit/no-credit only. Offered: Asp.

CEP 301 The Idea of Community (5) I&S Campbell Theories of community and communal rights and responsibilities. Experience building a learning community within major. Explores struggles for community in every sector of life. Offered: A.

CEP 302 Environmental Response (5) I&S/NW Miller

Explores issues of environmental crisis and societal responses. Readings and reflective analysis from broad selection of authoritative sources to develop grounded perspective in ecological literacy and consciousness. Currently, experiential education in challenges and practical responses to building sustainable society through

participation in community-based environmental effort. Offered: W.

CEP 303 Social Structures and Processes (5) I&S *Abramson, Born, Curry* Investigates use of formal and informal social structures and processes within context of community and environment. Looks at patterns and institutions of social organization and relationships among different sectors. Issues of interrelatedness, citizenship, knowledge, and communication. Offered: Sp.

CEP 400 Governance Practicum (1, max. 6) *Campbell* Emphasizes personal and collective leadership, democratic decision making, and learning through direct action and reflection. Explores and develops students' personal skills as doers and leaders, while also learning how to form and function as effective groups. Credit/no-credit only. Offered: AWSp.

CEP 446 Internship (5, max. 10) *Ryan* Connects core and individual courses with field work. Group and individual readings develop understanding of how students' internships and field placements constitute particular element of community and environmental planning. Explores how what we do for a living is part of our lives as citizens and public service. Credit/no-credit only. Offered: AWSpS.

CEP 460 Planning in Context (5) I&S *Abramson, Born, Curry, Sterrett* Examines theory against backdrop of practice for broad historical understanding of social, political, environmental planning. Critique from viewpoints, e.g., planning history, ethics, ecofeminism, environmental justice, class and capitalism, planning and global economy. Develop personalized history reflecting individual experience, professional experience, and philosophical heritage of planning profession. Offered: A.

CEP 461 Ethics and Identity (5) I&S *Purcell* Examination of personal, societal, vocational, environmental, planning ethics. Readings and discourse on ethical foundations for public life. Individual and group readings on values, human potential. Develops understanding of ecological context, moral responsibility, self-awareness. Constructs positive, diverse view of humanity, environment regardless of race, gender, ethnicity, beliefs. Offered: W.

CEP 462 Community and Environment (5) I&S *Campbell, Ryan* Capstone quarter merges core seminars, disciplinary courses in major, community field experiences for mastery of personal knowledge and skills. Reflection and synthesis of themes in major; engagement with contemporary issues. Compares theoretical definitions of community and environment with individual philosophies and knowledge within thoughtful, applied context. Offered: Sp.

CEP 470 Tools for Sustainable Cities (4) *Sterrett* Examines specific tools used for planning sustainable cities, including hands-on learning, speakers, case studies, and site tours to enrich students' knowledge and experience. Prerequisite: CEP 200 or URBDP 300. Offered: SpS.

CEP 490 Senior Project Prep Seminar I: Research and Project Scoping (1-3) Supports the conceptualization and planning of senior project/capstone work. Focuses on selecting a project, beginning a literature review, finding a mentor, and developing a plan. Credit/no-credit only.

CEP 491 Senior Project Prep Seminar II: Methods and Actualization (1-3) Focuses on implementing the senior project/capstone, including revisions and updates as seen fit. Credit/no-credit only.

CEP 498 Special Topics (1-9, max. 15) I&S Systematic study of specialized subject matter.

CEP 499 Undergraduate Independent Study or Research (1-5, max. 10) Individual reading, research, fieldwork, other special project approved and supervised by faculty adviser most appropriate for the project proposed. Credit/no-credit only. Offered: AWSpS.

Real Estate

R E 552 Real Estate Process (4) Introduces the real estate process including zoning, design, development, appraisal, finance, market research, and feasibility analyses. Helps students understand how to allocate real estate resources to create sustainable, market-based projects drawing on interdisciplinary concepts, perspectives, and processes to optimize spatial solutions. Offered: jointly with URBDP 552; A.

R E 553 Urban Land Economics (4) *Bitter* Introduces urban economics, land markets, and locational decision making; and examines urban spatial structure and the economic, political, social, technological, and historical forces that shape land values and uses. Uses applied spatial analytical tools including geographic information systems and geodemographic software. Offered: jointly with URBDP 553; A.

R E 554 Real Estate Finance (4) Expands on basic financial concepts introduced in the Real Estate Process. Designed to help students understand the financial implications of various real estate decisions. Covers mortgage finance, leverage, cash flow analysis, capital sources, financial engineering, and advanced modeling. Prerequisite: URBDP 552. Offered: jointly with URBDP 554; W.

R E 555 Real Estate Appraisal (4) *Bitter* Discusses valuation theory and the mechanics underlying real estate appraisal practices. Explores the unique market within which property interests are created, allocated or transferred, the dynamic nature of real estate values, and the valuation impacts of various external factors. Offered: jointly with URBDP 555; Sp.

R E 556 Real Estate Investment (4) Focuses on direct real estate investment based on the productive capacity of the total property, debt, and equity components and their impact on the cash returns in the form of positive returns to the property, tax savings potential, alternative leverage effects, and the gains at sale. Offered: jointly with URBDP 556; W.

R E 557 Real Estate Law (4) *Amster* Focuses on the legal principles and issues essential to understanding the workings of the real estate industry, including the fundamentals of real estate transactions and development projects. Offered: jointly with URBDP 557; A.

R E 558 Real Estate Market Analysis (4) Prepares students to conduct and interpret market studies to cover a range of real estate decisions. Exposes students to the market analysis process and various tools and techniques that can be used to analyze and forecast supply, demand, and rental rates. Offered: jointly with URBDP 558; W.

R E 560 Real Estate Feasibility (4) *DeLisle* Applies critical thinking needed to understand the drivers of value of the major property types which covers the "user in search of a site" and "investor in search of involvement" feasibility questions. Applies a combination of qualitative and quantitative analysis to target markets. Offered: jointly with URBDP 568; Sp.

R E 561 Real Estate Capital Markets (4) *Grissom* Studies capital markets, investigating the agents and institutions that channel money from the array of sources of savings to investment projects. Identifies the sources of available capital and uses investment and portfolio tools employed by conduits and intermediaries matches the capital to projects and asset classes. Offered: jointly with URBDP 569; A.

R E 569 Real Estate Portfolio Management (5) *DeLisle* Students develop formal portfolio management strategies that draw on their in-depth understanding of real estate fundamentals, strategic planning and portfolio theory. Working in teams, students prepare cutting-edge portfolio strategies including the policies and procedures for implementation and portfolio management. Offered: jointly with URBDP 559; Sp.

R E 570 Real Estate Project Finance (3) *Rolfe* Introduces financing real property projects developed by public, community, and private entities with a primary emphasis on interim (acquisition/development/construction) and take-out lending for new real estate projects. Offered: jointly with URBDP 577; Sp.

R E 571 Real Estate Development (4) Introduction and survey of processes and people involved in developing real estate, including issues of site control, public/private approvals, feasibility analysis, project financing, design/construction, marketing, and asset management. Prerequisite: URBDP 552. Offered: jointly with URBDP 578.

R E 590 Real Estate Forum I (1) *DeLisle* Provides an opportunity for students to learn about the interdisciplinary nature of real estate from industry leaders. Discusses current issues and opportunities in the industry as well as what it takes to develop a sustainable career path. Offered: jointly with URBDP 590; A.

R E 598 Real Estate Special Topics (1-4, max. 12) *Bitter, DeLisle* Systematic study of specialized subject matter. Prerequisite: permission of instructor. Offered: AWSpS.

Strategic Planning for Critical Infrastructures

SPCI 505 Epidemiology of Biological and Chemical Hazards Mitigation I: Principles (3) Introduction to epidemiology: surveillance for detection of outbreaks, outbreak investigation, and control for infectious agents, toxins, and chemicals. Case studies are drawn from actual outbreaks illustrating these essential epidemiological methods. Examines problem-solving techniques. Credit/no-credit only.

SPCI 506 Strategic Planning Practicum I (3) Uses case-based and problem-based approaches to teach the techniques of planning, decision-making, and analysis common to critical infrastructures.

SPCI 510 Strategic Planning Practicum II (3) Second in a three-course sequence that uses case-based and problem-based approaches to teach the techniques of planning, decision-making, and analysis common to critical infrastructures. Credit/no-credit only.

SPCI 511 Business Continuity Planning (3) Introduces safeguards that organizations can employ to ensure they survive a disaster, using examples from government services, banking and finance. Presents specifics of disaster/crisis management, business impact analysis, contingency planning, continuity of operations, and risk reduction tools. Examines lessons learned from 9/11.

SPCI 513 Strategic Planning Practicum III (3) *Whittington* Uses case-based and problem-based approaches to teach the techniques of planning, decision-making, and analysis common to critical infrastructures. Third in a three-course sequence. Offered: WS.

SPCI 515 Capstone (4) *Whittington* Culminating course where students select one of several problem-solving methods (problem-based case, tabletop exercise, research paper) and complete a final project focusing on a real-world problem. Requires mastery of the methodological skills and infrastructure knowledge taught in the program.

SPCI 598 Special Topics (1-4, max. 12) Systematic study of specialized subject matter. Topics vary for each quarter, depending upon current interest and needs, and are announced in the preceding quarter.

Urban Planning

URBDP 200 Introduction to Urbanization: Planning and Designing Alternative Urban Futures (5) I&S Introduces how cities work and explores alternative ways of planning and designing urban futures. Explores the economic, cultural, political, and social aspects of cities and how we might change them for the better. Also examines numerous case studies from the Global North and South.

URBDP 300 Introduction to Urban Planning (5) I&S Principles and theories of urban structure and institutions. Concepts and logic of planning as a community process and a professional activity. Evolution of planning ideas in response to changing social, economic, and environmental conditions within the American political framework. Complementary nature of public and private responsibilities. Major procedures used by planners.

URBDP 301 Database Management Fundamentals (3) Introduces the tasks and roles that contribute to the management of the design and security of database systems in an organizational context. Students gain a basic understanding of database management systems and administrative practices, as well as hands-on database experience. Credit/no-credit only.

URBDP 370 Reading the City (5) VLPA/I&S Comprehending cities as reflection of individual reader and social/cultural context. Skills for analyzing everyday, visible evidence of the city. Topics include self-identity with place, city, image and perception, visual design analysis; and place as representation of culture. Extensive writing, multiple texts, collaborative work in groups and fieldwork.

URBDP 422 Urban and Regional Geospatial Analysis (5) Principles of GIS applied to problems in urban design and planning, landscape architecture, and environmental and resource studies. Practical problem-solving approaches using contemporary desktop mapping packages and vector and raster GIS systems. Siting, environmental evaluation and inventories, and modeling. Prerequisite: either GEOG 317, GEOG 360, GEOG 461, GEOG 462, GEOG 465, FISH 452, or OCEAN 452. Offered: W.

URBDP 429 Computer-Aided Planning of Urban Systems (3) Survey of online planning applications; use of various on-line systems to solve urban systems design problems; investigations of hardware/software tradeoffs; human factors in man-computer systems design theory as it relates to problem-solving activity. Offered: jointly with CEE 418.

URBDP 446 Practical Experience (4, max. 8) Off-campus internship under academic supervision in situations useful to the education of planners, such as public/private planning and design offices, projects related to the environment, cross-cultural matters, and decision making. Assistance in identifying appropriate projects.

URBDP 450 Introduction to Land Use, Growth Management, and Environmental Planning (3) Provides an understanding of contemporary land use issues (including sprawl, smart growth, new urbanism, transit-oriented development, and Washington's Growth Management Act) and examines their environmental impact and social welfare implications. Analyzes best-practice techniques of growth management.

URBDP 451 Housing (3) I&S Survey of housing and redevelopment problems, theories, standards, and practice. Development of public policies, finance, technological considerations, social factors, and priorities. Prerequisite: 3.0 in URBDP 300.

URBDP 457 Housing in Developing Countries (3) Emphasis on role of the design and planning professional in housing delivery in developing countries. Exploration of issues of culture, political environment, social context, economic circumstances, and other factors which define and limit the manner in which the professional planner and designer can and should function.

URBDP 466 Infrastructure and Community Facilities (4) Issues and methods associated with planning for parks, schools, drainage, sewerage, utilities, libraries, solid waste, and transportation. Covers their relationship to comprehensive plans, project permitting, and impact assessment. Financing, regulating, and relationships to social, environmental, and economic goals are discussed.

URBDP 467 Urban Planning Uses of Remote Sensing (3) Using aerial photographs and satellite image data in urban planning. Urban change analysis, land-use and land cover

classification, and environmental planning applications. Scale and resolution considerations. Development of proficiency through laboratory exercises and use of image-processing software.

URBDP 470 Introduction to Urban Design (3) VLPA/I&S Definitions and examples of urban design; heritage of urban design; theories of city building; the role of urban design in the fields of architecture, landscape architecture, and urban planning.

URBDP 474 Site Planning: Issues and Techniques (3) Introduction to site planning; how it is regulated; why it is important to know; and how to carry out its key tasks, including residential subdivision and mixed-use development layout; basic topographical and hydrological analysis and manipulation; roadways, parking and hierarchies of circulation, and site design detail. Offered: Sp.

URBDP 479 The Urban Form (3) VLPA Elements, patterns, and evolution of urban form. The forces that shaped cities in history. Contemporary trends. Methods of urban morphological analysis as related to urban design and planning practices. Required for MUP graduate students.

URBDP 481 Metropolitan Planning and Development in Developing Countries (3) I&S Examination of the nature and causes of urban planning and management problems in developing countries and exploration of alternative approaches to solve some of these problems.

URBDP 498 Special Topics (1-9, max. 15) Systematic study of specialized subject matter. Topics for each quarter vary, depending upon current interest and needs, and are announced in the preceding quarter.

URBDP 499 Special Projects (1-12, max. 12) Independent/tutorial study for undergraduates. Individual reading, research, fieldwork, or other special project, outlined in advance, approved by, and under the direction of, the faculty adviser most appropriate for the project proposed.

URBDP 500 Survey of Urban Planning (4) Concepts and logic of planning as a professional activity. Evolution of guiding ideas in relation to changing social, economic, and environmental conditions within the American political framework. Major procedures used by planners. Critical appraisal. Open to graduate students in urban design and planning and to graduate students in architecture seeking the urban design certificate.

URBDP 501 Comprehensive Planning and Implementation (3) Whittington Reviews the comprehensive planning process as a part of managing metropolitan growth. Examines federal/state statutes affecting local government comprehensive plans. Includes local government land use regulations and reviews development process. Concentrates on tools to shape land use and development patterns and their effectiveness in creating outcomes specified in comprehensive plans. Offered: W.

URBDP 502 Tools for Sustainable Cities (4) Sterrett Examines specific tools used for planning sustainable cities, including hands-on learning, speakers, case studies, and site tours to enrich students' knowledge and experience. Prerequisite: CEP 200 or URBDP 300. Offered: SpS.

URBDP 503 Communication and Analysis (3) Development of communication skills understanding within the planning and design process. Presentation of communications as a design process with mental, visual, oral, written, and kinesthetic cognitive actions combined to form communications thinking. Offered: W.

URBDP 506 Planning Studio Prep (2) Introduces plan-making process, provides time for background research, issue identification, public involvement, and preliminary analysis.

URBDP 507 General Urban Planning Laboratory (4) Studio/field project in applied professional planning of a comprehensive nature, utilizing a local study area to examine the realities of problem solving in situations of functional and normative conflict. Integration of analysis, program-

ming, implementation, and presentation phases of the planning process.

URBDP 508 Specialized Planning Laboratory (5, max. 10) Studio/field project on a specialized planning problem. Several options are offered each year, such as regional-environmental planning, housing, metropolitan planning, and urban design. Prerequisite: ARCH 500 and ARCH 507. Additional prerequisite for some sections: urban planning seminar or lecture courses.

URBDP 509 Resources for Urban Planning (1) Provides an opportunity for students to explore and discuss issues of professional practice with practicing planners in an informal context. Questions posed by the participants usually emphasize practical aspects of working as planners. Credit/no-credit only.

URBDP 510 Theories and Methodologies of Planning I (4) Survey of the philosophy, methods, and analytical techniques used in planning public actions and policies, with emphasis on the logic and assumptions upon which these are based. Various planning surveys and methods. Open to graduate students in urban design and planning and to graduate students seeking the urban design certificate. Prerequisite: URBDP 500.

URBDP 512 Research Seminar (3) Planning, designing, and undertaking applied research in an urban setting. Framing, critically assessing, managing, and presenting research used in urban planning and design. Conceptual modeling of causal relationships, choice among experimental and quasi-experimental designs, and ethical and political implications of research undertakings. Exercises leading to a complete research design.

URBDP 519 Qualitative Research Methods (3) Qualitative research methods covering both the theoretical foundations and practical methodologies of traditional and innovative approaches, including cognitive mapping, open-ended interviews, ethnographic observation, hermeneutics, phenomenology, critical theory, communicative action, grass-roots empowerment, post-structuralism, and self-organization. Offered: jointly with ARCH 567.

URBDP 520 Quantitative Methods in Urban Design and Planning (4) Born Methods of statistical and mathematical analysis in design and planning. Emphasizes the use of computer packages for analyzing urban data. Regression, matrix methods, cohort-survival populations models with examples solved on microcomputers. Prerequisite: college mathematics and basic course in probability and statistics.

URBDP 525 Evaluation in Urban Planning (3) Methods and techniques for a priori assessment of physical improvement plans, program designs, public policies. Includes cost effectiveness and matrix or goal achievement, as well as more conventional cost-benefit and cost-revenue forms of analysis. Emphasis on understanding the reasoning and issues in evaluation, and gaining a working competence in at least one of the methods treated.

URBDP 536 Health Impact Assessment (2) Examines the use of Health Impact Assessment as a public health tool for informing decision-makers about the potential health impacts of proposed projects and policies. Students learn the steps for conducting HIAs, review case studies, and conduct an HIA of a current local proposed project. Offered: jointly with ENV H 536; Sp.

URBDP 538 Public Health and the Built Environment (2) Examines how the design of communities and land use and transportation decision have positive and adverse effects on health. Considers built environment impacts on physical activity, obesity, air quality, injuries, mental health, social capital, and environmental justice; and explores interventions to promote healthy community design. Offered: jointly with ENV H 538; W.

URBDP 549 Hazard Mitigation Planning (3) A survey of the field of planning for managing risks of natural hazards-earthquakes, floods, coastal/meteorological hazards, and human-caused technological hazards/terrorism. Covers

pre-event mitigation through building and land-use controls; disaster preparedness; post-event response, recovery, and mitigation of future hazards. Emphasizes hazard mitigation as a long-term strategy for achieving sustainability of communities.

URBDP 552 Real Estate Process (4) Introduces the real estate process including zoning, design, development, appraisal, finance, market research, and feasibility analyses. Helps students understand how to allocate real estate resources to create sustainable, market-based projects drawing on interdisciplinary concepts, perspectives, and processes to optimize spatial solutions. Offered: jointly with R E 552; A.

URBDP 553 Urban Land Economics (4) *Bitter* Introduces urban economics, land markets, and locational decision making; and examines urban spatial structure and the economic, political, social, technological, and historical forces that shape land values and uses. Uses applied spatial analytical tools including geographic information systems and geodemographic software. Offered: jointly with R E 553; A.

URBDP 554 Real Estate Finance (4) Expands on basic financial concepts introduced in the Real Estate Process. Designed to help students understand the financial implications of various real estate decisions. Covers mortgage finance, leverage, cash flow analysis, capital sources, financial engineering, and advanced modeling. Prerequisite: URBDP 552. Offered: jointly with R E 554; W.

URBDP 555 Real Estate Appraisal (4) *Bitter* Discusses valuation theory and the mechanics underlying real estate appraisal practices. Explores the unique market within which property interests are created, allocated or transferred, the dynamic nature of real estate values, and the valuation impacts of various external factors. Offered: jointly with R E 555; Sp.

URBDP 556 Real Estate Investment (4) Focuses on direct real estate investment based on the productive capacity of the total property, debt, and equity components and their impact on the cash returns in the form of positive returns to the property, tax savings potential, alternative leverage effects, and the gains at sale. Offered: jointly with R E 556; W.

URBDP 557 Real Estate Law (4) *Amster* Focuses on the legal principles and issues essential to understanding the workings of the real estate industry, including the fundamentals of real estate transactions and development projects. Offered: jointly with R E 557; A.

URBDP 558 Real Estate Market Analysis (4) Prepares students to conduct and interpret market studies to cover a range of real estate decisions. Exposes students to the market analysis process and various tools and techniques that can be used to analyze and forecast supply, demand, and rental rates. Offered: jointly with R E 558; W.

URBDP 559 Real Estate Portfolio Management (5) *DeLisle* Students develop formal portfolio management strategies that draw on their in-depth understanding of real estate fundamentals, strategic planning and portfolio theory. Working in teams, students prepare cutting-edge portfolio strategies including the policies and procedures for implementation and portfolio management. Offered: jointly with R E 559; Sp.

URBDP 560 Inequality, Governance, and Policy in the Metropolitan Region (3/4) Explores national/local urban policy concerning the major problems confronting cities and metropolitan regions today. Economic globalization, income inequality, and metropolitan decentralization shape the urban agenda, the context for urban policy, and the analytic focus of the course. A project allows the exploration of strategies for intervention. Offered: jointly with PB AF 560.

URBDP 561 Urban Economics and Public Policy (3/4, max. 12) Examines the rationale for and consequences of public intervention in urban land, housing, and transportation markets through land use regulations such as zoning and urban growth boundaries, infrastructure investments, and fiscal policies to manage urban development and traffic.

Prerequisite: PB AF 516 or equivalent. Offered: jointly with PB AF 561.

URBDP 562 Introduction to Neighborhood Planning and Community Development (3) Provides introduction to basic practices in neighborhood planning and community development, including theoretical/historical bases; developing neighborhood plans/projects; indicators and evaluation of neighborhood quality; community participation; institutional framework, ethical dilemmas, and professional roles. Addresses current issues, including Seattle's experience, NIMBYism, security, neighborhood character, housing segregation, environmental racism. Offered: jointly with PB AF 562.

URBDP 564 Planning History, Theory, and Ethics (3) Examines major historical landmarks since the Civil War (urban, suburban, and rural, physical and social-economic); theoretical alternatives (rationalism, pluralism-advocacy, critical theory, bio-regionalism, dissipative models); and ethical issues (such as distributive justice and principles of professional conduct).

URBDP 565 American Urban History (3) Intensive lecture/seminar designed to provide students the opportunity for immersion in historical scholarship that addresses social, economic, political, technological, and cultural forces that have shaped the development of American cities.

URBDP 567 Democracy, Citizenship, and Participation in the City (3) Graduate seminar on democracy in cities. Focuses on contemporary ideas, debates, and initiatives.

URBDP 568 Real Estate Feasibility (4) *DeLisle* Applies critical thinking needed to understand the drivers of value of the major property types which covers the "user in search of a site" and "investor in search of involvement" feasibility questions. Applies a combination of qualitative and quantitative analysis to target markets. Offered: jointly with R E 560; Sp.

URBDP 569 Real Estate Capital Markets (4) *Grissom* Studies capital markets, investigating the agents and institutions that channel money from the array of sources of savings to investment projects. Identifies the sources of available capital and uses investment and portfolio tools employed by conduits and intermediaries matches the capital to projects and asset classes. Offered: jointly with R E 561; A.

URBDP 573 Digital Design (4) Uses digital technologies for mapping, drafting, modeling, and communication. Includes real-world case study projects that focus on urban design and planning issues.

URBDP 576 Pedestrian Travel, Land Use, and Urban Form (3) Seminar concentrating on walking as a mode of transportation in cities and city-regions, including social, cognitive, and perceptual dimensions of pedestrian movement and behavior theory. Offered: jointly with CEE 586.

URBDP 577 Real Estate Project Finance (3) *Rolfe* Introduces financing real property projects developed by public, community, and private entities with a primary emphasis on interim (acquisition/development/construction) and take-out lending for new real estate projects. Offered: jointly with R E 570; Sp.

URBDP 578 Real Estate Development (4) Introduction and survey of processes and people involved in developing real estate, including issues of site control, public/private approvals, feasibility analysis, project financing, design/construction, marketing, and asset management. Prerequisite: URBDP 552. Offered: jointly with R E 571.

URBDP 580 Legal and Administrative Framework for Planning (3) Political, legal, and administrative institutions closely related to the planning process. Issues of devolution of authority and public representation and participation. Legal basis for planning and associated regulation.

URBDP 585 Introduction to Historic Preservation Planning (3) Theories, methods, and practices associated with historic preservation planning. Overview of preservation plan-

ning programs at federal, state, and local levels. Introduction to tools and methods needed to identify, document, evaluate, and plan for protection of historic properties. Provides opportunity to learn fundamentals of preservation planning through practical experience.

URBDP 586 Implementation in Preservation Planning (4) Practical experience in identifying, documenting, evaluating and developing strategies for protection of historic resources, building on introductory theories, methods, and practices. Develops skills critical to preservation planning via research, fieldwork, and writing. Prerequisite: introductory course in preservation.

URBDP 587 Preservation and the Vernacular Environment (3) Exploration of theoretical, methodological, and practical issues related to the preservation of vernacular architecture and cultural landscapes in the United States.

URBDP 590 Real Estate Forum I (1) *DeLisle* Provides an opportunity for students to learn about the interdisciplinary nature of real estate from industry leaders. Discusses current issues and opportunities in the industry as well as what it takes to develop a sustainable career path. Offered: jointly with R E 590; A.

URBDP 591 Doctoral Seminar I (4-) Researchable issues and research methodology. Discussion and critique of selected pieces of recent research work. Presentation and critique of research proposed by members of the seminar. Prerequisite: master's degree or equivalent in a planning discipline.

URBDP 592 Doctoral Seminar II (-4-) Researchable issues and research methodology. Discussion and critique of selected pieces of recent research work. Presentation and critique of research proposed by members of the seminar. Prerequisite: master's degree or equivalent in a planning discipline.

URBDP 593 Doctoral Seminar III (-4) Researchable issues and research methodology. Discussion and critique of selected pieces of recent research work. Presentation and critique of research proposed by members of the seminar. Prerequisite: master's degree or equivalent in a planning discipline.

URBDP 598 Special Topics (1-6, max. 15) Systematic study of specialized subject matter. Topics vary for each quarter, depending upon current interest and needs, and are announced in the preceding quarter. Prerequisite: permission of instructor.

URBDP 600 Independent Study or Research (*-)

URBDP 700 Master's Thesis (*-)

URBDP 800 Doctoral Dissertation (*-)

Michael G. Foster School of Business

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Men and women embarking on business careers have the opportunity to influence many of the social, political, and economic forces in today's world. The Foster School prepares students for professional careers in management and related disciplines in both the private and public sectors.

The Foster School offers an undergraduate program leading to the degree of Bachelor of Arts in Business Administration (BABA) and graduate programs leading to the degrees of Master of Business Administration (MBA), Executive Master of Business Administration (EMBA), Technology Management Master of Business Administration (TMMBA), Master of Professional Accounting (MPAcc), and Doctor of Philosophy (PhD). An evening MBA program is also offered. Additionally, the Foster School offers a Master of Science degree in Information Systems (MSIS).

Business Administration became an independent unit within the University system in 1917. It has been accredited by the American Assembly of Collegiate Schools of Business (now known as the International Association for Management Education) since 1921.

Facilities and Services

Most Foster School classes and activities are in four buildings. Balmer Hall, named for Thomas Balmer, former president of the University Board of Regents, contains classrooms and computer labs. There are four computer labs in Balmer Hall available to Foster School students. Mackenzie Hall, named in memory of Prof. Donald Mackenzie, Chair of the Department of Accounting from 1949 to 1955, contains the Dean's Office, the Undergraduate Program Office, the Graduate Program Office, the PhD Program Office, Business Administration Computer Services (BACS), Office of Development and External Relations, faculty offices, five department offices, and other business administration program offices. Nearby Lewis Hall contains the Business Connections Center and other faculty and administrative offices. A fourth building, on the north side of Balmer, has three distinct components: the Bank of America Executive Education Center (which includes the James B. Douglas Executive Forum), the Boeing Auditorium, and the Albert O. and Evelyn Foster Business Library.

To serve the continuing education needs of middle- and senior-level managers, the Foster School offers a number of certificate programs, either University-initiated or co-sponsored with various community and industry organizations. The management program, a nine-month, one night per week program, strengthens understanding and skills in all areas of management and provides an opportunity for successful managers to learn from a distinguished faculty and each other. Short courses and seminars are offered throughout the year, focusing on topics such as leadership, finance and accounting for non-financial executives, and negotiation skills. In addition, the School develops and runs custom programs under contract with individual companies and organizations. Information on continuing education programs may be obtained from the Office of Ex-

ecutive Programs, (206) 543-8560, fax (206) 685-9236, uwexp@uw.edu.

International Business Programs

International business programs are coordinated and developed by the Foster School's Global Business Center. These activities include special graduate and undergraduate certificate programs, the Global Business Program, seminars, internships, business foreign-language programs, special guest-speaker programs, and study tours. Although the Marketing and International Business Department offers a general curriculum in international business, each of the five academic departments within the Foster School maintains faculty with special international teaching and research expertise. Internationally oriented courses are offered by each department.

At the undergraduate level, the Foster School offers the Certificate of International Studies in Business (CISB) Program. Students in the program complete the same demanding business curriculum as other students and enhance this training with foreign language study, area studies, and an international experience. The program requires that students have a solid foundation in one of five language tracks: Chinese, French, German, Japanese, and Spanish; a sixth custom track for other languages is also an option.

At the MBA level, the Foster School offers opportunities for MBA students to build on the international business foundation that every MBA develops through the first year of the program. In addition to international business electives, the program offers overseas travel through study tours, quarter-long exchange programs, and international internships. MBA students may also participate in the weekly Global Business Forum, which brings top international business leaders to campus to discuss important issues facing their companies and industries.

Questions regarding these programs may be directed to (206) 685-3432 or goabroad@uw.edu.

Entrepreneurship Programs

The focus of the Foster School's entrepreneurship programs is on nurturing skills that generate creative ideas, innovative processes, and new business growth. These skills are developed through special academic certificate programs, internships, a business plan competition, club activities, and consulting opportunities with area businesses.

The Center for Innovation and Entrepreneurship (CIE) is open to both undergraduate and graduate students from the Foster School as well as other University schools and colleges. Through its workshops, events (Entrepreneur Week), and annual competitions (Business Plan Competition, Environmental Innovation Challenge, and Venture Capital Investment Competition), CIE encourages a cross-discipline and collaborative approach to business creation, and nurtures overall entrepreneurial thinking in students. The CIE's Lavin Program is a curriculum for entrepreneurially minded undergraduates that provides the core foundational experience, skills, and know how for developing future business ventures. Graduate students may take the Entrepreneurship Certificate program, which offers real-world experience, technology internships with the UW Center for Commercialization, and mentoring from the Seattle entrepreneurial community. For more information visit www.startup.washington.edu, or contact CIE at (206) 685-9868, or uwcie@uw.edu.

The Business and Economic Development Center (BEDC) matches undergraduate and graduate student consulting teams with small-business owners in Seattle's inner city to implement business development projects. Through courses, independent study options, summer internships, and hands-on projects with inner-city entrepreneurs, students explore the challenges faced by central city businesses, while also providing valuable assistance. Questions about

the Business and Economic Development Center can be directed to the program office at (206) 543-9327.

Consulting Programs

The Business and Economic Development Center (BEDC) matches undergraduate and graduate student consulting teams with small-business owners in Seattle's inner city to implement business development projects. Through courses, independent study options, summer internships, and hands-on projects with inner-city entrepreneurs, students explore the challenges faced by central city businesses, while also providing valuable assistance. Questions about the Business and Economic Development Center can be directed to the program office at (206) 616-1216 or wtutol@uw.edu.

Business Career Center

The Business Connections Center coordinates all MBA and MPAcc career services. These include career counseling and career management workshops, the administration of special career events such as career fairs, company presentations, on-campus MBA and MPAcc recruitment, and a job-listing service. The Business Connections Center also administers alumni and executive mentoring programs. Questions regarding these programs and services may be directed to the center's office, 202 Lewis, (206) 685-2410.

Undergraduate business-career counseling and on-campus recruitment is provided by the UW Center for Career Services, 134 Mary Gates Hall, (206) 543-0535.

Instructional Resources Office

The Instructional Resources Office promotes excellence in teaching by providing resources in current practice and research in teaching and learning. The office serves faculty and teaching assistants with individual consultations, coordinates a teaching preparation program for doctoral students, and offers assistance with instructional innovations. Questions can be directed to the Instructional Resources Office, 317 Lewis, (206) 685-9608.

The Business Writing Center

The mission of the Business Writing Center is to help undergraduates develop the writing skills essential to professional success. The center offers one-on-one tutoring, workshops and peer feedback for special class projects, and opportunities for advanced students to be peer tutors. Questions can be directed to the center's office, 337 Lewis, bwrite@uw.edu.

Honor Societies

Beta Gamma Sigma is the national scholastic honor society in the field of business. Election to membership is available to both undergraduate and graduate students in business. Selection is based on outstanding scholastic achievement.

Beta Alpha Psi is the accounting honor society. Membership is based primarily on scholastic achievement, but some community service is also required. Beta Alpha Psi provides a mechanism for students, professionals, and educators to meet on both formal and informal bases.

The goals and interests of graduate students are served by the MBA Association, Business Consulting Network, Challenge for Charity, Entrepreneurship and Innovation Club, Graduate Consulting Club, MBA Finance Club, Global Business Association, Graduate and Professional Student Senate, MBA Marketing Club, Net Impact, High-Tech Club, MBA Speakeasy, Women in Business, and the Doctoral Association.

UNDERGRADUATE PROGRAM

137 Mackenzie

Associate Dean

Stephan E. Sefcik

Director

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The Foster School offers the following programs of study:

- The Bachelor of Arts in Business Administration degree with options in accounting, entrepreneurship, finance, human resources management, information systems, and marketing.

Bachelor of Arts in Business Administration

Suggested First- and Second-Year College Courses: English composition, calculus, ECON 200, ECON 201. In addition, classes to fulfill general education requirements which develop strong writing and analytic skills. ACCTG 215, ACCTG 225, MGMT 200, and Q METH 201 are suggested second-year college work.

Department Admission Requirements

The Foster School offers admission to upper division applicants for autumn and winter quarters. Those UW students who are prepared, as freshmen, to apply for early admission, may do so only for autumn quarter. Students admitted for autumn may elect to take classes during the prior summer quarter.

Applicants are considered in two admission groups: the Freshman Direct Admission Program and the Upper-Division Admission Group (UAG), described below. The following requirements apply to the Upper-Division Admission Group:

1. A minimum cumulative 2.50 GPA for all college coursework
2. A minimum cumulative 2.50 GPA for all required business courses
3. A student who has previously attended the UW also must have GPAs of at least 2.50, both UW cumulative and in UW business courses.
4. Since eligible applicants exceed the space available, acceptance is competitive. Admission is based on evaluation of four factors:
 - a. Overall scholastic record.
 - b. Grades in pre-application courses, described below.
 - c. Written communication skills.
 - d. Evidence of leadership skills, community activities, and the promise of achievement in a business or professional career.

Consideration is also given to such factors as economic and educational disadvantage, significantly higher recent grades, and exceptional extracurricular activities or work experience.

Admission for UAG is offered twice a year, for autumn and winter quarters. Admission for Freshman Direct is offered

once a year, for autumn quarter only. A Foster School application, together with all supporting materials, must be on file by April 5 for autumn quarter admission or October 5 for winter quarter admission. Records of all coursework completed by the deadline must be submitted at the time of application.

Freshman Direct Admission Program

The Foster School enrolls a small number of students each year directly out of high school, prior to completion of any university-level prerequisites. Freshmen applicants to the University listing Business Administration as their intended major are automatically considered. Admission is offered to students with exceptionally competitive academic records, including but not limited to high school GPA and SAT or ACT scores.

Upper-Division Admission Group (UAG)

Students must present a minimum of 60 academic credits at the time of application including the following graded credits: ACCTG 215; ECON 200 or ECON 201; MATH 112, MATH 124, or MATH 134; an approved English composition course, chosen from C LIT 240, ENGL 104-ENGL 105, ENGL 111, ENGL 121, ENGL 131, ENGL 197, ENGL 198, ENGL 199, or ENGL 281, ENGL 297, ENGL 298, or ENGL 299. In addition, the following courses must be completed prior to admission in autumn quarter: ACCTG 225; ECON 200 and ECON 201; MGMT 200; QMETH 201. Applicants should take general education or elective courses to complete the minimum 60 graded credits.

Students admitted to the UW as freshmen are expected to take ACCTG 215, ACCTG 225; MGMT 200; and QMETH 201 in residence.

Qualified applicants with at least 45 credits and a minimum 2.85 GPA who meet University admission requirements, but not Foster School requirements, are eligible to be placed in the College of Arts and Sciences as pre-business majors.

The University of Washington provides equal opportunity in education without regard to race, color, creed, religion, national origin, sex, sexual orientation, age, marital status, disability, or status as a disabled veteran or Vietnam veteran in accordance with UW policy and applicable federal and state statutes and regulations.

Graduation Requirements

180 credits as follows:

General Education Requirements

The following must be selected from the University Areas of Knowledge courses: 20 credits in Visual, Literary, & Performing Arts; 20 credits in Individuals & Societies, including 10 credits in microeconomics and macroeconomics (ECON 200 and ECON 201); 20 credits in the Natural World, including 5 credits in calculus (MATH 112, MATH 124, or MATH 134); most students need precalculus before taking college calculus (some precalculus courses qualify for the Natural World requirement); 5 credits in English composition.

Students from community colleges in Washington should check the Transfer Guide or consult with their community college adviser for equivalent courses. Students from other four-year schools should see an adviser at their school. Students entering the Foster School under the terms of the Associate Degree Agreement may apply courses selected from the community college's breadth list toward the general education requirements.

Foster School Requirements

ACCTG 215, ACCTG 225; QMETH 201; MGMT 200; B ECON 300; MKTG 301; I S 300; I BUS 300; OPMGT 301; FIN 350; MGMT 300; MGMT 320; MGMT 430; and 300- or 400-level business electives (or area of concentration) to bring the total number of business credits to 72; two writing-intensive courses, one from B CMU 301, B CMU 410, ENGL 281, ENGL 381; one from English composition, or from the re-

maining three courses listed immediately above, or from any W course. No more than 6 lower-division business elective credits; a minimum of 90 non-business credits, which may include up to 14 credits of economics and up to 9 credits of statistics but not GEN ST 350; a minimum 2.50 cumulative GPA in all business credits earned at the UW; and a cumulative GPA of 2.50 for all UW credits. No more than 8 credits of business independent research coursework may be applied to the degree and no more than 4 credits of business independent research coursework may be applied to upper-division business electives. No more than 8 credits of internship coursework is applicable to the degree. Business internship credit may not apply to the upper-division business elective requirement. Students must complete six of the nine upper-division core courses, including MGMT 430, and 40 of the 53 required upper-division business credits at the UW. Students who have taken more than three of the nine upper-division core business courses at another school should consult an academic adviser in the Foster School Undergraduate Program Office prior to applying.

Accounting Option

The notation "Accounting" is indicated on the permanent record, or transcript, of a student who graduates with a degree of Bachelor of Arts in Business Administration and who completes the following courses with a minimum cumulative GPA of 2.50: ACCTG 301, ACCTG 302, ACCTG 303, ACCTG 311, ACCTG 320, ACCTG 411, ACCTG 421, ACCTG 440, and at least one 400-level accounting elective, excluding ACCTG 401, ACCTG 490, ACCTG 495, and ACCTG 499. Students who have completed ACCTG 505 may not apply to the accounting option. The accounting option requires 186 credits for graduation.

Entrepreneurship Option

The notation "Entrepreneurship" is indicated on the transcript of a student who graduates with a degree of Bachelor of Arts in Business Administration and who completes the following courses with a minimum 2.50 cumulative GPA: ENTRE 370, FIN 457, MKTG 455; 8 credits of the following courses: ENTRE 422, ENTRE 432, ENTRE 440, ENTRE 443, ENTRE 459, or ENTRE 472 and ENTRE 473.

Finance Option

The notation "Finance" is indicated on the transcript of a student who graduates with a degree of Bachelor of Arts in Business Administration and who completes the following courses with a minimum cumulative GPA of 2.50: one course from FIN 450, FIN 453, FIN 454, or FIN 457; either FIN 460 or FIN 461; four additional courses chosen from the 400-level FIN courses, B ECON 301 or ECON 301, or the 400-level B ECON courses, excluding FIN 490, FIN 495, FIN 499, B ECON 490, and B ECON 499.

Human Resources Management Option

The notation "Human Resources Management" is indicated on the transcript of a student who graduates with a degree of Bachelor of Arts in Business Administration and who completes the following courses with a minimum cumulative GPA of 2.50: MGMT 311, MGMT 411, MGMT 412, and two of the following courses: MGMT 323, MGMT 401, MGMT 402, MGMT 403, MGMT 404, or MGMT 413.

Information Systems Option

The notation "Information Systems" is indicated on the transcript of a student who graduates with a degree of Bachelor of Arts in Business Administration and who completes the following courses with a minimum 2.50 cumulative GPA: I S 320, I S 410, I S 445, I S 451, and I S 460.

Marketing Option

The notation "Marketing" is indicated on the transcript of a student who graduates with a degree of Bachelor of Arts in Business Administration and who completes the following courses with a minimum 2.50 cumulative GPA: MKTG 450, MKTG 460, and three additional MKTG electives, excluding MKTG 490, MKTG 495, and MKTG 499. It is recommended

that students take MKTG 450 and MKTG 460 before they take the other electives.

Operations and Supply Chain Management Option

The notation "Operations and Supply Chain Management" is indicated on the transcript of a student who graduates with a degree of Bachelor of Arts in Business Administration and who completes the following courses with a minimum 2.50 cumulative GPA: QMETH 450, OPMGT 443, OPMGT 450, IS 451.

Admission to the options

Students can apply to one option at the same time they apply to the Foster School. Continuing Foster School students can apply during publicized application periods. If demand for the option exceeds the number of spaces available, students are considered based on the factors identified for admission to the Foster School and on their GPA in all previous option-specific courses.

Continuation Policy

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

Student Outcomes and Opportunities

- **Learning Objectives and Expected Outcomes:** A business education develops important communication and interpersonal skills. The ability to express an idea, negotiate a settlement, motivate others, manage time, and build collaborative networks distinguishes the most successful business people. UW Foster School students learn to recognize and define problems, examine data, and persuasively communicate their ideas to achieve results in organizations and people's lives. Regardless of post-graduation path -- be it climbing up the corporate ladder, starting a company, joining the Peace Corps, entering law school, or becoming a doctor -- a business education helps immeasurably.
- **Instructional and Research Facilities:** The Foster Business Library houses an extensive collection of books, reference tools, and journals necessary to the study of business. Balmer Hall has wireless capabilities for faculty and student use and houses three computer labs with 120 workstations. The virtual NASDAQ trading room equipped with trading and analytical software allows students to simulate stock transactions using real-time market data and stock quotes so they can study diversification, hedging, and other investment strategies. The New Venture Creation Lab represents a new paradigm for integrating entrepreneurial education with technology development and hands-on experience. The lab features computer workstations, proprietary software, online technology and market assessment tools and data to assist student entrepreneurial efforts. The Business Writing Center provides free consultations on business class writing assignments, cover letters, and resumes.
- **Honors Options Available:** Honors students benefit from a sense of community generated by Honors seminars, as well as from the academic challenge associated with more rigorous study. The program requirements are flexible, challenging students to explore business topics in greater depth. Students entering the Honors program become candidates for the degree "With College Honors" or "With Honors."
- **Research, Internships, and Service Learning:** The Foster School encourages student participation in internships to supplement in-class learning experiences. For more information about internship guidelines and a list of undergraduate internship opportunities, visit www.foster.washington.edu/academic/undergrad/Pages/Internships.aspx.

- **Department Scholarships:** The Foster School awards approximately 90 undergraduate scholarships. Some are general scholarships while others are specific to options or areas of concentration. Only students admitted to both the UW and the Foster School are eligible to receive awards. Applicants are considered for all scholarships for which they meet the minimum qualifications and specific criteria. Although financial need is not a requirement for all business scholarships, most are awarded on the basis of need. (The FAFSA must be filed with the Office of Student Financial Aid.) The Foster School scholarship application is due April 5.
- **Student Organizations/Associations:** Chapters of Alpha Kappa Psi, Association of Black Business Students, Undergraduate Entrepreneurship Club, International Association of Students in Economics and Business (AIESEC), American Marketing Association, Business Information Technology Society, Dow Dawgs Investment Club, Hispanic Business Association, Society for Human Resources Management, Business and Economic Development Program Leadership Team, Undergraduate Finance Club, Undergraduate Management Consulting Association, University Sales Club, and Undergraduate Leadership Forum provide opportunities for undergraduate students to meet informally and to participate in a variety of projects and events.

Double Baccalaureate and Second Baccalaureate

Students who wish to earn more than one baccalaureate degree should consult an academic adviser in the Foster School Undergraduate Program Office, either during or before their junior year. Persons seeking a second baccalaureate should apply at the University's Office of Undergraduate Admissions. To be considered, applicants must complete by quarter of entry the same prerequisites for admission as applicants for the first baccalaureate degree. Since the number of eligible applicants exceeds available space, acceptance is competitive, based on the criteria listed above for selection of first baccalaureate degree applicants. The Foster School uses the GPA for the last 90 credits earned.

Undergraduate Diversity Services

Director, Jai-Anna Elliott

Recruitment, admissions counseling, advising, and support services are available for minority students underrepresented at the University, and students from educationally and economically disadvantaged backgrounds. Special scholarships are also available for underrepresented minority students. Academic advisers have information on this program.

GRADUATE PROGRAMS

Associate Dean for Master's Degree Programs

David Burgstahler

Admission

Qualified students who are graduates of the University of Washington or other accredited colleges or universities may be admitted to graduate degree programs. GPA, Graduate Management Admission Test score, work experience, educational and professional objectives, and other factors are considered in the admission process. Inquiries concerning the details of admission should be made to the specific degree program of interest, University of Washington, Foster School of Business, Mackenzie Hall, Box 353200, Seattle, WA 98195.

Application Procedure

Applications to the MBA, EMBA, and PhD programs are considered for entry in autumn quarter only. Applications to

the Technology Management MBA and Master of Science in Information Systems program are considered for entry in winter quarter only. The formal deadlines for application are February 1 for the PhD program; December 1, January 1, February 1, and March 1 for domestic applicants for the MBA; February 1 for international applicants for the MBA; April 1 for Evening MBA; and April 15 for the Executive MBA and MPAcc programs. Students are encouraged to apply as early as possible for the programs.

The Foster School of Business offers programs of study leading to the advanced degrees of Master of Business Administration, Master of Professional Accounting, Master of Science in Information Systems, and Doctor of Philosophy. Four programs can lead to an MBA degree: the full-time program, the evening program, the Technology Management (TMMBA) program, and the Executive MBA program.

Master of Business Administration

Executive Director

Dan Poston

110 Mackenzie Hall, Box 353200

(206) 543-4661

mba@uw.edu

Degree Requirements

96 credits (80 credits for evening MBA)

The full-time Master of Business Administration degree program has been designed for students preparing for a professional career in management. A period of two academic years, or 96 academic credits, is required for most students to complete the MBA program. The first year of the program consists of 48 credits of required courses: B A 500, B A 501, B A 502; three of the following bridge elective options: EBIZ 509 (required for EBIZ certificate), ENTRE 509 (required for CIE certificate), FIN 509 (prerequisite for most finance electives), I BUS 509, MGMT 579 (2-4, max. 12), or MKTG 509. The second year of the program is 48 credits of elective courses. The student may take no more than 24 credits in any one elective area.

The evening MBA program is targeted toward fully employed college graduates who seek a management degree that can be earned outside their regular working hours. Instruction takes place two evenings per week and students typically take two courses per quarter. The program consists of 80 academic credits, with normal completion of degree requirements in ten quarters. The course requirements are as follows: ACCTG 500, ACCTG 501, B ECON 500, B ECON 501, FIN 502, I S 504, MGMT 500, MGMT 502, MGMT 505, MKTG 501, OPMGT 502, QMETH 500, QMETH 501, 34 credits of electives

Special Programs

Within the MBA program, there are options for special study: Global Business Program; E-Business Program, and the Program in Entrepreneurship and Innovation. The following concurrent degree programs are also available: MBA/JD with the School of Law, MBA/MAIS with the Henry M. Jackson School of International Studies, MBA/MSE with the College of Engineering's Program in Engineering and Manufacturing Management, and MBA/MHA with the School of Public Health.

Executive Master of Business Administration

Director

Louise Kapustka

(206) 685-1333

emba@uw.edu

Since the autumn of 1983, the Executive MBA Program has provided an additional pathway to the Master of Business Administration degree. The EMBA program provides

an intensive executive-development experience to a select group of midcareer managers who continue to work full-time while pursuing the MBA degree. Candidates for this two-year program should have seven or more years of increasingly successful work experience including three to four years in management, and currently hold mid- or top-level management positions. They are typically sponsored by their organizations and have been identified as employees with high potential to advance as general managers. Students are selected to ensure diversity of industry, functional areas, and organizational size.

The Executive MBA degree program is offered in two scheduling options. Both run for two academic years, September through June. (1) The Regional Program meets on campus for a full day once a week, on alternating Fridays and Saturdays. In addition, students attend spring and fall residence sessions each year. (2) The North America Program meets on campus once a month, generally for three consecutive days, Thursday through Saturday. Between monthly sessions, students continue to interact with faculty and classmates online via the Internet and interactive groupware. This format is designed for individuals from the greater Northwest as well as those from the Puget Sound area whose schedules preclude weekly attendance.

While the scope of the curriculum is comparable to that of the regular MBA program, the pace is more intense and the perspective is that of a general manager. There are 21 required courses and no electives.

Admission Requirements

1. Letter of Endorsement: Candidates must be sponsored by their employing organizations and endorsed by senior management as potential general managers. In sponsoring EMBA candidates, organizations agree to release them on class days and, in some cases, to cover the program fee. Individuals not sponsored by a company need to submit an additional letter of recommendation in place of the Letter of Endorsement.
2. Three letters of recommendation
3. Graduate Management Admission Test (GMAT) scores
4. Two sealed copies of official transcripts from all degree-granting institutions attended

Applications are accepted throughout the year, with an application deadline of April 15 for the class beginning each autumn. Late applications are handled on a space-available basis.

Degree Requirements

68 credits

The 21-month, 68-credit curriculum builds a solid foundation of business fundamentals. Case studies and group projects link theory with current business practice. Themes based on current trends in business, including the impact of technology and globalization, are threaded through the entire curriculum.

Students frequently use their own organizations as laboratories, applying lessons learned in the classroom and then bringing the results back to the class for further discussion.

The following are the required courses: EMBA 502, EMBA 503, EMBA 504, EMBA 505, EMBA 506, EMBA 510, EMBA 511, EMBA 512, EMBA 520, EMBA 521, EMBA 529, EMBA 530, EMBA 531, EMBA 532, EMBA 533, EMBA 534, EMBA 540, EMBA 551, EMBA 552, EMBA 558.

Technology Management Master of Business Administration

Director

(206) 221-6995

tmmba@uw.edu

The Technology Management MBA program is designed for professionals who are employed in technology companies or who work in technology jobs in more traditional businesses. The curriculum combines the essential components of management education with a specialized focus on high-tech industries. It is structured for individuals who want to play a broader role in management and are seeking the necessary management skills and business knowledge. The program is focused on real-world projects and analyses, collaborative learning in study groups, and extensive participant interaction in the classroom. Candidates for this 18-month program have technology experience and upward career progression.

The Technology Management MBA program provides an intensive educational experience to professionals who continue to work full-time while pursuing their MBA degree. The TMMBA program runs six consecutive quarters of instruction beginning every January and ending the next year in June. Three-hour sessions are held once a week on a mid-week evening and six-hour sessions are scheduled two Saturdays per month. There are 68 required credits of which 6 are electives. Additionally, two residential sessions are offered one at the beginning of the program and one at the end. Candidates may be sponsored by their organizations or apply on their own.

Admission Requirements

1. Applicants should hold a professional position and have a minimum of five years of work experience. Applicants must demonstrate a career trend of increased responsibilities or promotions. Supervisory or management experience is not required, but applicants should demonstrate leadership potential. Candidates' work accomplishments and letters of recommendation should provide evidence of their potential for senior management.
2. Applicants must hold a baccalaureate degree from an accredited college or university.
3. Personal statement
4. Three letters of recommendation and evaluations
5. Resume
6. Interview
7. GMAT scores
8. Two sealed copies of official transcripts
9. *Additional requirement for permanent residents:* Proof of English language proficiency (if applicable)
10. *Additional requirements for international applicants:* International Graduate Admissions Application, Proof of Financial Ability form, photocopy of current visa (if applicable), notice of action (if applicable), proof of English language proficiency (if applicable)

Each year approximately 50 students are accepted into the TMMBA Program. Applications are accepted throughout the year. Contact the TMMBA office to find out application deadlines for the upcoming class.

Degree Requirements

68 credits, as follows:

TMMBA 500, TMMBA 501, TMMBA 502, TMMBA 503, TMMBA 505, TMMBA 507, TMMBA 510, TMMBA 512, TMMBA 515, TMMBA 516, TMMBA 517, TMMBA 520, TMMBA 521, TMMBA 522, TMMBA 528, TMMBA 530, TMMBA 551, 6 credits of electives

Master of Professional Accounting

Managing Director

Francine Shafer

231 Mackenzie

(206) 616-4964

The Master of Professional Accounting (MPAcc) prepares students for high-level careers with major accounting and consulting firms, governmental agencies, and industry. Students with undergraduate degrees in accounting may complete the program in three quarters. Students with no prior business background must take an expanded version of the program. Enrollment is limited to 25 to 30 students in each of two tracks - Accounting and Assurance (A&A) and Taxation. MBA students with a strong interest in accounting and taxation may earn a joint MBA/MPAcc degree.

Admission Requirements

1. Satisfactory completion of prerequisite courses (see website for list of prerequisite courses)
2. Scores from the GMAT exam
3. International TOEFL scores
4. Well written essays
5. Work experience
6. Volunteer and student activities

Degree Requirements, Auditing and Assurance Pathway

48 credits, as follows:

1. ACCTG 521, ACCTG 523, ACCTG 527, ACCTG 576, ACCTG 566, ACCTG 577, ACCTG 579
2. *Internship:* ACCTG 575. If no internship, complete four approved elective classes: ACCTG 420, ACCTG 524, ACCTG 525, ACCTG 562 ACCTG 564

Degree Requirements, Taxation Pathway

48 credits, as follows:

ACCTG 530, ACCTG 531, ACCTG 533, ACCTG 534, ACCTG 535, ACCTG 536, ACCTG 537, ACCTG 538, ACCTG 539, ACCTG 541, ACCTG 541, ACCTG 543, ACCTG 547

Doctor of Philosophy

Program Coordinator

Jaime Banaag

102 Mackenzie

(206) 543-4111

baphd@uw.edu

The PhD program in business administration is research-based and designed to train scholars interested in academic careers, although this training is also useful for individuals seeking research positions in business and government, as well as in consulting firms.

With the guidance of faculty members who have similar interests, PhD students complete a program of formal coursework (minimum of 18 courses) and participate in doctoral seminars, independent study, and research. A Faculty Supervisory Committee is appointed early in the program to assist each student in constructing a course of study that fits that individual's background and interests. Students select one major area of specialization and complete requirements in two or three additional minor areas that support their major area of specialization (including areas outside the Foster School, such as economics, psychology, and mathematics). Throughout the program, doctoral students receive support and training that hone their skills as teachers and course developers.

Major areas of concentration include accounting, finance, human resource management and organizational behavior, marketing, information systems, operations management, operations research, and strategic management. All doctoral students are required to have research methods as one of their minor areas.

Doctoral study is full-time and year-round, and students are admitted autumn quarter only. Most candidates require four to five years to complete the program. The school's goal is to make financial aid available, in the form of research and teaching assistantships, to all of its doctoral students. In addition to service appointments, fellowships are available on a competitive basis to support students engaged in their dissertation research during the final part of their programs.

Special Requirements

Applicants to graduate business programs are required to submit scores on the Graduate Management Admission Test. Those admitted to the MBA program must demonstrate understanding of the fundamental concepts of calculus.

DEPARTMENTS

Accounting

Accounting involves development and communication of financial and operational information for business and nonprofit economic entities. The curriculum includes understanding accounting information systems, using accounting information in managerial decision making, preparing and auditing financial statements under generally accepted accounting and auditing standards, and understanding the fundamental aspects of personal and corporate taxation. Elective courses provide in-depth instruction in managerial and financial accounting, not-for-profit accounting, and taxation. Courses provide a foundation for careers in accounting (public, industrial, private, or governmental), for a general business career, or for other professions such as law.

For more information, see the Department of Accounting website.

Finance and Business Economics

Finance and Business Economics address the financial and economic aspects of business decision making. The finance curriculum focuses on financial management and the financial markets within which firms and individual investors operate. Business economics courses concern the economic behavior of firms, including factors that determine costs and prices, and real and monetary forces (such as government policies) that affect the national and international economic environment.

For more information, see the Department of Finance and Business Economics website.

Management and Organization

Management and Organization provides an understanding of the processes and structures of organizations through three distinct programs. The Human Resource Management and Organizational Behavior (HRMOB) courses address personnel and industrial-relations topics such as selection, performance appraisal, compensation, and negotiations, as well as behavioral topics such as leadership, motivation, and group dynamics. They prepare students for managing an organization's human resources effectively. The Organization and Environment (O E) courses examine organization theory, organization design, and management of technology and innovation, as well as the social, political, legal, and ethical environments in which organizations operate. They give students the knowledge, perspective, and analytical tools to deal effectively with organization-environment interactions. The Business Policy (B POL)

courses focus on organizational effectiveness from the viewpoint of top management. Emphasis is placed on an integrated view through strategic management and control, planning, decision making, and entrepreneurship.

For more information, see the Department of Management and Organization website.

Information Systems and Operations Management

The Department of Information Systems and Operations Management consists of three sub-areas: Information Systems (I S), Operations Management (OPMGT), and Quantitative Methods (QMETH). The information systems area focuses on the management of computer-based information systems. The I S curriculum is designed to give students a basic understanding of I S technology and its impact on all phases of an organization. Specific areas of study include telecommunications and network design, systems analysis and design, database management, expert systems, and applications programming. The operations management area of study refers to the functional area of management which produces goods or services in an organization. Specifically, the OPMGT curriculum focuses on the many changes which have occurred in the past ten years in the way that managers think, plan, and operate manufacturing and service facilities. The area includes courses in logistics, quality, inventory and supply-chain management, project management, and waiting lines, among others. The quantitative methods area focuses on the theory and application of mathematical and statistical tools in the modeling and analysis of business problems. The QMETH curriculum includes courses in statistics and data analysis as well as courses in operations research (e.g., linear programming, forecasting, and using spread-sheets to construct decision support models).

For more information, see the Information Systems and Operations Management website.

Marketing and International Business

Marketing (MKTG) provides knowledge of concepts and relationships in the areas of consumer behavior, channels of distribution, measurement and analysis of markets, pricing, physical movement of goods, product development, promotion, and sales administration. Marketing careers may involve specialization in Internet marketing, product or brand management, advertising, selling, sales management, marketing research, retailing, wholesaling, and international marketing for a wide spectrum of firms and industries. International Business (I BUS) includes trade, payments, and multinational corporate systems and activities. The area prepares students for international responsibilities in domestic business firms, governmental agencies, and overseas business. Courses in Business Communications (B CMU) stress writing in organizations to accomplish goals, oral reporting, business plan presentation, and the use of computer graphics in communication.

For more information, see the Department of Marketing and International Business website.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

Business Administration

B A 300 Foreign Study-Business Administration (3-5, max. 15) For participants in approved foreign-study programs where equivalent UW business administration courses are not available.

B A 390 Business Honors Seminar (2-5, max. 5) Special topics in business. Required for Honors students in Business Administration.

B A 490 Special Topics in Business (1-6, max. 8)

B A 500 Business Administration I (16) Coordinated series consisting of accounting, business economics, business ethics, business policy, finance, information systems, international business, legal environment of business, management, and organizational behavior, marketing, operations management, and quantitative methods for management. Prerequisite: permission of the Foster School of Business.

B A 501 Business Administration II (14) Coordinated series consisting of accounting, business economics, business ethics, business policy, finance, information systems, international business, legal environment of business, management, and organizational behavior, marketing, operations management, and quantitative methods for management. Prerequisite: permission of the Foster School of Business.

B A 502 Business Administration III (8) Coordinated series consisting of accounting, business economics, business ethics, business policy, finance, information systems, international business, legal environment of business, management, and organizational behavior, marketing, operations management, and quantitative methods for management. Prerequisite: permission of the Foster School of Business.

B A 505 Global Business Fundamentals (16) An intensive overview of the fundamental core business topics: financial accounting, managerial accounting, business economics, statistics, management, macroeconomics, finance, marketing, operations management, quantitative methods, and strategy. Prerequisite: permission. Offered: S.

B A 541 Environmental Management I (4) Survey of environmental ethics, environmental laws and regulation, the economics of environmental decisions, and the relationship of business to public policy and the environment. Must be taken concurrently with B A 544. Prerequisite: permission of instructor.

B A 542 Environmental Management II (4) Applications of the functional areas of business to environmental concerns. Major federal legislation affecting these concerns applied to business problems in the areas of accounting, finance, marketing, management information systems, and organizational behavior. Must be taken concurrently with B A 544. Prerequisite: B A 541 or permission of instructor.

B A 543 Environmental Management III (4) Case studies that integrate the fundamentals of business and environmental management to address such issues as plant siting, regulatory compliance, production line changes, and innovative, proactive responses to environmental issues. Case studies include results of student consulting projects and a capstone case in environmental management. Must be taken concurrently with B A 544. Prerequisite: B A 542 or permission of instructor.

B A 544 Environmental Management Seminar (1, max. 3) Guest lecturers from academia, business, government, and advocacy groups discuss environmental science, ethics, law, regulation, economics, finance, accounting, and policy issues. Seminar topics supplement course material in B A 541, B A 542, B A 543, which are to be taken concurrently.

B A 545 The Global Business Forum: Current Issues in Global Business (1, max. 3) Discussion of current trends in the global business environment and of international issues facing companies. Leaders from international businesses and other organizations, as well as faculty members from various departments and specializations, invited to share their perspectives with seminar participants. Topics change each quarter.

B A 560 Cooperative Education in Business (1) Business practicum: internship with approved business or governmental agency. Open only to students who meet requirements of internship program. Internship credit may not be

applied to fulfill specific course requirements or to credits required for graduation. Credit/no-credit only. Offered: S.

B A 571 Research Reports (4-) Independent study in business administration; critical evaluation of business analysis and research methods. Effective communication of ideas emphasized. Methods and content of independent research studies subjected to critical evaluation. Open only to MBA non-thesis students. Prerequisite: instructor's approval of preliminary research topic outline.

B A 572 Research Reports (-4) Independent study in business administration; critical evaluation of business analysis and research methods. Effective communication of ideas emphasized. Methods and content of independent research studies subjected to critical evaluation. Open only to MBA non-thesis students. Prerequisite: B A 571.

B A 578 Practicum in Business Management (2) Provides an opportunity for first-year MBA students to apply the skills learned in the classroom to real world problems. Students participating in the Business Consulting Network (BCN) partner with client firms on an applied learning project that offers additional training opportunities not possible in the classroom. Credit/no-credit only.

B A 580 Problems in Microeconomics (4) Study of microeconomic intuition, directed toward Business School Ph.D. students, showing the interconnections between formal, mathematical analysis and the unstructured economic questions posed by the world. Emphasis on setting up problems and examining the intuition behind the analysis of them. Many applications to specific business issues.

B A 700 Master's Thesis (*-)

B A 800 Doctoral Dissertation (*-)

Accounting

ACCTG 199 Accounting for Problem Solving (2, max. 4) Supplementary lectures, discussions, and problem-solving sessions in introductory accounting. Enrollment priority to EOP students and others by permission. Credit may not be applied to fulfill specific program requirements. Corequisite: ACCTG 215. Credit/no-credit only. Offered: AWSp.

ACCTG 215 Introduction to Accounting and Financial Reporting (5) Nature and social setting of accounting; uses of accounting information; introduction of basic accounting concepts and procedures; interpretation of financial statements. May not be repeated. Offered: AWSpS.

ACCTG 225 Fundamentals of Managerial Accounting (5) Analyses and evaluation of accounting information as part of the managerial process of planning, decision making, and control. Concentrates on information useful to enterprise managers. Prerequisite: ACCTG 215; ECON 200; may not be repeated. Offered: AWSpS.

ACCTG 275 Accounting and Finance Essentials (3) QSR Paperman Explores the economic foundations of accounting systems. Discusses the short-term and long-term implications of using accounting information to evaluate performance, create budgets, and analyze financial statements. Not open for credit to students pursuing a business degree. Offered: Sp.

ACCTG 301 Intermediate Accounting I (4) Concepts and principles of financial accounting. Analysis of controversies and problems related to the measurement of enterprise income and asset and liability valuation. Prerequisite: minimum grade of 2.0 in ACCTG 225; may not be repeated. Offered: AWSpS.

ACCTG 302 Intermediate Accounting II (4) Concepts and principles of financial accounting. Analysis of controversies and problems related to the measurement of enterprise income and asset and liability valuation. Prerequisite: minimum grade of 2.0 in ACCTG 301; minimum grade of 2.0 in B CMU 301; may not be repeated. Offered: AWSp.

ACCTG 303 Intermediate Accounting III (4) Concepts and principles of financial accounting. Analysis of controversies and problems related to the measurement of enterprise

income and asset and liability valuation. Prerequisite: minimum grade of 2.0 in ACCTG 302; may not be repeated. Offered: AWSp.

ACCTG 311 Cost Accounting (4) Introduction to the theory of cost accounting; job order, process, and standard cost systems; overhead accounting; problems in accumulation and allocation of costs; decision making with cost data. Prerequisite: minimum grade of 2.0 in ACCTG 225; may not be repeated. Offered: AWSpS.

ACCTG 320 Introduction to Accounting Information Systems (4) Concepts of accounting information systems in organizations. Processes of analyzing and designing accounting information systems, with emphasis on those using computer facilities. Internal controls and auditing considerations. Prerequisite: minimum grade of 2.0 in ACCTG 225; I S 300 which may be taken concurrently; may not be repeated. Offered: AWSpS.

ACCTG 321 Tax Effects of Business Decisions (4) Issues in taxation, including tax considerations in business decision making, tax effects of business transactions, taxation of compensation, fringe benefits, capital gains, fixed asset transactions, disposition of business distribution from corporations. Prerequisite: minimum grade of 2.0 in ACCTG 301; may not be repeated. Offered: AWSpS.

ACCTG 375 Topics in Financial Reporting (4) Critical examination of the uses and limitations of general purpose financial statements that have been prepared in accordance with generally accepted accounting principles. Not open for credit to accounting majors or to students who have completed ACCTG 301. Prerequisite: minimum grade of 2.0 in ACCTG 225; may not be repeated.

ACCTG 411 Auditing Standards and Principles (4) Intensive introduction to the attest function in society today. The environment, the process, and the report of the public auditor are analyzed. Potential extensions of the attest function are examined. Prerequisite: minimum grade of 2.0 in ACCTG 303; 2.0 in ACCTG 320; may not be repeated. Offered: AWSpS.

ACCTG 420 Database Management for Accounting (4) Continuation of ACCTG 320, covering database and processing architectures, database reliability, database recovery, database security, database administration, internets and intranets, and network security. Not available for credit to information systems majors or to students who have completed I S 410 and I S 445. Prerequisite: minimum grade of 2.0 in ACCTG 320; may not be repeated.

ACCTG 440 Accounting and Financial Management Decisions (4) Business financial planning with an emphasis of the role of accounting information in financial decisions. Topics include the accounting and finance aspects of business valuation, short and long term financing, short and long term investments, alternative types of debt and equity financing, and related topics. Prerequisite: minimum grade of 2.0 in ACCTG 303; 2.0 in ACCTG 311; 2.0 in ACCTG 321; FIN 350; may not be repeated. Offered: AWSp.

ACCTG 450 Business Taxation (4) Issues of taxation for entities other than individuals, including corporations, subchapter S corporations, partnerships, estates, and trusts. Includes corporate distributions, liquidations, and reorganizations. Prerequisite: minimum grade of 2.0 in ACCTG 321; may not be repeated. Offered: WSp.

ACCTG 451 Individual Income Taxation (4) Political, economic, and social forces influencing federal income taxation, role of taxation in personal decisions. Coverage of individual income tax matters, including business and investment income, business and personal deductions, property transactions, and tax issues of employees. Prerequisite: minimum grade of 2.0 in ACCTG 321; may not be repeated. Offered: Sp.

ACCTG 460 Advanced Cost Accounting (4) Advanced analysis of cost and management accounting problems; special applications of cost accounting techniques for management planning and control; current developments in cost

accounting. Prerequisite: minimum grade of 2.0 in ACCTG 311; may not be repeated. Offered: Sp.

ACCTG 471 Fraud Examination (4) Provides a comprehensive introduction to the concepts and techniques of the fraud examination process. Prerequisite: ACCTG 225; MGMT 200; QMETH 201.

ACCTG 480 Accounting for Not-for-Profit Organizations (4) Fund and budgetary accounting as applied to public sector organizations, such as governments, foundations, hospitals, and colleges. Prerequisite: minimum grade of 2.0 in ACCTG 302; may not be repeated. Offered: WSp.

ACCTG 485 Advanced Financial Accounting (4) Accounting for partnerships, accounting for business combinations, parent-subsidiary and branch relationships, foreign exchange. Prerequisite: minimum grade of 2.0 in ACCTG 303; may not be repeated. Offered: A.

ACCTG 490 Special Topics in Accounting (1-6, max. 6) Special topics of current concern to faculty and students. Offered only when faculty is available and student interest is sufficient. Class is announced in advance of scheduled offerings.

ACCTG 495 Accounting Internship (1-4, max. 8) One quarter's internship with a certified public accounting firm, industrial organization, or government agency. Prerequisite: ACCTG 301. Credit/no-credit only. Offered: AWSpS.

ACCTG 499 Undergraduate Research (1-6, max. 9) Arranged and supervised by individual members of the faculty.

ACCTG 500 Financial Accounting (4) Introduction to concepts and procedures underlying determination and presentation of information for financial decisions by investors and other decision makers outside the business enterprise. Study of problems of valuation, income determination, and financial reporting.

ACCTG 501 Managerial Accounting (4) Study of the generation and the use of accounting information within the firm for purposes of planning and controlling operations. Topics covered include cost concepts, responsibility accounting systems, cost control, and the use of accounting information in short- and long-term management decision problems. Prerequisite: ACCTG 500.

ACCTG 503 Introduction to Accounting for Managers (4) Provides potential managers with a basic knowledge of financial and managerial accounting. Focuses on the use, not the preparation, of accounting information. Examples presented for a variety of for-profit and nonprofit organizations.

ACCTG 505 Intensive Analysis of Accounting Principles and Practices (18) Covers the subjects in the required core for undergraduate accounting majors: intermediate accounting, advanced accounting, cost accounting, auditing, and tax accounting. Credits do not count toward MBA degree. Prerequisite: ACCTG 215 and ACCTG 225 or equivalent, or permission of instructor.

ACCTG 506 Intensive Analysis of Accounting Principles and Practices I (6) First of an intensive three-course program. Emphasizes the practical application of accounting concepts in a business setting. Credits do not count toward MBA degree. Prerequisite: ACCTG 215; ACCTG 225 or equivalent, or permission of instructor; recommended: experience in accounting practice. Offered: A.

ACCTG 507 Intensive Analysis of Accounting Principles and Practices II (6) Second of an intensive three-course program. Covers the third part of financial accounting, accrual-based financial statements, and cost accounting for decision-making. Credits do not count toward MBA degree. Prerequisite: ACCTG 506. Offered: W.

ACCTG 508 Intensive Analysis of Accounting Principles and Practices III (6)

ACCTG 510 Introduction to Financial Statement Analysis (4) Extension of the core financial accounting material, focusing on the use of financial statements to assess the

financial position and prospects of companies. Examines the critical financial reporting issues that influence interpretation of financial statements. Prerequisite: either B A 500, ACCTG 500, or permission of instructor.

ACCTG 511 Advanced Financial Statement Analysis (4) Covers accounting issues related to firm valuation and use of financial statement information to assess the risks and rewards of various firm strategies. Prerequisite: ACCTG 510 or permission of instructor.

ACCTG 513 Tax Effects of Business Decisions (4) Importance of tax considerations in making business decisions. Covers regulatory and economic impacts of the U. S. tax system. Prerequisite: either B A 500, ACCTG 500, or permission of instructor.

ACCTG 515 Problems in Managerial and Cost Accounting (4) Extension of the core management accounting material. Uses cases and discussion to analyze costing techniques, use of accounting data in planning and evaluation of managerial performance, and use of accounting data in short-run and long-run decisions. Prerequisite: either B A 502, ACCTG 501, or permission of instructor.

ACCTG 521 Cases and Issues in Information Quality and Assurance Services (4) Analysis of cases and discussions of current issues dealing with assurance services.

ACCTG 523 Advanced Financial Analysis (4) Explores the use of published financial reports by decision makers external to the firm (e.g. investors and creditors). Emphasis is on traditional and statistical analyses of financial statements for the purposes of making economic decisions.

ACCTG 524 Individual Taxation (4) Political, economic, and social forces influencing federal income taxation, role of taxation in personal decisions. Coverage of individual tax matters, including business and investment income, business and personal deductions, property transactions, and tax issues of employees.

ACCTG 525 Business and International Taxation (4) Issues of taxation for entities other than individuals, including corporations, subchapter S corporations, partnerships, estates, and trusts. Includes corporate distributions, liquidations, and reorganizations. International dimensions of business taxation introduced. Prerequisite: ACCTG 524.

ACCTG 526 Principles of Taxation for Auditors (4) Raises level of understanding of the tax law and enables intelligent conversation about business income tax topics. Covers flow-through entities (partnerships, S. Corps & LLCs), corporate taxation, non-taxable exchanges, and planning techniques.

ACCTG 527 Communications in Professional Accounting (4) Introduction to the communications practices of professional accountants. Development of effective written and oral skills employed in accounting presentations such as audit reports. Study of results of organizational communications research applicable to accounting firms and units within firms.

ACCTG 528 Communications, Marketing, and Interpersonal Skills for Auditors (4) Emphasizes improving interpersonal skills and students' abilities to market their firm.

ACCTG 529 Business Ethics and Law for Accountants (4) Explores basic legal and ethical principles underlying the practice of accounting. Special attention devoted to spotting legal and ethical issues as they arise in a commercial and professional context.

ACCTG 530 Tax Issues in Property Ownership (4) Analysis of gain and loss realization, recognition, and characterization of such. Detailed exploration of statutory and case law regarding acquisition, ownership, and disposition of assets. Treatment of capital and ordinary gains and losses. Timing issues regarding deferral transactions and installment reporting are analyzed. Prerequisite: undergraduate accounting concentration or equivalent.

ACCTG 531 Timing and Periods of Taxation (3) Analysis of the cash and accrual methods of accounting, choice of taxable period and multi-period transaction analysis. Consideration of statute of limitations and mitigation thereof. Details of passive activity losses. Prerequisite: undergraduate accounting concentration or equivalent.

eration of statute of limitations and mitigation thereof. Details of passive activity losses. Prerequisite: undergraduate accounting concentration or equivalent.

ACCTG 533 Procedural and Policy Issues (3) Analysis of the procedures of federal taxation: assessment, collection, and refund claims. Detailed exploration of the rules governing the statute of limitations and the mitigation thereof. An introduction to tax policy considerations is given. Tax penalties are explored. Prerequisite: undergraduate accounting concentration or equivalent.

ACCTG 534 Fundamentals of Corporate Taxation (3) Detailed analysis of contribution of assets to corporations. Calculation of recognized gains and basic effects of asset contributions. Treatment of income and deduction items of corporate operations. Analysis of distribution of assets to shareholders with respect to their stock. Prerequisite: undergraduate accounting concentration or equivalent.

ACCTG 535 Advanced Issues in Corporate Taxation (3) A continuation of ACCTG 534. Fundamentals of moving assets out of and within corporate solution. Basics of corporate reorganizations: acquisitive and divisive. The details of the election to obtain (or avoid) the Section 338 election are explored in detail. Prerequisite: undergraduate accounting concentration or equivalent; ACCTG 534 or permission of instructor.

ACCTG 536 Advanced Issues in Corporate Taxation (3) Continuation of ACCTG 534 and ACCTG 535. Study of complex issues in corporate taxation planning. Substantial portion of course involves resolving case studies to improve analytic skills and to interrelate disparate corporate planning opportunities. Corporate reorganizations are analyzed in detail. Prerequisite: undergraduate accounting concentration or equivalent; ACCTG 535 or permission of instructor.

ACCTG 537 Income Taxation of Conduits I (3) Tax consequences to owners and entity from formation, operation, distributions from, and liquidation of partnerships and S corporations. Study of taxable and tax-free formations, nature of "bottom line" income and separately stated items, changes to owners' tax basis, basics of non-liquidating and liquidating distributions. Prerequisite: undergraduate accounting concentration or equivalent. Offered: W.

ACCTG 538 Income Taxation of Conduits II (3) A continuation of ACCTG 537. Study of complex issues in partnership and S corporation taxation. Substantial portion involves resolving case studies to improve analytic skills and interrelate partnership and S corporation planning issues. Sections 751(b) and 736 examined in detail. Prerequisite: undergraduate accounting concentration or equivalent; ACCTG 537 or permission of instructor.

ACCTG 539 Tax Research and Decision Making (4) Decision-making processes in relation to problems of taxation. Tools of tax analysis and research and the communication of conclusions flowing from professional tax work. Role of the professional accountant in client business transactions and in negotiations with taxing authorities is highlighted and simulated on the basis of actual case histories. Prerequisite: undergraduate accounting concentration or equivalent.

ACCTG 540 Communications for Taxation Professionals I (4) Focuses on internal communications in an accounting firm setting. Evaluation of difficult tax question and practice communicating advice and explanations to colleagues and managers.

ACCTG 541 Communications for Taxation Professionals II (4) Introduction to the communications forms and to practices of professional accountants and accounting managers. Development of effective written and oral skills employed in accounting presentations, such as audit reports and consultants' reports. Study of results of organizational communications research applicable to accounting firms and/or units within firms. Prerequisite: undergraduate accounting concentration or permission of instructor.

ACCTG 542 Communications for Taxation Professionals III (4) Development of oral and written skills associated with

the tax accountant's role as a client advocate. Develop communication production related to the various stages of a tax case. Prerequisite: ACCTG 541.

ACCTG 543 Income Taxation of Trusts and Estates (3) Development of fundamental skills regarding income taxation of trusts and estates. Calculation of distributable net income and the distribution deduction for the fiduciary entity. Basic analysis of the throwback rules. Case studies. Prerequisite: undergraduate accounting concentration or equivalent.

ACCTG 547 Estate and Gift Taxation (3) Development of fundamental knowledge of the unified transfer tax on the transfer of property from one person to another. Calculation of gross estate, adjusted gross estate, and taxable estate. Calculation of gift and estate taxes owing. Discussion of estate planning concepts. Prerequisite: undergraduate accounting concentration or equivalent.

ACCTG 548 Speaker Forum-Tax (3) Covers topics such as state and local taxation, international taxation, interperiod tax allocation, qualified and nonqualified stock options, the R&D credit, and IRS audit issues presented by practicing professionals in the industry.

ACCTG 549 Tax Planning (4) Advanced issues in tax planning. Think strategically about tax planning. Adjunct lecturers simulate client interviews and simulate presenting factual concepts and planning ideas to clients.

ACCTG 564 Governmental Accounting (4) Budgetary and financial accounting/reporting as applied at the state, local, and special-purpose governments; financial accounting and reporting for not-for-profit organizations.

ACCTG 566 Issues in International Accounting (4) Insights into the conceptual, managerial, professional, and institutional issues of international accounting. Focus on current topics in international accounting and on the cultural, managerial, and governmental forces that shape both internal and external accounting in specific countries.

ACCTG 575 Internship (14) Professional internship in graduate accounting program. Prerequisite: enrollment in MPAcc program, accounting and assurances track.

ACCTG 576 Independent Research Project Proposal (2-) Topic identification and development for research project to be completed in ACCTG 577. Prerequisite: enrollment in MPAcc program, accounting and assurances track.

ACCTG 577 Independent Research Project Proposal (-4) Development and completion of independent research project. Topic identification and proposal approval completed in ACCTG 576. Prerequisite: enrollment in MPAcc program, accounting and assurances track; ACCTG 576.

ACCTG 579 Special Topics in Accounting (2/4, max. 12) Accounting topics of current concern to faculty and students. Offered only when faculty are available and sufficient student interest exists. Seminar content announced in advance of scheduled offering. Prerequisite: permission of instructor.

ACCTG 580 Doctoral Seminar: Introduction to Accounting Research (4) Examination of research problems and techniques in accounting. Interdisciplinary nature of accounting research emphasized. Work in finance, economics, and psychology used to develop current trends in accounting research. Prerequisite: doctoral student status.

ACCTG 581 Doctoral Seminar in Managerial Accounting (4) Critical examination of conceptual and practical issues of cost and managerial accounting. Specific topics may change from quarter to quarter, and they include application of behavioral, quantitative, and economic models to managerial accounting problems. Prerequisite: ACCTG 511 or permission of instructor.

ACCTG 582 PhD Research Seminar: Introduction to Selected Research Topics (4) Introduces first-year and second-year accounting PhD students to the research areas and methodologies of the current account faculty. Research areas include financial, managerial, audit, and

tax. Research methodologies include analytical, archival, experiments, and surveys.

ACCTG 596 Doctoral Seminar in Financial Accounting Research (4) Review and critical analysis of research strategies and methods applied to problems in financial reporting practice and financial accounting standard setting. Prerequisite: doctoral student status and ACCTG 580 or equivalent or permission of graduate office.

ACCTG 597 Doctoral Seminar in Managerial Accounting Research (4) Critical analysis of current managerial accounting research, both published and unpublished. Prerequisite: doctoral student status and ACCTG 581 or equivalent or permission of graduate office.

ACCTG 599 Doctoral Seminar in Accounting (1, max. 12) Study and research in advanced topics of accounting. Generally concerned with unpublished areas of research as well as research methodology and philosophy. Conducted by departmental faculty and occasional distinguished visiting faculty. Prerequisite: doctoral student status.

ACCTG 600 Independent Study or Research (*)

Administration

ADMIN 510 Fundamentals of Business Administration ([1-15]-, max. 15) Includes materials basic to study and application of business theories and practice; accounting; business economics and financial control; and business strategy; commercial law; human resources and negotiations; marketing; operations management. Faculty team-teaching approach. Not open to master of business administration majors. Credit/no-credit only.

Business Administration Research Methods

BA RM 580 Applied Econometrics I (4) Emphasizes the application of econometric methods rather than the mathematical proofs of statistical procedures. Introduction to the linear regression model, interpretation of summary statistics, bias and precision of regression estimates, analysis of the residuals, and hypothesis testing. Prerequisite: STAT 342 or STAT 395 or STAT 481, or permission of instructor.

BA RM 581 Applied Econometrics II (4) Continuation of BA RM 580. Measurement errors, distributed lags, and simultaneous equation models. Prerequisite: BA RM 580.

BA RM 590 Behavioral Research Methods - Theory and Design (4) Philosophy of science, development of scientific method, and meaning of behavioral research. Historical perspective of scientific investigation and the evaluation of research. The development of theory and its relationship to research. Various strategies and designs in behavioral research. Prerequisite: STAT 361, STAT 362, or permission of instructor.

BA RM 591 Behavioral Research Methods - Approaches and Applications (4) Considers alternative research approaches, such as laboratory and field experimentation, simulation, and surveys, with data-gathering techniques appropriate for each approach. Primarily concerned with developing alternative approaches to research problems and with discussing specific applications. Builds upon a background of specific statistical tools and techniques and an understanding of theory development and research design. Prerequisite: STAT 361, STAT 362, or permission of instructor.

Business Communication

B CMU 301 Strategic Business Communication (4) Strategic approach to communications as a management tool. Analysis of the psychology, semantics, planning, and principles of effective business writing, presenting, and interpersonal and team communication. Practical applications include written and oral messages, inform and persuade, individual and team presentations, and tools and processes to increase collaboration among members of a team.

B CMU 410 Business Reports and Other Specialized Communications (4) Covers internal and external, written and oral business reporting. Considers communications strategies within the context of rapidly changing technologies. Students learn to apply primary and secondary research to quarter-long, individual projects resulting in a variety of reports: proposals, progress reports, feasibility studies, business plans, etc. Prerequisite: B CMU 301 or B CMU 302.

B CMU 490 Special Topics in Business Communications (1-6, max. 12) Students and faculty focus on current topics of concern. Prerequisite: either B CMU 301 or B CMU 302.

B CMU 499 Research in Business Communications (1-6, max. 9)

B CMU 509 Finding your Voice (2) Develop a leadership communication style by discovering core values and learning how to translate those values into effective messages. Students give speeches as well as critique speeches of classmates, produce written evaluation of speeches given in class and receive instructor feedback. Prerequisite: B A 501.

B CMU 510 Business Communications for Managers (4) Develops understanding of communication theories, describes strategies for planning managerial communications, and builds skills in oral and written reporting and persuading. Looks at how new technologies are changing the way people in business communicate, and the implications those changes have for organizations. Prerequisite: B A 501.

B CMU 579 Special Topics in Business Communication (2/4, max. 12) Business and managerial communication topics of current interest to faculty and students.

B CMU 600 Independent Study or Research (*) Offered: AWSp.

Business Economics

B ECON 300 Managerial Economics (4) Analysis of economic factors affecting decisions made by business firms. Demand and cost analysis, and alternative policies from the firm's point of view. Prerequisite: ACCTG 225; ECON 201; either MATH 112, MATH 124, MATH 125, MATH 127, MATH 134, MATH 145, or Q SCI 291; either IND E 315, QMETH 201, Q SCI 381, PSYCH 315, PSYCH 318, STAT 220, STAT 221, STAT 311, or STAT 390; may not be repeated. Offered: AWSp.

B ECON 301 Intermediate Macroeconomics (4) Analysis of economy with attention to the business cycle, output of goods and services (GNP), inflation, unemployment, and government's fiscal and monetary policies. How the economy affects individuals and firms and how to deal effectively with the economic environment. Prerequisite: ECON 201; may not be repeated. Offered: AWSp.

B ECON 420 Financial Markets (4) Analysis of the structure and functions of the money and capital markets; the saving-investment process and financial intermediaries; supply and demand for lendable funds and the level and structure of interest rates, role of Federal Reserve and Treasury in money market developments. Prerequisite: either B ECON 300 or ECON 300; may not be repeated. Offered: Asp.

B ECON 426 Competing in the Global Economy (4) Examines the global environment for business and the challenges facing managers in this environment. Explores the implications of the common phrase "think global - act local." Prerequisite: either B ECON 300 or ECON 300; recommended: either B ECON 301 or ECON 301. Offered: W.

B ECON 427 International Finance (4) Asset choice and institutional operations in international finance, foreign exchange problems, the impact of international financial problems and operations on business, short- and long-term international financing. Prerequisite: either B ECON 300 or ECON 300; either B ECON 301 or ECON 301; may not be repeated. Offered: Sp.

B ECON 490 Special Topics in Business Economics (1-6, max. 6) Study and research on topics of current concern to faculty and students. Only offered when allowed by faculty availability and sufficient student interest. Seminar content to be announced in advance of scheduled offerings.

B ECON 499 Undergraduate Research (1-6, max. 9) Research in selected areas of business economics. Recommended: either ECON 301 or B ECON 300 and B ECON 301.

B ECON 500 Introduction to Business Economics (4) Factors underlying the determination of cost and prices for the industry and the firm, demand and supply analysis and firm behavior. The relation of the economic environment to the microeconomic decisions of the firm.

B ECON 501 Analysis of Global Economic Conditions (4) Analysis of real and monetary factors affecting national and international economics, supply and demand for money, interest rates and stabilization problems and policies, in relation to government policy effects on business and individual affairs. Focuses on global macroeconomic issues. Prerequisite: MBA core microeconomics.

B ECON 520 Financial Markets (4) Analysis of the structures and functions of financial markets and institutions; the behavior of interest rates through time; the cross-sectional structure of interest rates; and the roles of the Federal Reserve and Treasury in financial markets. Prerequisite: MBA Core Finance.

B ECON 526 Competing in the Global Economy (4) Examines the global environment for business and the challenges facing managers in this environment. Explores the implications of the common phrase "think globally - act locally." Offered: WSp.

B ECON 527 International Finance (4) Study of selected problems in financing, international trade, investment, and foreign business operations; international aspects of money markets; problems of evaluation of foreign investments. Prerequisite: MBA core finance; recommended: MBA core macroeconomics.

B ECON 579 Special Topics in Business Economics (2/4, max. 12) Business economics topics of current concern to faculty and students. Offered only when faculty are available and sufficient student interest exists. Seminar content announced in advance of scheduled offering. Prerequisite: permission of instructor.

B ECON 600 Independent Study or Research (*)

Entrepreneurship and Innovation

ENTRE 370 Introduction to Entrepreneurship (4) Introduction to entrepreneurial practices with an emphasis on learning how to find business ideas, how to evaluate their potential, and how to recognize the barriers to success. Exposure to the stresses of a start-up business, the uncertainties that exist, and the behavior of entrepreneurs. Prerequisite: ACCTG 225; ECON 200; ECON 201. Offered: AWSp.

ENTRE 401 Leadership, Critical Thinking, and Decision Making (4) The manager as leader and decision maker. Various leadership theories, styles, and behaviors. Decision-making models and techniques. Offered: jointly with MGMT 401.

ENTRE 422 Innovation Strategy (4) Focuses on starting a hardware or software company. Includes guest entrepreneurs, lawyers, and financiers discussing market identification and analysis; planning the business; financing; and typical operating and administrative problems.

ENTRE 432 Software Entrepreneurship (4) Explores the opportunities and challenges of launching a software company. Issues include an overview of the industry, trends and emerging opportunities, funding, technology transfer, industry challenges, and cutting-edge software practices.

ENTRE 440 Business Plan Practicum (2) Enables students interested in new venture creation to explore their entrepreneurial aptitude, formulate their ideas, validate the op-

portunity, develop a business plan, and demonstrate the depth of their knowledge by preparing an executive summary and competing in the UW Business Plan Competition. Credit/no-credit only. Offered: W.

ENTRE 443 Environmental Innovation Practicum (2) Focuses on developing innovative solutions to real-world environmental problems and creating new business opportunities. Speakers include experts from the clean-tech community, environmental start-ups, the public sector, as well as corporate environmental strategists. Themes include water, energy, green building, and transportation. Includes the opportunity to participate in the UW Environmental Innovation Challenge.

ENTRE 455 Entrepreneurial Marketing (4) Examines the skills and tools entrepreneurs need for bootstrap marketing in their start-up firms. Students learn to identify target market segments, position their products, estimate demand, set prices, gain access to channels, and manage the issues of rapid growth. Prerequisite: MKTG 301; may not be repeated. Offered: jointly with MKTG 455; AWSp.

ENTRE 457 Entrepreneurial Finance (4) Explores financial issues that face entrepreneurs, including the stages of financing, business cash flow models, and strategic positioning of the early-stage company. Examines the role of business angels, venture capital funds, institutional investors, strategic alliances, licensing agreements, and exit strategies. Prerequisite: FIN 350; either B ECON 300 or ECON 300. Offered: jointly with FIN 457; AWSp.

ENTRE 459 Venture Investing (4) Analyzes and makes recommendations on investment opportunities through learning the fundamentals of venture investing and performing due diligence on real companies. Explores the venture investing process from the entrepreneur's and the investor's point of view. Students present their recommendations to the Investment Committee of the W Fund. Offered: jointly with FIN 459.

ENTRE 472 Creating a Company I (4-) Two-course sequence with ENTRE 473. Working in teams, students develop a business plan for a new venture, present their plans to a panel of investors, obtain funding, run the business, and exit the firm at the end of the second quarter. Prerequisite: ENTRE 370. Offered: AW.

ENTRE 473 Creating a Company II (-4) Two-course sequence with ENTRE 472. Working in teams, students develop a business plan for a new venture, present their plans to a panel of investors, obtain funding, run the business, and exit the firm at the end of the second quarter. Prerequisite: ENTRE 472. Offered: WSp.

ENTRE 490 Special Topics in Entrepreneurship (1-6, max. 6)

ENTRE 499 Undergraduate Research (1-6, max. 9) Independent research in selected areas of entrepreneurship; new venture strategy and investment; market analysis and financial forecasts; and corporate issues under faculty supervision. Prerequisite: ENTRE 370.

ENTRE 509 Foundations of Entrepreneurship (2) Evaluation of new market opportunities and starting a new venture; focuses on identifying and evaluating new venture opportunities, developing and testing market strategies, evaluating test market performance, and evaluating business plans. Emphasizes the interplay between marketing, manufacturing, finance, accounting, and team management. Prerequisite: Permission of Foster School of Business. Offered: Sp.

ENTRE 510 Entrepreneurial Strategy (4) Uses the tools of competitive strategy to analyze the success and failure of entrepreneurial ventures, identifying general strategic principles that might increase the probability that an entrepreneurial venture will succeed. Draws heavily on the principles of microeconomics and strategy. Prerequisite: B A 500; B A 502.

ENTRE 521 Corporate Entrepreneurship (4) Focuses on entrepreneurial activities in large, established corporation.

Introduces the theory and best practices on the process of converting new ideas to commercial products and new businesses. Prerequisite: B A 500; B A 501; B A 502.

ENTRE 522 Innovation Strategy (4) Explores how firms tap into external sources of innovation, focusing on user communities, universities, and entrepreneurial ventures. Demonstrates how open, collaborative, community-based models of innovation create successful business options. Offered: jointly with MGMT 522.

ENTRE 530 Entrepreneurial Decision Making (4) Song Provides an overview of the major decisions entrepreneurs face when creating a business. Covers the startup lifecycle from idea generation and opportunity recognition to entry strategy, growth, and exit. Prerequisite: B POL 509; B A 501. Offered: W.

ENTRE 531 Developing Business Models for Emerging Technologies (4) Focuses on the commercialization of emerging technologies. Topics include conducting feasibility assessments of intellectual property landscape, evaluating business opportunities, analyzing competition, developing business models and strategies, constructing a professional quality business plan, and presenting business plan, transforming a new technology into a market-ready technology-based business. Offered: W.

ENTRE 532 Software Entrepreneurship (4) A case- and project-based course, focusing on starting a software or hardware company. Guest entrepreneurs, lawyers, and financiers discuss market identification and analysis, planning the business, financing, and typical operating and administrative problems.

ENTRE 540 Business Plan Practicum (2, max. 4) Gives student entrepreneurs the opportunity to network with the founders/CEOs of companies, explore their entrepreneurial aptitude, and work through the details of their own start-ups. Provides structure, tools, and resources to start of company, and compete in the UW Business Plan Competition. Credit/no-credit only.

ENTRE 541 Technology Commercialization Practicum (4) Provides the experience of researching and creating a commercialization plan for a promising technology. Designed to apply the skills and perspectives of students in cross-disciplinary teams so they learn how to work effectively with peers in assessing complex and potentially ambiguous situations. Offered: S.

ENTRE 542 Venture Capital Investment Practicum (2) Provides overview and teaches the mechanics of the venture capital industry and culminates in intramural venture capital competition. Students assume the role of investors in a venture capital firm and real entrepreneurs pitch to them for investment dollars. Teams defend their allocation decisions before a judging panel of venture capitalists. Credit/no-credit only. Offered: A.

ENTRE 543 Environmental Innovation Practicum (2) Focuses on developing innovation solutions to real-world environmental problems and creating new business opportunities. Speakers include experts from the clean-tech community, environmental start-ups, the public sector, as well as corporate environmental strategists. Themes include water, energy, green building, and transportation. Students have the opportunity to participate in the UW Environmental Innovation Challenge. Offered: A.

ENTRE 555 Entrepreneurial Marketing (4) Examines the skills and tools entrepreneurs need for bootstrap or guerrilla early-stage companies. Covers how to target market segments, position products, estimate demand, set prices, gain access to channels, and manage issues of rapid growth. Prerequisite: B A 501, MKGT 501 or equivalent. Offered: jointly with MKTG 555.

ENTRE 557 Entrepreneurial Finance (4) Analyzes the unique financial issues facing entrepreneurial firms. Topics include assessing financial performance, financial forecasting and planning, financial management of rapidly growing businesses, start-up ventures, valuation, sources

of financing, venture capital, initial public offerings, and the decision to harvest. Prerequisite: MBA core courses. Offered: jointly with FIN 557.

ENTRE 579 Special Topics in Entrepreneurship (2-4, max. 12) Topics vary. Offered only when faculty members are available and there is sufficient student interest.

ENTRE 581 Theoretical Foundations of Entrepreneurship (4) Focuses on theoretical overview, entrepreneurs, environment and organizational founding, entrepreneurship's links with other disciplines, venture capital and venture capitalists, new venture strategy and performance, growth processes and challenges, and entrepreneurial networks and alliances. Offered: A.

ENTRE 582 Technology, Innovation, and Entrepreneurship (4) Explores issues of how a knowledge-based economy competes and performs using technological innovations and entrepreneurship. Explores research on capabilities of broader entities; processes of learning at the firm, industry, technology, economy-level; development of know-how as evolutionary process; and explorations by firms, sectors and economies exploring new technologies and techniques. Offered: W.

ENTRE 590 New Venture Research Practicum (4) Exposes students to new venture creation phenomena. Teaches how to think about and understand empirical research methods such as case studies, participant-observation, and other field methods while contributing to on-going cumulative data collection process.

ENTRE 600 Independent Study or Research (*-)

Finance

FIN 350 Business Finance (4) Evaluating and funding projects within the firm. Time value of money, inflation, capital budgeting; risk and return in the financial markets, stocks, bonds, portfolios and diversifiable risk, market efficiency and the balance between debt and equity to fund the firm. Prerequisite: ACCTG 225; ECON 201; either MATH 112, MATH 124, MATH 125, MATH 134, MATH 145, or Q SCI 291; either IND E 315, MATH 390, QMETH 201, Q SCI 381, PSYCH 315, PSYCH 318, STAT 220, STAT 221, STAT 311, or STAT 390. Offered: AWSpS.

FIN 423 Banking and the Financial System (4) Role of banks and nonbank financial institutions in the financial system; asset choices of banks and nonbank financial institutions; problems in the management of financial institutions with emphasis on commercial banks. Prerequisite: FIN 350; either B ECON 300 or ECON 300; may not be repeated. Offered: AWSp.

FIN 425 Introduction to Real Estate Finance and Investment (4) T. SESLEN Introduction to valuing, financing, and investing in real estate with emphasis on those topics that distinguish real estate from other investments, including valuation techniques, lease structures, loan options, equity partnerships, risk management, and taxation. Prerequisite: FIN 350.

FIN 428 International Financial Management (4) Analysis of financial problems facing businesses engaged in international activities. Financing foreign investment, financial control of foreign operations, and working capital management including foreign exchange positions using cases and readings. Prerequisite: FIN 350; either one 400-level FIN course, B ECON 301 or ECON 301. Offered: WSp.

FIN 435 Introduction to Real Estate Capital Markets (4) T. SESLEN Examines who the real estate capital providers are, how that capital is priced, and why the markets operate as they do. Provides a toolbox for sound decision-making, either as an investor seeking funding or as a noteholder in the secondary market. Prerequisite: FIN 350. Offered: AWSp.

FIN 450 Problems in Corporate Finance (4) Case problems in corporate financial management. Includes cases on management of current assets, obtaining short-term loans, raising long-term capital, capital budgeting, and

dividend policy. The management point of view is stressed. Prerequisite: FIN 350; either B ECON 300 or ECON 300. Offered: WSp.

FIN 453 Financial Theory and Analysis (4) Business financial strategic planning. Topics include business valuation and financing, performance evaluation, risk analysis, capital budgeting, and inflation and taxes. Emphasizes tools with real-world applications while incorporating modern finance concepts. Prerequisite: FIN 350; either B ECON 300 or ECON 300; may not be repeated. Offered: AWSp.

FIN 454 Business Valuation, Investment, and Financing (4) Key issues in financial management using both analytical and case study illustrations. Valuation of public and private companies; cost of capital estimation; investment complications, such as taxes, inflation, risk, project interdependencies, and financing-investment interactions; leasing; mergers; spin-offs and carve-outs. Prerequisite: FIN 350; either B ECON 300 or ECON 300. Offered: AW.

FIN 457 Entrepreneurial Finance (4) Explores financial issues that face entrepreneurs, including the stages of financing, business cash flow models, and strategic positioning of the early-stage company. Examines the role of business angels, venture capital funds, institutional investors, strategic alliances, licensing agreements, and exit strategies. Prerequisite: FIN 350; either B ECON 300 or ECON 300. Offered: jointly with ENTRE 457; AWSp.

FIN 459 Venture Investing (4) Analyzes and makes recommendations on investment opportunities through learning the fundamentals of venture investing and performing due diligence on real companies. Explores the venture investing process from the entrepreneur's and the investor's point of view. Students present their recommendations to the Investment Committee of the W Fund. Offered: jointly with ENTRE 459.

FIN 460 Investments (4) Introduction to the nature, problems, and process of evaluating particular securities and portfolio construction and administration. Special attention is directed to the risk and rate-of-return aspects of particular securities portfolios, and total wealth. Prerequisite: FIN 350; either B ECON 300 or ECON 300; may not be repeated. Offered: AWSp.

FIN 461 Financial Futures and Options Markets (4) Introduction to financial futures and options markets. Institutional aspects and social functions of these markets, pricing of options and futures, and risk shifting by hedging. Prerequisite: FIN 350; either B ECON 300 or ECON 300; may not be repeated. Offered: AWSp.

FIN 462 Management of Financial Risk (4) Modern tools for managing financial risk. Fixed income securities and interest rate risk, credit risk, foreign currency risk, and insurance. Emphasis on use of futures, forwards swaps, and option contracts. Prerequisite: FIN 350; either B ECON 300 or ECON 300; FIN 461. Offered: Sp.

FIN 466 Alternative Investments: Hedge Funds and Private Equity (4) Brogaard Examination of the market for alternative investments including the investment strategies employed by hedge funds and private equity firms, the risk-return tradeoffs of those strategies, and the legal and economic environments in which alternative investment firms operate. Prerequisite: FIN 350; either B ECON 300 or ECON 300.

FIN 490 Special Topics in Finance (1-6, max. 6) Study and research on topics of current concern to faculty and students. Only offered when allowed by faculty availability and sufficient student interest. Seminar content to be announced in advance of scheduled offerings.

FIN 495 Finance Internship (1-4, max. 8) Internship with a private firm, nonprofit organization or government agency, where work experience involves substantial application of finance concepts learned in classroom. Prerequisite: FIN 350. Credit/no-credit only. Offered: AWSpS.

FIN 499 Undergraduate Research (1-6, max. 9) Research in selected areas of business finance, money and bank-

ing, or investments, with permission of instructor. Recommended: FIN 350; either B ECON 300 or ECON 300.

FIN 502 Business Finance (4) Financial management of the firm, including capital budgets, working capital analysis, and financing policy. Prerequisite: ACCTG 500, B ECON 500, QMETH 500.

FIN 528 International Financial Management (4) Analysis of financial problems facing businesses engaged in international activities: financing foreign investment, financial control of foreign operations, and working capital management including foreign exchange positions using cases and readings. Prerequisite: B A 502 or FIN 509.

FIN 530 Financial Management of Banks (4) Analysis of problems in the financial management of commercial banks and other financial institutions. Loan and investment policies, liability management, capital policies, and other selected issues are discussed. Prerequisite: B ECON 520 or permission of graduate office.

FIN 550 Advanced Business Finance (4) Systematic coverage of key theoretical issues in financial management. Application of quantitative analysis to financial problems of the firm that are important in practice, including issues related to financing and investment. Prerequisite: MBA Core Finance.

FIN 551 Problems in Business Finance (4) Uses case studies to examine a broad range of financial management topics, including forecasting financial statements, use of bank credit, working capital management, public and private securities issues, capital budgeting, and business valuation. Credit allowed for only one of FIN 551 and FIN 552. Prerequisite: B A 502.

FIN 552 Problems in Corporate Planning and Financing (4) Uses case studies to examine business financing. Topics include financial statement analysis, financial planning and forecasting, banking relationships, and financing sources, including the use of derivative securities, venture capital, and private equity. Credit allowed for only one of FIN 551 and FIN 552. Prerequisite: either B A 501 or FIN 502.

FIN 553 Problems in Capital Investment Planning (4) Case discussions used to examine corporate resource allocation decisions. Topics include capital budgeting techniques, estimation of capital costs, capital budgeting systems, strategic investment decisions, and financial restructurings. Prerequisite: either B A 501 or FIN 502.

FIN 555 Financing Decisions, Payout Policy, and Corporate Control (4) Analysis of business financing methods, payout policy, management compensation, ownership structure, and the distribution of control rights. Covers the major issues critical to structuring contracts within the corporation. Prerequisite: MBA Core Finance.

FIN 556 Business Valuation and Investment Analysis (4) Valuation of business enterprises, evaluation of financial performance, analysis of complex investment opportunities, business taxation, leasing, and business acquisitions. Emphasis on complications encountered in practice. Prerequisite: MBA Core Finance.

FIN 557 Entrepreneurial Finance (4) Analyzes the unique financial issues facing entrepreneurial firms. Topics include assessing financial performance, financial forecasting and planning, financial management of rapidly growing businesses, start-up ventures, valuation, sources of financing, venture capital, initial public offerings, and the decision to harvest. Prerequisite: MBA core courses. Offered: jointly with ENTRE 557.

FIN 558 Mergers and Acquisitions (4) Advanced finance topics focusing on providing the necessary training to value, structure, and close acquisitions. Additional topics include antitrust issues, the legal environment governing mergers, and antitakeover defense.

FIN 560 Investments (4) Introduction to the nature, problems, and process of evaluating particular securities and portfolio construction and administration. Special atten-

tion is directed to the risk and rate of return aspects of particular securities, securities portfolios, and total wealth. Prerequisite: MBA Core Finance.

FIN 561 Financial Futures and Options Markets (4) Overview of futures markets and options markets. Analysis of pricing of futures contracts and options; comparison of futures, forward, and options contracts; risk management with hedging; alternative investment strategies; and review of empirical evidence. Prerequisite: MBA Core Finance.

FIN 562 Management of Financial Risk (4) Modern tools for managing financial risk. Fixed income securities and interest rate risk, credit risk, foreign currency risk, and insurance. Emphasis on use of futures, forwards, swaps, and option contracts. Prerequisite: MBA Core Finance.

FIN 563 Real Options (2) Short overview of option pricing theory, followed by applications of option analysis in evaluating complex investment projects by business firms. Prerequisite: B A 502.

FIN 566 Alternative Investments: Hedge Funds and Private Equity (4) Brogaard Examination of the market for alternative investments including the investment strategies employed by hedge funds and private equity firms, the risk-return tradeoffs of those strategies, and the legal and economic environments in which alternative investment firms operate.

FIN 579 Special Topics in Finance (2/4, max. 12) Finance topics of current concern to faculty and students. Offered only when faculty are available and sufficient student interest exists. Seminar content announced in advance of scheduled offerings. Prerequisite: permission of instructor.

FIN 580 Doctoral Seminar in Financial Economics (4) Study of the financing of the corporation, including recent theoretical and institutional developments. Extensive reading and discussion in designated areas covering problems relating to financial management and to the social and economic implications of the financial process. Prerequisite: ECON 500 or permission of instructor.

FIN 590 Doctoral Seminar in Capital Market Theory (4) Decision making under uncertainty, information and capital market efficiency, portfolio theory, capital asset pricing model, arbitrage pricing model, and options pricing model. Prerequisite: ECON 500 or permission of instructor.

FIN 591 Doctoral Seminar in Corporate Finance (4) Principles of intertemporal choice, alternative valuation models, theory of investment under uncertainty, impact of dividend and financing decisions on firm valuation in perfect and imperfect markets, and theory of firm organization and agency costs. Prerequisite: FIN 590 and BA RM 581 or ECON 582 or permission of instructor.

FIN 592 Doctoral Seminar in Financial Research (4) Empirical research in finance with emphasis on methodology and scientific method. Empirical research in market efficiency, capital asset pricing model, options pricing model, and impact of firm's dividend and financing decisions on firm value. Prerequisite: FIN 590 and BA RM 581 or ECON 582 or permission of instructor.

FIN 599 Doctoral Seminar in Finance (1, max. 12) Study and research in advanced topics of finance. Generally concerned with unpublished areas of research, conducted by visiting professors and departmental faculty. Prerequisite: doctoral student status.

FIN 600 Independent Study or Research (*-)

Information Systems

I S 300 Introduction to Information Systems (5) Fundamentals of information systems, what they are, how they affect organizations. Technical and organizational foundations of information systems, building information systems, managing information system resources. Laboratory emphasizes using computer to analyze, coordinate, solve organizational decision-making problems. Prerequisite: ACCTG 225; ECON 200; either MATH 112, MATH 124,

MATH 125, MATH 134, MATH 135, or MATH 145; either ECON 311, IND E 315, QMETH 201, Q SCI 291, Q SCI 381, PSYCH 315, PSYCH 318, STAT 220, STAT 221, STAT 311, or STAT 390; may not be repeated. Offered: AWSpS.

I S 310 Fundamentals of Business Information Technologies (4) Exposure to fundamental programming and scripting concepts, conceptual data modeling, database management, and XML Applying data types and control structures. Continues the concepts of I S 300 of entity-relationship diagrams and record structure diagrams. Database management component includes relational databases, basic SQL, data architecture issues. Prerequisite: I S 300. Offered: AWSp.

I S 320 Fundamentals of Application Programming (4) Fundamental programming concepts including data types, control structures, modularization, and structure programming. Developing solutions for problems in interactive business applications. Introduction to data and file structures. Extensive use of an event-driven programming language. Prerequisite: I S 300, which may be taken concurrently; may not be repeated. Offered: AWSp.

I S 410 Business Data Communications (5) Technology and applications of business data communications including characteristics of data, fundamentals of transmission, communications hardware and software, network configurations (LAN, MAN, WAN), management, and security. Laboratory provides hands-on experience with these applications. Prerequisite: I S 300, which may be taken concurrently; may not be repeated. Offered: AWSp.

I S 445 Database Management (4) Examines the business need for database processing. Discusses database design, development, and administration. Students practice real-world database design and implementation using SQL. Discusses issues related to transaction management, data warehouse, etc. Prerequisite: I S 320, which may be taken concurrently; may not be repeated. Offered: AWSp.

I S 451 Data Mining for Business Intelligence (4) *Tan* Introduces data mining concepts and techniques, including associations rules, decision trees, cluster analysis, classification, logistic regression, text mining, and web analytics. Includes real-work applicants in information systems, supply chain management, and marketing. Prerequisite: I S 300; OPMGT 301. Offered: AWSp.

I S 460 Systems Analysis and Design (4) Analysis and design of business information systems. Concentrates on the analysis phase of systems development. Covers systems development life cycle, feasibility studies, analysis of user requirements, and development of logical system models. Prerequisite: I S 410; I S 445; both of which may be taken concurrently; may not be repeated. Offered: WSP.

I S 461 Systems Implementation (4) Develops business information systems integrating knowledge gained in previous 400-level I S courses. Topics include software project management, system/database design, GUI, software testing, systems implementation/support/maintenance, user training, integrating web, and business environments. Prerequisite: I S 445; I S 460; may not be repeated.

I S 490 Selected Topics in Information Systems (1-6, max. 20) Topics of current concern to faculty and students. Potential topics include networks and distributed information-processing systems, office automation, artificial intelligence and knowledge-based systems, new approaches to systems development, fourth- and fifth-generation languages, economics of information systems. Prerequisite: I S 320.

I S 495 Practical Experience in Information Systems (1-4, max. 8) Undergraduate substantive I S internship and mentorship. Internships can be repeated up to two quarters for maximum of 4 credits; grades based on weekly status reports, paper, demonstration of knowledge. Mentorship program (maximum 1 credit/quarter) allows student to be matched with I S executive; grade based on status reports, other participatory events. Offered: AWSpS.

I S 499 Undergraduate Research (1-6, max. 12) Selected problems in information systems and computer applications. 504.

I S 504 Computer-Based Information Systems for Management (3) Introduction to information systems and computer technology. Covers concepts of information use in decision making. Use of decision-support problem-solving tools (e.g., spreadsheet, database software). Management's responsibility in defining, developing, using information systems is focal point.

I S 530 Management of Information Systems Resources (4) Topics include general control problem in organizations; performance evaluation of data processing managers; technology and cost trends; software cost estimation; capacity planning; short term utilization; queuing and associated externalities; issues in centralization and decentralization of the information system facilities. Prerequisite: B A 501 or I S 504 or equivalent.

I S 545 Database Systems and Applications (4) Logical data models, relational database systems, structured query language (SQL), conceptual modeling, database design, Web-connected databases, transaction management, distributed and heterogeneous systems, data warehousing, data mining, database administration issues. Focuses on the use/management of business data in areas such as finance. Prerequisite: B A 502 or I S 504.

I S 560 Information Systems Development (4) Offers comprehensive look at information systems development. Covers user requirements analysis, logical and physical system models, system implementation and maintenance, project valuation and management. Additional topics include object-oriented approach, systems development in online environments, and financial information systems. Prerequisite: B A 501 or permission of instructor.

I S 570 Business Data Communications and Networking (4) Networking basics, Internet/web-based services, client-server architecture, fundamentals of transmission, networking protocols, physical layer, data-link layer, local-area networks, backbone networks, internetworking devices, metropolitan and wide-area networks, wireless networking, network security, network analysis and management. Combines technical, operational, and management issues in data communications. Prerequisite: B A 502 or I S 504.

I S 579 Selected Topics in Information Systems (2/4, max. 12) Topics of current concern to faculty and students. Potential topics include networks and distributed information-processing systems, office automation, artificial intelligence and knowledge-based systems, new approaches to systems development, fourth- and fifth-generation languages, economics of information systems. Prerequisite: B A 501 or I S 504 or permission of instructor.

I S 580 Advanced Research Topics in Information Systems I (4) Overview of research problems and techniques in information systems. Focuses on application of microeconomic theories, mathematical, statistical, and operations research methods. Extensive reading and discussion in current and emerging research topics. Prerequisite: doctoral student or permission of instructor.

I S 581 Advanced Research Topics in Information Systems II (4) Advanced topics of current interest of faculty in heterogeneous database, temporal database, data warehousing, data uncertainty, active and deductive database systems, database design, and formal database languages. Prerequisite: doctoral student or permission of instructor.

I S 582 Advanced Research Topics in Information Systems III (4) Potential topics include information systems design, software engineering, decision support and expert systems, empirical methods, optimal control theory. Prerequisite: I S 580 or doctoral student or permission of instructor.

I S 599 Doctoral Seminar (1, max. 12) Advanced topics of information systems. Generally concerned with unpublished areas of research and conducted by visiting profes-

sors and departmental faculty. Prerequisite: doctoral student status.

I S 600 Independent Study or Research (*-)

Information Systems Master of Science

MSIS 501 Information Technology and Organizational Strategy (3) Discusses the role of information technology (IT) in the development and execution of business strategy that takes into account competitors, customers, and firm competencies (including IT capabilities). Examines the impact of IT on two sets of strategic issues for a company - where to compete and how to compete. Helps students develop tools to use IT in aiding strategy. Offered: SpS.

MSIS 502 Business Data Analysis (2) Covers statistical techniques for managerial decision making. Includes hypotheses testing, regression, and analysis of variance. Offered: SpS.

MSIS 503 Operations and Business Process Management (3) Presents a framework to understand organizational processes, offers tools to improve these processes. Covers process improvement methodologies such as reengineering, TQM, six-sigma, simulation, and collaboration. Focuses on discussing application and implementations of improvement programs in a wide variety of settings, including operations processes related to inventory and scheduling, service, and quality assurance. Offered: SpS.

MSIS 504 Business Decision Models (2) Covers formulating and modeling business decision problems. Includes risk analysis, simulation, linear programming, and extensions. Offered: SpS.

MSIS 510 Introduction to Data Mining and Analytics (3) Covers managerial decision-making and business intelligence. Topics include naive Bayesian classifier, decision trees, rule covering, and other classification techniques, as well as issue related to data cleaning, design, testing, and validation. Special attention given to embedded intelligence in modern business processes and applications. Offered: AS.

MSIS 511 Digital Transformation of Organizations (3) Studies the impact of digital technologies within an organization, an industry, and an economy. Discusses system architecture that enables business process and provides foundation for management and use of information systems within organizations. Covers issues related to workflow process changes, efficiency and effectiveness, innovation, convergence, competitive advantage, and sustainability. Offered: A.

MSIS 512 Information Security and Assurance in a Networked World (3) Explores technical and managerial aspects of information security and assurance within a networked environment. Includes inspection and protection of information assets, detection of and reaction to internal and external threats, determining the levels of protection needed, and design of a consistent and reasonable information security architecture along with an implementable process. Offered: AS.

MSIS 521 Information Technology and Marketing in the New Economy (3) Explores issues related to marketing models based on social networking/computing, such as concepts and applications of search engine optimization (SEO), viral marketing, web analytics, user generated content, the wisdom of crowds, and prediction markets. Students work in teams on real-world projects to develop marketing strategies for maximizing online traffic to business sites. Offered: AS.

MSIS 522 Advanced Business Data Mining (2) Covers managerial decision-making and business intelligence. Topics include association rule mining and regression. Special attention given to embedded intelligence in modern business processes and applications. Offered: AW.

MSIS 523 Compliance and Legal Issues in Information Technology (3) Covers the overall framework of information technology (IT) compliance, both generic and indus-

try-specific. Includes intellectual property rights, privacy, copyright protection, trade secrets, and other legal issues relevant to IT. Offered: AW.

MSIS 524 Managing Information Technology Projects (3) Explores issues related to analyzing and managing complex information technology (IT) projects in a globalized and networked world. Covers topics such as life-cycle models, use case point estimation, function point analysis, COCOMO, scheduling and budgeting, project risk analysis, monitoring and control, contract design, outsourcing, and capability maturity model (CMM). Students manage a real-world information technology project in a simulated environment. Offered: AW.

MSIS 526 Enterprise Systems and Integration (3) Provides an overall understanding of the complex role of information systems in transforming organizational processes and integrating them as part of an enterprise system. Topics include the concept of process-enabling information technologies and enterprise resource planning systems that support organizational manufacturing, customer service, and human resource management. Offered: SpS.

MSIS 541 Advanced and Unstructured Data Mining (2) Advanced topics in data mining, focusing on unstructured data, web mining, and text mining. Students learn and apply unstructured data mining tools on real-world unstructured data. Offered: WSp.

MSIS 542 Advanced Development Frameworks (2) Introduces object-oriented principles and key web-based system development tools. Topics include object-oriented modeling, object-oriented programming languages, and advanced user interface design. Students use object analysis and design, modern programming languages, and advanced database technology to develop business applications. Offered: WSp.

MSIS 543 Advanced Database Systems and Data Warehouses (2) Extends and enhances understanding of enterprise databases to design, implement, and support business intelligence (BI) solutions. Topics include DBMS extensions for data warehousing, data warehouse and data mart design, loading and extracting data, performance tuning, and cloud-based BI application design. Emphasizes agile techniques to efficiently produce optimal solutions that meet business requirements and increase competitive advantage. Offered: WSp.

MSIS 544 Managing Information Technology Resources (2) Covers issues related to managing operations of the information (IT) department in an organization. Topics include IT budgeting, systems implementation/support/maintenance, user training, hardware replacement strategies, performance evaluation, technology cost estimation and trend forecasting, capacity planning, website utilization and traffic load balancing, and coordination with other functional departments. Offered: WSp.

MSIS 545 Technology Entrepreneurship (2) Examines the issues involved in creating an organizational environment that recognizes, nurtures, and grows technology-related entrepreneurial activities, the practice of selecting and monitoring ventures, and the capital process within a firm. Offered: WSp.

MSIS 546 Information Systems Economics (2) Examines basic concepts of economics as it pertains to information technology and systems. Includes the value of information, cost-benefit analysis, economies of scale, network effects, pricing of digital goods, information uncertainty in electronic markets, risk-return trade-offs, and other related topics. Offered: WSp.

MSIS 550 MSIS Leadership Series (1-, max. 5) Provides the capstone learning experience. Includes seminars by information technology leaders. Seminar topics and speakers chosen based on the progression of other courses in the program. Credit/no-credit only. Offered: AWSpS.

MSIS 579 Contemporary Topics in Information Systems (2) Contemporary topics in Information Systems. Offered: WSp.

International Business

I BUS 300 Global Business Perspectives (4) Prepares students to understand the most important aspects of the international political economy. Emphasis on the important relationships among nations and business and economic institutions that influence students' performances as managers, consumers, and citizens. Prerequisite: ECON 200. Offered: AWSpS.

I BUS 330 Business Environment in Developing Nations (4) The international environment for transnational trade, investment, and operations in the less-developed countries; survey of the economics of underdevelopment; analysis of foreign economic, cultural, and political environments and their impact on international business; foreign investment in the development process; case studies. Prerequisite: I BUS 300; may not be repeated. Offered: A.

I BUS 340 Business Environment in Industrial Countries (4) Factors and conditions affecting business operations and behavior in developed countries, international integration, business relations among nation states and integrated supranational systems, direct investment and multinational industrial activities, analysis of sources and causes of international change. Prerequisite: I BUS 300; may not be repeated. Offered: Sp.

I BUS 440 Business in Asia (4) Major aspects of the Asian business environment and how Asian enterprises are managed. Problems and opportunities of foreign corporations in Asia. Prerequisite: I BUS 300; may not be repeated. Offered: Sp.

I BUS 461 Science, Technology, and Innovation Policies in East Asia (5) I&S Anchoroguy Role of state and technological change in economic development. Analyzes state and corporate technology policies historically. Basic technology concepts, institutions, and policies in Japan, South Korea, Taiwan, and China. Examines sources of Asia's rise in world of technology and explores whether conditions for its success will continue. Recommended: one JSIS course. Offered: jointly with JSIS A 472.

I BUS 462 Japanese Business and Technology (5) I&S Anchoroguy Examination of Japan's postwar enterprise system in its historical context. Topics include corporate and financial structure, production and distribution, trade and investment policies, government-business relations, system of innovation, technological developments, prospects for the future. Offered: jointly with JSIS A 478.

I BUS 470 Management of International Trade Operations (4) Integrated study of international trade functions, practices, concepts, management, strategy, and policy. The approach utilizes lectures, case studies, research, guest speakers, and extensive practical application. Prerequisite: I BUS 300. Offered: A.

I BUS 480 Multinational Operations Management (4) Case studies in foreign operations management: planning international objectives and strategies; developing multinational company structures and executives; adapting administrative practices and operating policies to international diversities. Prerequisite: I BUS 300; may not be repeated. Offered: W.

I BUS 490 Special Topics in International Business (1-6, max. 12) Students and faculty focus on current topics of concern. Offered when faculty, student interest, and availability allow. Prerequisite: I BUS 300.

I BUS 491 CISB Track Seminar (1, max. 9) Students meet with business community leaders to discuss international aspects of their companies. Allows for networking and sharing experiences with other students as well as practicing foreign languages. Credit/no-credit only.

I BUS 495 International Business Internship (1-4, max. 8) An internship with a company, not-for-profit organization,

or government agency in an international business capacity. Prerequisite: IBUS 300. Credit/no-credit only. Offered: AWSpS.

I BUS 496 International Business Practicum (4) Offers students opportunity to apply principles, concepts, and skills learned previously to actual business situation. Projects provide students an exposure to the issues and choices facing managers operating in an international business environment. Prerequisite: I BUS 300. Offered: Sp.

I BUS 499 Undergraduate Research (1-6, max. 9) Prerequisite: I BUS 300.

I BUS 520 International Trade Policy (4) Examines issues important to trade policy. Topics include trade policy basics, tariffs and non-tariff barriers, safeguards, voluntary restraints, dumping, subsidies and strategic trade theory, agricultural trade, developing country rules, regionalism, and services. Prerequisite: B A 500 or course in international economics, trade, or international finance, or permission of graduate office.

I BUS 530 International Business in Less Developed Countries (4) Understanding the economic, sociocultural, and political environment in the less developed countries. Problems of international trade and investment, north-south relations, commodities, technology transfer, foreign aid, and capital flows. Prerequisite: B A 500 or course in international economics or trade or international finance, or permission of graduate office.

I BUS 540 International Business in Industrialized Countries (4) Understanding the economic, sociocultural, and political environment in developed, industrialized countries. Problems of international trade and payments relations, economic integration, national policies, and supranational organizations' impact on managerial environments. Prerequisite: B A 500 or course in international economics or trade or international finance, or permission of graduate office.

I BUS 545 Cases in Sustainability (4) Stearns Examines components of corporate sustainability- financial, social, and environmental - in cases and articles format. Tackles rigorous global cases using triple bottom line framework. All topics are augmented by executive experts. Students research and critique strategic and executional and intent actions of companies as they face twenty-first century challenges and shareholder demands.

I BUS 550 International Business Consulting (4) Research, analysis, and report on a specific international business project with an existing organization involved with international trade. Possible tasks include identifying most viable foreign target markets, developing best market entry strategies, establishing international terms and conditions of sale, and completing a preliminary marketing or business plan for clients.

I BUS 560 Multinational Business Management (4) Managerial responses to problems of international business organizations and operations. Strategy formulation in an international context; design and control of multinational organization; adaptation of management systems and policies to different economic, sociocultural, and political environments. Prerequisite: B A 500 or course in international economics or trade or international finance, or permission of graduate office.

I BUS 561 Science, Technology, and Innovation Policies in East Asia (5) Anchoroguy Role of state and technological change in economic development. Analyzes state and corporate policies historically. Technology concepts, institutions, and policies in Japan, South Korea, Taiwan, and China. Examines sources of Asia's rise in world of technology and explores conditions for its successful continuation. Recommended: one JSIS course. Offered: jointly with JSIS A 581.

I BUS 562 Japanese Business and Technology (5) Anchoroguy Examination of Japan's postwar enterprise system in its historical context. Topics include corporate and finan-

cial structure, production and distribution, trade and investment policies, government-business relations, system of innovation, technological developments, prospects for the future. Offered: jointly with JSIS A 578.

IBUS 570 International Study Tour (2) Educational international study tour. Includes pre-tour and post-tour activities. Prerequisite: B A 502 and permission of Foster School of Business.

IBUS 572 Cross-Cultural Conversations on Contemporary Issues (1, max. 4) Creates opportunities for students from across the globe to share information and perspectives on contemporary issues important to international business. In weekly, facilitated, small-group conversations, students improve their ability to formulate and express ideas and opinions, and practice persuasion and facilitation skills. Credit/no-credit only.

IBUS 575 Business Studies Abroad (*, max. 24) Research and study of foreign business problems in the country or countries where the firms are located. Limited to students who have the approval of their major adviser and a faculty member who has agreed to direct their work in accordance with a definite program of studies. Credit/no-credit only.

IBUS 579 Seminar: Special Topics in International Business (2/4, max. 12) Application of international business principles to the analysis of a specific issue in trade or resource transfer, or to the business conditions in a particular country. Japan and other Pacific Rim countries are frequent topics. Prerequisite: B A 500 or permission of instructor.

IBUS 600 Independent Study or Research (*-)

Management

MGMT 200 Introduction to Law (5) I&S Legal institutions and processes; law as a system of social thought and behavior and a frame of order within which rival claims are resolved and compromised; legal reasoning; law as a process of protecting and facilitating voluntary arrangements in a business society. Offered: AWSp.

MGMT 275 Management Essentials (3) I&S McPherson Explores management and leadership through understanding individuals, teams, and organizations. Discusses relevant concepts and applications of strategic planning, problem solving, conflict management, negotiation, change management, and control systems. Also covers current issues regarding ethical behavior, social responsibility, and diversity. Not open for credit to students pursuing a business degree. Offered: W.

MGMT 300 Leadership and Organizational Behavior (4) Focuses on how managers become effective leaders. Examines basic principles of managing people, making use of theories that transcend the workplace, including the psychology of individual and group behavior. Emphasizes leadership, strategic thinking, team building, and performance. Offered: AWSpS.

MGMT 311 Managing Human Resources (4) The personnel/industrial relations function from a managerial perspective. Selection, compensation, performance appraisal, and training and development. Special emphasis on union-management relations and relevant behavior science research. Offered: A.

MGMT 312 Career Development Workshop (2) Develops career goals in business administration and guides students toward the academic training that achieves their goals. Emphasizes development of the personal skills necessary to market oneself in a competitive marketplace and present oneself to potential employers.

MGMT 320 Business, Government, and Society (4) Political, social, and legal environment of business. Critical managerial issues from historical, theoretical, ethical perspectives; their impact on organization. Corporate political power, boards of directors, capitalism, industrial policy, business ethics and social responsibility, alternative corporate roles in society. Offered: AWSpS.

MGMT 323 Business Ethics and Corporate Social Responsibility (4) Philosophical and pragmatic perspectives, including values and social/ethical premises in organizational decision making. Several issues covered in depth; investments abroad, hazardous products, bribery, industry practices, and others. Offered: Sp.

MGMT 401 Leadership, Critical Thinking, and Decision Making (4) The manager as leader and decision maker. Various leadership theories, styles, and behaviors. Decision-making models and techniques. Offered: jointly with ENTRE 401.

MGMT 402 Deal-Making and Negotiations (4) The art and science of negotiations with the goal of making students more effective negotiators in a variety of business situations, such as budget negotiations, buying and selling, contracts, and merger negotiations. Concept and skill development. Offered: AWSp.

MGMT 403 Motivating High Performance (4) Various strategies for influencing employee motivation and performance. Reward systems, goal-setting procedures, and various techniques to enlarge and enrich one's job. Effects of these formal and informal strategies on job attitudes. Offered: ASp.

MGMT 411 Recruiting and Hiring Talent (4) Affirmative action, recruitment, testing, interviewing, placement, promotion, and overall human resource planning. Prerequisite: MGMT 311. Offered: W.

MGMT 412 Performance Appraisal and Compensation (4) The various kinds of systems used by organizations to evaluate and reward employee performance. Job analysis, job evaluation, setting performance standards, giving appraisal feedback, designing incentive systems, administering a salary plan. Prerequisite: MGMT 311. Offered: Sp.

MGMT 430 Strategic Management (4) Develops strategic thinking skills for balancing opportunities and risks of business competition to generate superior value for stakeholders. Performs in-depth analyses of industries and competitors, predicts competitive behavior, and explores how firms develop and sustain competitive advantage over time. Prerequisite: FIN 350; MKTG 301; either HRMOB 300 or MGMT 300; recommended: OPMGT 301. Offered: AWSpS.

MGMT 440 Business Consulting (4) Integrates knowledge and tools from the undergraduate business core curriculum with a focus on consulting. Students learn theoretical frameworks and develop proficiencies in a wide range of skills. Students gain practical experiences working in teams and assisting local organizations to solving immediate business issues. Offered: Sp.

MGMT 445 Multicultural Marketing and Business Development (4) DIV Integrates tools from marketing, consulting, and multi-cultural business management to provide consulting services to small business in economically-distressed communities. Working in teams with assistance from industry mentors and alumni from the course, students gain practical experience in multi-cultural marketing, consulting, and managing a business. Prerequisite: MKTG 301. Offered: jointly with MKTG 445; W.

MGMT 490 Special Topics in Management (1-6, max. 6) Topics of current interest to faculty and students. Offered when allowed by faculty availability and sufficient student interest. Content announced in advance of scheduled offerings.

MGMT 495 Management Internship (1-4, max. 8) Internship with a private firm, nonprofit organization, or government agency, where work experience involves substantial application of management concepts learned in classroom. Prerequisite: MGMT 300. Credit/no-credit only. Offered: AWSpS.

MGMT 499 Undergraduate Research (1-6, max. 9) Independent research in selected areas of human resource management, organizational behavior, and business strategy under faculty supervision. Prerequisite: MGMT 300; MGMT 320.

MGMT 500 Management and Leadership (4) Behavioral aspects of management with emphasis on leadership, motivation, and decision making. May include communication, conflict management, group dynamics, and organizational change.

MGMT 502 Business Strategy (4) Policy decisions and strategic leadership from the general management point of view. Determination of corporate product-service objectives, development of a network of internal operating policies and methods to achieve objectives at a cost satisfactory to the consumer and to society. Prerequisite: all first-year required courses in MBA curriculum.

MGMT 504 Ethical Leadership (4) Examines the ethical aspects of conducting business. Topics include ethical decision-making, the ethical aspects of leadership and culture, stakeholder management, corporate social responsibility, sustainability, and corporate governance. Prerequisite: first-year MBA required courses. Offered: W.

MGMT 509 Global Strategy (2) Develops a broad overview of many of the issues that global managers face including government-MNE relations, global strategy, entry modes, country analysis, national culture, and the social responsibility of a global enterprise. Prerequisite: permission of School of Business Administration.

MGMT 510 Developing Leadership Skills ([0-2]-, max. 2) Assessment, instruction, and coaching to develop leadership abilities. Emphasizes team building and collaboration, written, oral, and interpersonal communication, and applied leadership activities.

MGMT 511 Leadership and Coaching Practicum (2, max. 4) Gives Leadership Fellows a venue to analyze and assess their coaching activities with first-year MBA student teams, receive feedback from the instructor and their fellow coaches, discuss readings on leadership, coaching, collaboration, and communication, and hear guest speakers on related topics. Credit/no-credit only.

MGMT 520 Designing a Corporate Strategy (4) Addresses the broad question: what business(es) should we compete in? Focuses on decisions related to an appropriate level of diversification and the means by which that diversification is implemented. Includes the following issues: mergers and acquisitions, strategic alliances, joint ventures, LBOs, and spin-offs.

MGMT 521 Strategic Management of Technology and Innovation (4) Examines how innovative firms often experience rapid and disruptive levels of growth and change and how without effective management of new technologies, the boom can quickly turn to bust. Investigates the micro-economic drivers of competition in technology industries, explores how technological change affects competition, and examines the implications for competitive strategy.

MGMT 522 Innovation Strategy (4) Explores how firms tap into external sources of innovation, focusing on user communities, universities, and entrepreneurial ventures. Demonstrates how open, collaborative, community-based models of innovation create successful business options. Offered: jointly with ENTRE 522.

MGMT 523 Business Ethics in a High Technology Environment (4) Examines business ethics from philosophical, theoretical, and pragmatic perspectives. Explores ethical theory and values in business. Attempts to place ethical concepts into a framework useful to practicing managers. Places emphasis on the ethical implications of rapidly changing hi-tech environments such as e-commerce and biotech.

MGMT 526 Competing in the Global Economy (4) Dewenter, Steensma Examines the global environment for business and the challenges facing managers in this environment. Explores the implications of the common phrase "think globally - act locally." Offered: WSp.

MGMT 530 Entrepreneurship (4) Entrepreneurship, both in the form of (1) establishment of new independent businesses owned largely by those who manage them and (2)

initiation of new enterprises having exceptional autonomy within larger organizations that finance and own them. Basic knowledge in accounting, marketing, and finance is assumed.

MGMT 531 Managing Intellectual Property Rights (4) Comprehensive analysis of the issues pertinent to the various forms of intellectual property, including how to recognize, develop, maintain, and capitalize on them.

MGMT 540 Managing Human Capital (4) Covers principles and techniques for recruiting, selecting, and developing employees, appraising their performance, and rewarding their contributions. Explores key topics primarily through case studies, readings, class discussion, and fieldwork. Reviews legal and regulatory issues that surround these methods. Intended for both general managers and human resource professionals.

MGMT 544 Managing Effectively Across Cultures (4) *Chen* Examines how, with increasing globalization of business, employees at all levels of corporations often work and interact with people from different nations, cultures, and how they need an understanding of cross-cultural management and challenges of international settings. Focuses on international organizational behavior and international human resource issues, practices. Offered: W.

MGMT 545 Leading and Managing High-Performance Organizations (4) Focuses on the nature and function of effective leadership in high-performance systems. Includes visionary and transformational leadership, decision-making and empowerment, power and influence in organizations desiring flexibility and innovation, and leading organizational change. Places emphasis on leadership of emerging forms of organization such as learning organizations, virtual organizations, and networks.

MGMT 546 High Involvement Employees (4) Focuses on two domains: (1) how managers can lead and motivate their people; and (2) how actual organizations, particularly high technology and entrepreneurial firms, employ these strategies. Specific topics include commitment, involvement, enthusiasm, effort, participation, citizenship, and performance. Student teams investigate how local companies utilize these ideas.

MGMT 547 Successful Negotiations (2) Focuses on a broad array of conflict resolution skills needed for effective management in a constantly changing business environment. Examines methods of conflict resolution - bargaining, distributive and integrative negotiation, mediation, and arbitration. Applies these tools to managerial challenges such as employment contracts, buyer-seller agreements, and mediated and arbitrated agreements.

MGMT 548 Dealmaking in High Velocity Ventures (2) Focuses on negotiations in ventures that lack conventional customers, suppliers, employees, joint-venture partners, strategic allies, and money. Analyzes negotiations with early potential customers and essential suppliers, sources of funding (e.g., "angels" and venture capitalists), critical partners and/or strategic allies (including established firms), and key employees. Prerequisite: MGMT 547.

MGMT 549 Dealmaking in the Global Arena (2) For students who expect to engage in significant international business negotiations. Includes deal-structuring skills needed in a range of cross-border transactions and relationships. Individual segments develop broad analytical themes, cross-cultural dimensions, and distinctive national approaches to corporate governance and their impact on negotiating strategy. Prerequisite: MGMT 547.

MGMT 579 Special Topics in Management (2/4, max. 12) In-depth study and research on topics of special interest to faculty members and students in the fields of human resources management, organizational behavior, and strategic management. Offered on an ad hoc basis. Content announced before scheduled offering.

MGMT 580 Psychological Foundations of Organizational Behavior (4) Focuses on attributes the individual brings to

the organization. Covers important performance-related processes such as learning, motivation, and decision-making as well as an understanding of personal attitudes and personality traits.

MGMT 581 Social Processes in Organizations (4) Focuses on ways in which the individual and the organization get things done through working with others. Includes leadership, social influence, and the use and abuse of power, with attention given to positive organizational activities such as citizenship behavior and extra role activities.

MGMT 582 Contemporary Organizational Behavior Research (4) Facilitates understanding of empirical foundations of theory development and testing in contemporary organizational behavior research. Focuses on assessing ways in which the empirical tradition has evolved in organizational behavior with special attention paid to emerging research areas and research methodologies.

MGMT 583 Special Topics in Organizational Behavior Research I (4) Focuses on the psychological, social psychological, and sociological factors that shape organizations and their members. Covers concepts such as cognition, emotions, identity, communication, group dynamics, team development, organizational culture, global culture, behavioral ethics, etc.

MGMT 584 Special Topics in Organizational Behavior Research II (4) Focuses on the psychological, social psychological, and sociological factors that shape organizations and their members. Covers concepts such as cognition, emotions, identity, communication, group dynamics, team development, organizational culture, global culture, behavioral ethics, etc. in more depth.

MGMT 590 Economic Foundations of Strategic Management (4) Reviews the economic theories that support strategies pursued by firms and explores the links between market processes, firm strategy, and firm performance. Topics include agency theory, transaction cost economics, resource dependence, population ecology, and neo-Austrian economics.

MGMT 591 Sociological Foundations of Strategic Management (4) Explores the sociology of organizations from multiple perspectives while introducing fundamental sociological questions and preparing students for conducting research in organizations. Emphasis on structural contingencies, institutions, resource dependence, population ecology, negotiated order and culture, organizational learning and decision making, organizational power and politics, networks, and inter-organizational relations.

MGMT 592 Contemporary Strategic Management Research (4) Facilitates understanding of empirical foundations of theory development and testing in contemporary strategic management research. Focuses on evaluation of ways in which the empirical tradition has evolved in the strategic management area. Attention to evaluating research methodologies used in the field.

MGMT 593 Special Topics in Strategic Management I (4)

MGMT 594 Special Topics in Strategic Management II (4) Focuses on the social and political factors that help shape corporate strategy using stakeholder management as an integrating concept. Topics include corporate governance, corporate political activity, governmental regulation, comparative political economy, and normative aspects of strategic management, including ethics and corporate social responsibility.

MGMT 599 Doctoral Seminar in Management (1, max. 12) Advanced topics in the fields of human resources management and organizational behavior. May be used by visiting faculty members to present topics of interest to students.

MGMT 600 Independent Study or Research (*-)

Marketing

MKTG 275 Marketing Essentials (3) *I&S Beard* Explores marketing principles and their usefulness in diverse busi-

ness and organizational settings. Discusses controllable and uncontrollable factors in making marketing decisions, and the implications of product life cycle for decision-making. Develops working knowledge of marketing strategy. Not open for credit to students pursuing a Business degree. Offered: A.

MKTG 301 Marketing Concepts (4) Tools, factors, and concepts used by management in planning, establishing policies, and solving marketing problems. Marketing concepts, consumer demand and behavior, location analysis, marketing, functions, institutions, channels, prices, and public policy. Prerequisite: ECON 200. Offered: AWSpS.

MKTG 335 Principles of Selling (4) Focuses on selling from salesperson's perspective, role of persuasion in professional selling and other organizational settings. In addition to coursework in such areas as consumer behavior, negotiation, and communication, students practice sales skills in role plays, presentations, and other exercises requiring practical application of selling theory. Prerequisite: MKTG 301. Offered: AWSpS.

MKTG 340 Advertising (4) Management of the advertising function and its integration with other forms of promotion. Planning the program, determining the most effective approach, evaluation of media and budget, advertising research, advertising institutions, economic and social aspects. Prerequisite: MKTG 301; may not be repeated. Offered: AWSp.

MKTG 370 Retailing (4) Profit planning and business control; buying, stock control, pricing, promotion; store location, layout, organization, policies, systems; coordination of store activities. Prerequisite: MKTG 301; may not be repeated. Offered: WSp.

MKTG 410 Product Management (4) Covers the critical decisions and analyses associated with the management of successful products. A comprehensive simulation exercise provides an important context for application of product management strategies. Prerequisite: MKTG 301; may not be repeated. Offered: AW.

MKTG 411 Business to Business Marketing (4) *Caldieraro* Covers the integrated marketing approach that enables a supplier firm to understand, create, and deliver value to other businesses, governments, and institutional customers. Case-based and project-oriented approach to studying marketing management in the business-to-business market that brings the fundamental concepts to life with practical example. Prerequisite: MKTG 301. Offered: A.

MKTG 412 Consumer Marketing and Brand Management (4) *Forehand* Focuses on how consumers develop brand attitudes and how these attitudes guide behaviors. Devotes specific attention to the psychological processes that underlie brand attitude formation and the strategies necessary to build enduring brands. Case discussion and projects and real brands are heavily featured. Prerequisite: MKTG 301. Offered: Sp.

MKTG 415 Foundations of Pricing Strategy (4) *Shulman* Examines theoretical and applied perspectives in pricing strategy. Explores how firms optimally capture value and profit in the revenues that companies earn. Provides a rigorous foundation in making better pricing decisions. Prerequisite: MKTG 301. Offered: W.

MKTG 430 Sales Force Management (4) Focuses on the role of the sales manager within the organization. Includes distribution planning, sales organization, management of the sales force, methods of sales, cost and financial analysis, and performance analysis. Prerequisite: MKTG 301; may not be repeated. Offered: AWSp.

MKTG 445 Multicultural Marketing and Business Development (4) *DIV* Integrates tools from marketing, consulting, and multi-cultural business management to provide consulting services to small business in economically-distressed communities. Working in teams with assistance from industry mentors and alumni from the course, students gain practical experience in multi-cultural marketing,

consulting, and managing a business. Prerequisite: MKTG 301. Offered: jointly with MGMT 445; W.

MKTG 450 Consumer Behavior (4) Theory and practice pertinent to marketing decisions; utilization of theories from behavioral sciences in marketing research; theories of fashion, characteristics of goods, shopping behavior, product differentiation, market segmentation, and opinion leadership; application of concepts to management of advertising, personal selling, pricing, and channels of distribution. Prerequisite: MKTG 301; may not be repeated. Offered: AWSp.

MKTG 455 Entrepreneurial Marketing (4) Examines the skills and tools entrepreneurs need for bootstrap marketing in their start-up firms. Students learn to identify target market segments, position their products, estimate demand, set prices, gain access to channels, and manage the issues of rapid growth. Prerequisite: MKTG 301; may not be repeated. Offered: jointly with ENTRE 455; AWSp.

MKTG 460 Marketing Research (4) Examines marketing research process; steps of research design, questionnaire construction, sampling, data analysis, evaluation/presentation of findings, online research, and web surveys. Class project provides practical application. Prerequisite: MKTG 301; either ECON 311, QMETH 201, STAT 220, CS&SS 221/SOC 221/STAT 221, STAT 301, STAT 311, or MATH 390/STAT 390; may not be repeated. Offered: AWSp.

MKTG 470 International Marketing (4) Focuses on assessing international marketing opportunities, formulating and implementing international marketing strategies. Examines how to use marketing analyses and deductive decision modeling in assessing international marketing opportunities. Uses marketing tools and concepts in the planning, preparation, and presentation and discussion of cases and class project. Prerequisite: MKTG 301; may not be repeated. Offered: W.

MKTG 485 Strategic Market Management (4) Strategically analyzes important marketing issues by combining basic models of marketing with powerful spreadsheet analysis. Case discussions and projects provide valuable application exercises. Prerequisite: MKTG 301. Offered: Sp.

MKTG 490 Special Topics and Issues in Marketing (1-6, max. 12) Contemporary topics and issues in marketing: marketing in nonprofit organizations, marketing of services, marketing in the public sector, and marketing in an economy of scarcity. Ordinarily only one topic area is addressed in any one quarter. Course content reflects contemporary developments and the current interests of instructors and students. Prerequisite: MKTG 301.

MKTG 495 Marketing Internship (1-4, max. 8) An internship with a company, not for profit organization, or government agency in a marketing capacity. Prerequisite: MKTG 301. Credit/no-credit only. Offered: AWSpS.

MKTG 496 Marketing Practicum (4) Rhodes Offers opportunities to apply principles, concepts, and skills learned previously to actual business situations. Participation in class part-time and in an internship with a business employer part-time. Prerequisite: MKTG 301. Offered: Sp.

MKTG 499 Undergraduate Research (1-6, max. 9) Prerequisite: MKTG 301.

MKTG 501 Marketing Management (4) Analysis and management of customer satisfaction in goods and services markets by profit and nonprofit organizations. Buyer behavior, market segmentation and product positioning, product policy, pricing, distribution, sales force and advertising management, and market research in the contexts of strategy development, decision making, implementation, and control.

MKTG 505 Marketing Strategy (4) Focuses on the role of analytical marketing tools and competitive dynamics in strategy formation. Accentuates the integrative nature of marketing strategy through development of a strategic marketing plan and use of simulation software. Prerequisite: MBA core marketing.

MKTG 510 New Product Development (4) Integrates business, design, and engineering functions in the presentation and application of structures, tools, and methodologies important for successful new product development. New product development projects are accomplished with a cross-functional team emphasis. Prerequisite: MBA core marketing.

MKTG 511 Business-to-Business Marketing (4) Integrated approach to product marketing management in the business-to-business marketplace. Analysis of core competencies, competitive environment, positioning and segmentation strategies, cost structure, and customer satisfaction. Case-based and project-oriented approach to studying marketing management in the business-to-business market. Prerequisite: MBA core marketing or permission of instructor.

MKTG 512 Consumer Marketing and Brand Management (4) Analysis of marketing strategies for consumer products and services. Focuses on consumer satisfaction and brand management including product line and brand developments, pricing strategies, channel and retail relationships, and marketing communication strategies for consumer goods and services. Prerequisite: MBA core marketing.

MKTG 515 Pricing Strategies and Tactics (4) *Shulman* Examines theoretical and applied perspectives in pricing strategy and tactics. Explores how firms optimally capture value and profit in the revenues they earn. Provides students with a rigorous foundations from which to make better pricing decisions at the managerial level. Prerequisite: MKTG 501.

MKTG 520 Marketing Channels (4) Channels of distribution decisions for goods and services in profit and nonprofit organizations. Considers methods of optimizing the number, quality of institutions and activities employed in dealing with exchange, and space and time aspects of channel management. Relates management of marketing channels to marketing mix, organizational objectives. Prerequisite: MBA core marketing.

MKTG 530 Managing the Sales System (4) Examines the revenue generation function of a firm from a system-wide perspective. Topics include strategic and tactical considerations related to customer acquisition and retention, end-to-end sales and support operations, strategic partnerships, and continuous performance monitoring. Emphasis on case studies and team projects. Prerequisite: MBA core marketing.

MKTG 540 Advertising and Promotion Management (4) Management of advertising and promotional activities and their integration with other elements of the marketing mix. Topics include: understanding the communication process, analyzing markets, working with suppliers, establishing objectives, determining budgets, selecting media, measuring and evaluating effectiveness, using publicity and promotions. Legal, social, and economic consequences are considered. Prerequisite: MBA core marketing.

MKTG 550 Managing Customer Relationships Through Direct Marketing (4) Management of customer relationships through the lens of direct marketing. Topics include direct marketing creative activity, strategy, and execution; media and segmentation; direct marketing budgeting and financials; targeting, database, and predictive modeling; catalogue marketing; relationship marketing; business-to-business complex sales; privacy. Prerequisite: MBA core marketing.

MKTG 555 Entrepreneurial Marketing (4) Examines the skills and tools entrepreneurs need for bootstrap or guerrilla early-stage companies. Covers how to target market segments, position products, estimate demand, set prices, gain access to channels, and manage issues of rapid growth. Prerequisite: B A 501, MKTG 501 or equivalent. Offered: jointly with ENTRE 555.

MKTG 560 Research for Marketing Decisions (4) Methods and applications of marketing research to solve marketing

problems. Deals with: problem definition, research design, questionnaire construction, sampling, and data analysis using SPSS. Introduces promising new developments in online research, web surveys, and data analysis. Class research project provides practical application. Prerequisite: MBA core marketing.

MKTG 565 Data Driven Marketing (4) Provides tools and methods targeting data available to marketers deciding on issues such as pricing, online advertising, or other data-driven marketing strategies. Explores how to leverage data correctly to achieve goals of firms. Focuses on secondary data originating from consumer behavior. Prerequisite: B A 500 or MKTG 501.

MKTG 570 International Marketing (4) Analysis of the marketing strategies and tactics of multinational corporations. Choice of entry strategies for foreign markets, analyzing international competition at home and abroad, and developing global marketing strategies. Prerequisite: MBA core marketing; recommended: one I BUS course.

MKTG 575 Marketing High-Technology Products (4) Management of the marketing requirements of high-technology products. Examines how markets for high-tech products involve shortened product life cycles, demand for continual product updates, perceived risk of adoption by customers, requirements for intensive customer service and relationships, and growing reliance on business partners. Prerequisite: MBA core marketing.

MKTG 579 Special Topics in Marketing (2/4, max. 12) Marketing topics of current concern to faculty and students. Offered only when allowed by faculty availability and sufficient student interest. Seminar content to be announced in advance of scheduled offerings. Prerequisite: MBA core marketing.

MKTG 581 Doctoral Seminar in Consumer Behavior (4) Survey of the field of consumer behavior introduces fundamental topics in consumer behavior including cognitive processes, emotion, and consumer satisfaction. Provides exposure to a variety of research methods including experiments, surveys, and phenomenological research.

MKTG 582 Doctoral Seminar in Multivariate Analysis for Marketing Research (4) Survey of methods useful for empirical evaluation of multivariate marketing phenomena and relationships. Includes an overview of measurement theory and practice; multidimensional scaling; conjoint analysis; cluster, factor, and discriminant analyses; multivariate analysis of variance; structural equation modeling; and other methods commonly encountered in academic marketing research.

MKTG 583 Doctoral Seminar in Marketing Strategy (4) Study of factors influencing business performance and role of marketing in achieving competitive advantage. Analysis of prevailing, and emerging, theories underlying strategic thinking and competitive process. Examination of empirical research regarding measurement, level, and persistence of business success and implications of findings for theory and strategy development. Prerequisite: BA RM 580.

MKTG 584 Doctoral Seminar in Research Issues in Marketing (4) Examination of research problems and issues in marketing. Specific topics vary depending on the interest of faculty and students.

MKTG 591 Doctoral Seminar in Consumer Behavior Research Topics (4) Investigates research topics of current interest in consumer behavior. Considers the processes used by consumers to acquire and evaluate marketing information including advertising, publicity, word of mouth, packaging, product description, price, and retail outlets, and examines ways the principles in social perception influence consumers' individual responses to marketing-related activities.

MKTG 593 Doctoral Seminar in Marketing Models (4) Focuses on modeling research efforts in various areas of marketing. Discussion of mathematical and statistical modeling approaches which contribute to scientific devel-

opment in the marketing area and ways in which modeling is used to characterize and summarize the nature of general marketing situations in complex environments.

MKTG 599 Doctoral Seminar in Marketing (1, max. 12) Study and research in advanced topics of marketing. The seminar is generally concerned with unpublished areas of research and conducted by visiting professors and departmental faculty. Prerequisite: doctoral student status.

MKTG 600 Independent Study or Research (*)

Operations Management

OPMGT 301 Principles of Operations Management (4) Examines problems encountered in planning, operating, and controlling production of goods and services. Topics include: waiting-line management, quality assurance, production systems, project management, and inventory management. Computer and quantitative models used in formulating managerial problems. Prerequisite: ACCTG 225; ECON 200; either MATH 112, MATH 124, MATH125, MATH 134, or MATH 145; either ECON 311, IND E 315, QMETH 201, Q SCI 381, PSYCH 315, PSYCH 318, STAT 220, STAT 301, STAT 221, STAT 311, or STAT 390. Offered: AWSpS.

OPMGT 402 Introduction to Logistics (4) Logistics studies of the efficient delivery of goods and services. A total-cost approach recognizes this involves not only the obvious vehicle-routing issues but also shipment size and mix, warehouse location, product design, and customer services. Includes study of real companies' logistics problems. Prerequisite: OPMGT 301.

OPMGT 443 Inventory and Supply Chain Management (4) Examines modeling and analysis of global supply chains in order to improve service and decrease cost. Covers tools and methods for managing inventory of items with different demand and supply characteristics. Topics include forecasting, Just-in-Time production, deterministic and stochastic inventory models, Materials Requirements Planning; and supplier management. Prerequisite: OPMGT 301. Offered: AW.

OPMGT 450 Introduction to Project Management (4) Focuses on management principles, methods, and tools to effectively plan and implement complex projects. Includes project selection, preparation, planning, and monitoring. Covers classical techniques and new methodologies; spreadsheet-based tools; and probabilistic project simulation from strategic, tactical, and operational perspectives. Prerequisite: OPMGT 301. Offered: ASP.

OPMGT 490 Special Topics in Operations Management (1-6, max. 20) Operations management topics of current concern to faculty and students. Potential topics: logistics management, project scheduling, manufacturing strategy, site and location analysis, management of service operations. Prerequisite: OPMGT 301.

OPMGT 495 Operations Management Internship (1-4, max. 8) Internship with a private firm, nonprofit organization, or government agency, where work experience involves substantial application of analysis techniques and management concepts learned in classroom. Prerequisite: OPMGT 301. Credit/no-credit only. Offered: AWSpS.

OPMGT 499 Undergraduate Research (1-6, max. 9)

OPMGT 502 Introduction to Operations Management (3) Managerial decision making in operations problems, including application of quantitative analysis and use of computers. Production of goods or services in any type of organization. Inventory management, scheduling, facility location, management of service systems, and quality assurance. Prerequisite: QMETH 500.

OPMGT 550 Project Management (4) Management of complex projects, and tools and techniques (e.g., CPM and PERT) developed to aid the planning, scheduling, and control of projects. Includes work breakdown structures, precedence networks, Gantt charts, resource leveling and allocation, and the use of microcomputer programs. Prerequisite: B A 502 or OPMGT 502 or equivalent.

OPMGT 570 Operations Strategy (4) Strategic management of operations and manufacturing in domestic and international companies. Developing and implementing a coherent strategy based on continuous improvement of quality, productivity, products, processes, and customer services. Facilities, capacity, process/work-force planning, organization, people, systems integration, coordination between operations, marketing, engineering, and R&D. Prerequisite: B A 502 or OPMGT 502 or equivalent.

OPMGT 579 Special Topics in Operations Management (2/4, max. 12) Major topics in operations management and systems analysis. Emphasis on research and, where appropriate, application of quantitative analysis and computers. Topics vary, including workforce planning, project management, research and development management, quality assurance, technology planning and forecasting, systems analysis of complex organizations, and urban systems analysis. Prerequisite: B A 502, OPMGT 502, or equivalent.

OPMGT 581 Advanced Research Topics in Operations Management I (4) *Wagner* Overview of research problems and techniques in operations management. Focuses on emerging and ongoing research relating to current issues in the field, including readings and discussions of literature dealing with subjects of special interest to participants. Prerequisite: doctoral student or permission of instructor. Offered: A.

OPMGT 582 Advanced Research Topics in Operations Management II (4) *Moinzadeh* Overview of research problems and techniques in operations management. Focuses on emerging and ongoing research (beyond those discussed in OPMGT 581) relating to current issues in the field, including readings and discussions of literature dealing with subjects of special interest to participants. Prerequisite: doctoral student or permission of instructor. Offered: W.

OPMGT 583 Advanced Research Topics in Operations Management III (4) *Mamani* Examine interdisciplinary research in operations and supply chain management. Focuses on one specific application area of interest each quarter including: healthcare, sustainability, marketing, game theory, economics, etc. Prerequisite: doctoral student or permission of instructor. Offered: Sp.

OPMGT 584 Fundamentals of Operations Management Research (4) *Klasterin* Surveys basic areas that form the foundations for much of the research in operations management today. Topic areas include facility location, scheduling, project management, and supply chain management. Prerequisite: QMETH 580. Offered: W.

OPMGT 587 Advanced Topics in Inventory Management (4) Survey of literature in inventory/production control with emphasis on current research. Topics include single-echelon deterministic and probabilistic models and multi-echelon stochastic models. Prerequisite: QMETH 592 and course in probability theory and in stochastic processes.

OPMGT 599 Doctoral Seminar in Operations Management (1, max. 12) Study and research in advanced topics of operations management. Concerned with unpublished areas of research and conducted by visiting professors and departmental faculty. Prerequisite: doctoral student status.

OPMGT 600 Independent Study or Research (*)

Quantitative Methods

QMETH 201 Introduction to Statistical Methods (4) NW, QSR Survey of principles of data analysis and their applications for management problems. Elementary techniques of classification, summarization, and visual display of data. Applications of probability models for inference and decision making are illustrated through examples. Prerequisite: either MATH 112, MATH 124, MATH 125, MATH 134, or MATH 145. Offered: AWSpS.

QMETH 450 Spreadsheet Models for Managerial Decision Making (4) Formulation and solution of business problems using operations research techniques in a spreadsheet

environment. Techniques of linear and integer programming, decision analysis, network optimization, queuing, and simulation. Applications from marketing, finance, and operations. Prerequisite: I S 300. Offered: ASP.

QMETH 490 Special Problems in Quantitative Analysis (1-6, max. 20) Specialized quantitative techniques useful for solving business problems. Topics from operation research, statistics, computer methods. Emphasis on application. Prerequisite: either ECON 311, QMETH 201, PSYCH 213, PSYCH 218, STAT 220, STAT 301, STAT 311, or STAT 390.

QMETH 499 Undergraduate Research (1-6, max. 9) Research in selected problems in business statistics, operations research, decision theory, and computer applications.

QMETH 500 Statistical Data Analysis for Management (4) Statistical models, techniques, and tools for aiding management decisions. Use of spreadsheets in basic business problems. Probability distributions, random sampling and standard errors, hypothesis testing, multiple regression, ANOVA, chi-square tests. Prerequisite: preparation in elementary calculus and successful completion of University-administered proficiency exam.

QMETH 501 Decision Support Models (2) Introduction to computer-based modeling techniques for management decision making. Linear programming, decision analysis, and simulation. Formulation and interpretation. Prerequisite: QMETH 500, B A 500, or equivalent.

QMETH 503 Practical Methods for Data Analysis (4) Basic exploratory data analysis with business examples. Data summaries, multivariate data, time series, multiway tables. Techniques include graphical display, transformation, outlier identification, cluster analysis, smoothing, regression, robustness. Departmental credit allowed for only one of 403 and 503. Prerequisite: B A 500 or QMETH 500 or equivalent or permission of instructor. Offered: jointly with STAT 503.

QMETH 520 Managerial Applications of Regression Models (4) Data exploration and inference using regression models for business forecasting and management. Models include simple, multiple, logistic, and nonlinear regression, use of dummy variables, transformations, variable selection, and diagnostics. Prerequisite: QMETH 500 or B A 500.

QMETH 528 Survey Sampling Applications (4) Introduction to design and implementation of sample surveys with emphasis on business applications. Simple random, stratified, cluster, multistage sample methods. Probability sampling, optimal allocation of sampling units. Mail, telephone, interview methods. Estimation methods, Questionnaire design. Non-response. Prerequisite: QMETH 500 or B A 500 or equivalent or permission of instructor.

QMETH 530 Forecasting Models in Business (4) Introduction to time series analysis and forecasting. Topics include seasonal adjustment, decomposition, exponential smoothing, moving average, and autoregression as well as model identification, estimation, diagnostics, and adaptive forecasting illustrations using real data. Prerequisite: QMETH 500 or B A 500.

QMETH 551 Modeling with Spreadsheets (4) Advanced formulation and modeling of business problems in a spreadsheet environment. Techniques of linear, integer, and nonlinear programming, multi-objective goal programming, and simulation. Applications from finance, marketing, and operations. Prerequisite: B A 502 or QMETH 501 or equivalent.

QMETH 579 Special Topics in Quantitative Methods (2-4, max. 12) Presentation of topics of current concern to students and faculty in operations research and applied business statistics. Potential topics include applications and extensions of mathematical programming, stochastic processes, discrete programming, networks models, and the application of statistical techniques.

QMETH 580 Mathematical Programming (4) Advanced survey of mathematical programming with applications

to business problems. Includes linear, integer, stochastic, nonlinear, and dynamic programming and network optimization. Treatment includes formulation, optimality conditions, duality theory, solution algorithms. Applications to production, scheduling, marketing, finance, and equipment replacement. Prerequisite: B A 501 or equivalent and doctoral student or permission of instructor.

QMETH 592 Stochastic Models: Queuing and Simulation

(4) Application of stochastic processes to business problems. Focuses on development and application of queuing theory and discrete event simulation. Prerequisite: stochastic processes, knowledge of high level programming language, and doctoral student or permission of instructor.

QMETH 599 Doctoral Seminar in Operations Research

(1, max. 12) Study and research in advanced topics of operations research. Concerned with unpublished areas of research and conducted by visiting professors and departmental faculty. Prerequisite: doctoral student status. Credit/no-credit only.

QMETH 600 Independent Study or Research (*-)

School of Dentistry

Dean

Joel Berg

D322 Health Sciences

Established in 1945, the University of Washington School of Dentistry offers courses leading to a Doctor of Dental Surgery (DDS) degree, and advanced education leading to a Master of Science in Dentistry degree and/or a certificate of proficiency in endodontics, oral medicine, orthodontics, pediatric dentistry, periodontics, and prosthodontics. Residency training is available in oral and maxillofacial surgery and general practice. The Department of Oral Biology offers a Master of Science (MS), an MS non-thesis degree for dental hygiene educators, and a doctoral degree (PhD). Postdoctoral study is available in various disciplines.

Opportunities to earn other degrees concurrently (MS or PhD in the School of Dentistry's Department of Oral Biology and other schools) may be arranged on an individual basis.

These educational programs are enriched by the School's strong commitment to Research and the presence of a Regional Clinical Dental Research Center, the Northwest Center to Reduce Oral Health Disparities, Northwest PRECEDENT, an affiliation with the Institute of Translational Health Sciences (ITHS,) and a fellowship Research training program for predoctoral and postdoctoral students. The mission of the Regional Clinical Dental Research Center is to foster clinically relevant Research that advances dentistry's knowledge base, improves patient care, and promotes oral health. The Disparities Center performs Research aimed at reducing oral health disparities in the Pacific Northwest. Northwest PRECEDENT is the Practice-based Research Collaborative in Evidence-based DENTistry. Founded in 2005, this network of dental practices has established the infrastructure to perform a wide variety of oral health Research studies across a five-state region covering Idaho, Montana, Oregon, Utah, and Washington. The mission of the ITHS is to create, enable, and sustain innovative translational Research and Research collaborations across disciplines and professions which accelerates the development of concepts and tangible products that improve human health. State-of-the-art clinical Research facilities are available for faculty and student use.

School of Dentistry Mission Statement: "The School of Dentistry shares the University's overall mission to generate, disseminate, and preserve knowledge and serve the community. The School is an integral part of the Warren G. Magnuson Health Sciences Center and is an oral health-care center of excellence serving the people of the state of Washington and the Pacific Northwest. The primary mission, through educational, Research, and service programs, is to prepare students to be competent oral health-care professionals. The School's Research programs contribute to the fundamental understanding of biologic processes and to the behavioral, biomedical, and clinical aspects of oral health. The service mission is to improve the health and well-being of the people of the community and the region through outreach programs that are especially attentive to minority and underserved populations. The School values diversity in its students, staff, faculty, and patient populations. It seeks to foster an environment of mutual respect where objectivity, imaginative inquiry, and the free exchange of ideas can flourish to facilitate personal development, professionalism, and a strong sense of self-worth." (August 2002)

The following departments participate in the curriculum for the School's programs:

- Dental Public Health Sciences is concerned with the social, legal, political, economic, and psychological aspects of dental healthcare delivery as well as the epide-

miology of oral diseases and the application of biostatistical methods in studying them.

- Endodontics offers training in the diagnosis and treatment of diseases and injuries of the tooth pulp and periradicular tissues.
- Oral and Maxillofacial Surgery trains students in the procedures used for all types of operations in the oral cavity and all phases of dental pain control.
- Oral Biology encompasses the study of basic biological mechanisms in normal and diseased oral tissues and structures.
- Oral Medicine provides training in diagnostic techniques and nonsurgical treatments of oral disease.
- Orthodontics provides training in the prevention and correction of malocclusion of the teeth.
- Pediatric Dentistry provides students with a broad understanding of prevention, diagnosis, and treatment of most dental needs from infancy through adolescence with emphasis on the psychological and educational requirements of the patient and parent.
- Periodontics offers training relative to the periodontium and dental implants, with emphasis placed on diagnosis, prevention, treatment, and maintenance.
- Restorative Dentistry offers training in the restoration or replacement of tooth structure and study of the form and function of the masticatory structures, and fabrication and maintenance of removable, complete, immediate, and partial dentures and dental implants.

UNDERGRADUATE PROGRAM

The dental hygiene program is not accepting new applicants. Please contact the program for further information.

Adviser

D583 Health Sciences, Box 357475

(206) 543-5820

dhyg@uw.edu

GRADUATE PROGRAMS

Through their respective departments, the graduate faculty members of the School offer programs leading to the degrees of Master of Science in Dentistry, Master of Science, and Doctor of Philosophy, as well as postgraduate certificate programs.

Master of Science in Dentistry/ Postgraduate Certificates

Fields of study for the MSD programs include endodontics, oral pathology, oral medicine and orofacial pain, orthodontics, pediatric dentistry, periodontics, and prosthodontics. Although students may enroll in a graduate certificate program only, they may elect to pursue an MSD. Programs are planned to prepare students to think independently, to evaluate their own services and the literature of the programs, and to develop clinical skills to a level to permit successful clinical practice, teaching, or Research in their chosen specialty. Emphasis is placed on the basic principles of diagnosis and treatment. The purpose of the programs is not only to train students in their respective specialties but also to encourage preparation for academic careers or for Research. Research may be undertaken in basic or applied science. Opportunities for collaborative Research are available with the cooperation of other colleges, schools, or departments of the University.

Postgraduate certificate programs are not administered by the Graduate School, and no thesis is required. The course content may vary somewhat from the MSD program, although the same academic standards are applied in both

programs. Tuition and fees are assessed at the graduate level for both programs.

Master of Science in Dentistry

Admission Requirements

- Either a baccalaureate or a professional degree from a dental or medical school.
- Completed application and application fee of \$65
- Three letters of recommendation
- 200-300 word statement of educational and professional objectives which includes a general area of Research interest and academic goals. Optional: a personal statement that addresses the relationship between personal background and aspirations
- A brief biographical sketch in a resume/CV format
- Official transcripts, sent directly to the department
- GRE General Test scores
- TOEFL:** Required for international students. The minimum TOEFL score required is 237 computer, 580 paper, iBT 70 (based only on listening, reading, and writing sections).

Degree Requirements

50 credits, to include:

- Required Courses (Approximately 35 credits from this list):** ORALB 564, ORALB 565, ORALB 566, ORALB 569, PERIO 575, ORALB 570, ORALB 575, ORALB 579; either ORALB 591, ORALB 592, or DPHS 568; for foreign-trained dentists and non-dentists: ORALB 572, PATH 544
- Recommended Electives (Approximately 15 credits from this list):** DPHS 569, MEBI 520, ORALB 562, ORALB 574, PATH 501, PATH 552
- Research:** Fulfilled by either a report on experimentation carried out by the student in one of the laboratories, or a case report with review of the literature. Students interested in a more Research-intensive experience should consider enrolling in the MS in Oral Biology (thesis) program.
- Teaching:** Students are encouraged to take elective courses offered through the Department of Medical Education and Graduate School.
- Note:** At present, this program is not certified by the American Board of Oral Pathology.

Master of Science in Dentistry, Endodontics

Admission Requirements

- Professional degree from a dental school
- Completed application and application fee of \$65
- Three letters of recommendation
- A personal statement that addresses the relationship between the student's personal background and aspirations
- Brief biographical sketch in a resume/CV format
- Official transcripts, sent directly to the Department of Endodontics (international applicants must also send official transcripts to the Graduate School)
- GRE General Test, required only from applicants who graduated from a non-ADA-accredited dental school
- TOEFL:** Required for international students. The minimum TOEFL score required is 237 computer, 580 paper, iBT 70 (based only on listening, reading, and writing sections).

Degree Requirements

Minimum 148 credits, to include:

1. Students who have adequate backgrounds in required courses may, on presentation of appropriate documentation, be excused from required courses at the discretion of the program director.
2. **Required Core Courses:** ENDO 561, ENDO 580 through ENDO 587, ENDO 590, ENDO 593, ENDO 594, ENDO 600, ENDO 658, ENDO 660, DENT 565, DENT 568, DPHS 568, DPHS 569, ORALB 569, ORALB 574, ORALB 579, ORALB 591, ORALB 592, ORALM 580, ORTHO 580, PERIO 567, PERIO 582, PERIO 585, PERIO 586
3. **Non-thesis Research:** A non-thesis research study is required. During the first year, each student is encouraged to gain familiarity with Research in progress and to help identify an area of special interest. Then, a preceptor and Research advisory committee is appointed and the student begins Research work. The master's defense is concerned with the Research subject matter and is conducted as an open seminar followed by examination by the advisory committee.
4. **Teaching:** Students audit predoctoral lecture courses in endodontics, assist with teaching in the predoctoral endodontics laboratory course, and supervise predoctoral dental students working in the endodontic clinic.

Master of Science, Oral Biology

Admission Requirements

1. Either a baccalaureate or a professional degree from a dental or medical school
2. Completed application and application fee of \$65
3. Three letters of recommendation
4. 200-300 word statement of educational and professional objectives which includes a general area of Research interest and academic goals. Optional: a personal statement that addresses the relationship between the student's personal background and aspirations
5. Brief biographical sketch in a resume/CV format
6. Official transcripts, sent directly to the Department of Oral Biology
7. GRE General Test
8. **TOEFL:** Required for international students. The minimum TOEFL score required is 237 computer, 580 paper, iBT 70 (based only on listening, reading, and writing sections)

Degree Requirements

Minimum 70 credits, to include:

1. Minimum 70 credit hours (including at least nine credits of thesis), of which at least 7 credits must be from science courses outside the Department of Oral Biology. Students who have adequate backgrounds in required courses may, on presentation of appropriate documentation, be excused from required courses; up to six hours of transfer credit may be granted at the discretion of the Graduate School.
2. **Required Core Courses:** ORALB 569, ORALB 575, ORALB 578, ORALB 579, ORALB 581, ORALB 591, ORALB 592, ORALB 600, ORALB 700, DPHS 568
3. **Electives:** 7 credits from science courses outside oral biology
4. **Recommended:** One class on educational methods
5. **Thesis Research:** A research thesis is required. During the first year, each student is encouraged to spend time in several laboratories to gain familiarity with Research in progress and to help identify an area of special interest. Then, a preceptor and thesis advisory committee is appointed and the student begins thesis work. The final examination is concerned with the subject matter of the

thesis and is conducted as an open seminar followed by examination by the advisory committee.

6. **Teaching:** Students are encouraged to take elective courses offered through the Department of Medical Education and Graduate School.

Master of Science in Dentistry, Prosthodontics

Admission Requirements

1. Professional degree from a dental school
2. Complete electronic application to the Graduate School, including \$65 application fee
3. Complete the Questionnaire to Applicants for Postdoctoral Training (available for download at the School's website, www.dental.washington.edu)
4. Class Standing form (available for download at the School's website, www.dental.washington.edu)
5. Waiver form
6. Three letters of recommendation or Evaluation of Applicant forms (available for download at the School's Website, www.dental.washington.edu)
7. A personal statement explaining why the student wishes to pursue an education in prosthodontics
8. A CV or Resume
9. Official transcripts, sent directly to the Department of Prosthodontics (all applicants must also send official transcripts to the Graduate School)
10. GRE General Test (required only for applicants who graduated from a non-ADA-accredited dental school outside the US or Canada)
11. TOEFL required for international students; the minimum TOEFL score required is 237 computer, 580 paper, iBT 70, (based only on listening, reading, and writing sections).

Degree Requirements

Minimum 108 credits, to include:

1. **Required Core Courses:** PROS 560, PROS 562, PROS 563, PROS 564, PROS 572, PROS 660 (minimum 16), PROS 665, RES D 570, RES D 580, RES D 585, RES D 588, RES D 589, RES D 590, RES D 600 (minimum 14), RES D 660 (minimum 24), DENT 565, DPHS 568, DPHS 569, ORALM 570, ORALM 580, ORALB 574, ORTHO 580, ORTHO 582, PERIO 561, PERIO 580, PERIO 582, PERIO 585, PERIO 586
2. **Non-thesis Research:** A non-thesis research study is required for the MSD. During the first year, each student is encouraged to gain familiarity with Research in progress and to help identify an area of special interest. After the student identifies an area of interest, a Research committee is established. The master's defense is concerned with the Research subject matter and is conducted as an open seminar followed by examination by the committee.
3. **Teaching:** Second- and third-year students supervise predoctoral dental students working in the prosthodontics and restorative clinics.

Master of Science, Dental Hygiene

Admission Requirements

1. Either a baccalaureate or a professional degree from a dental or medical school
2. Completed application and application fee of \$65
3. Three letters of recommendation
4. 200-300 word statement of educational and professional objectives which includes a general area of Research interest and academic goals. Optional - a personal

statement that addresses the relationship between the student's personal background and aspirations

5. Brief biographical sketch in a resume/CV format
6. Official transcripts, sent directly to the Department of Oral Biology
7. GRE General Test
8. TOEFL required for international students. The minimum TOEFL score required is 237 computer, 580 paper, iBT 70 (based only on listening, reading, and writing sections).

Degree Requirements

70 credits, to include:

1. **Coursework:** 48 credits, as follows: CONJ 401, CONJ 402, CONJ 403, PATH 544, PERIO 575, ORALB 520, ORALB 561, ORALB 572, ORALB 575; at least one of the following: PERIO 517, DPHS 568, DPHS 569, or O S 532; at least two of the following: MEBI 520, MEBI 521, GRDSCH 630, ORALB 562, D HYG 595.
2. **Electives:** 22 credits of electives. Recommended electives: ORALB 569, ORALB 574, ORALB 578, ORALB 579, ORALB 600, DENT 534, DPHS 550, DPHS 569, ORTHO 580, O S 520, PHCOL 434, PHCOL 435, ORALM 520
3. Clinical opportunities may be available in the DECOD (Dental Education in Care of Persons with Disabilities) and the Dental Fears Clinics.

Doctor of Philosophy

Admission Requirements

1. Either a baccalaureate or a professional degree from a dental or medical school
2. Completed application and application fee of \$65
3. Three letters of recommendation
4. 200-300 word statement of educational and professional objectives which includes a general area of research interest and academic goals. Optional: a personal statement that addresses the relationship between the student's personal background and aspirations
5. Brief biographical sketch in a resume/CV format
6. Official transcripts, sent directly to the Department of Oral Biology
7. GRE General Test
8. TOEFL required for international students. The minimum TOEFL score required is 237 computer, 580 paper, iBT 70 (based only on listening, reading, and writing sections).

Degree Requirements

Minimum 90 credits, to include:

Through coursework, students are expected to gain proficiency in one or more basic biologic sciences and to master modern biological approaches in addition to gaining expertise in the subject area of oral and craniofacial sciences. At least 15 credit hours must come from science courses in departments other than oral biology. These include courses offered through the School of Medicine and courses selected to match the basic science interests of the student. Cross-disciplinary training in bioengineering is also available. All graduate students attend and participate in departmental seminars (ORALB 575).

1. **Required Core Courses:** ORALB 569, ORALB 575, ORALB 578, ORALB 579, ORALB 581, ORALB 591, ORALB 592, ORALB 600, ORALB 800, DPHS 568
2. At least 6 credits from the following School of Medicine courses: CONJ 524 through CONJ 558 and PABIO 537
3. Strongly recommended: at least one class on educational methods

Residency Training

Residency training programs are available in oral and maxillofacial surgery and the general practice of dentistry. Both programs provide for rotation through several of the University-affiliated hospitals. Each is a fully accredited program that grants a certificate upon successful completion of the training. Stipends are provided.

The oral and maxillofacial surgery program is four years in duration and provides broad exposure to all aspects of the practice of oral and maxillofacial surgery. Application, selection, and administration of this training program is provided through the Department of Oral and Maxillofacial Surgery. Applicants to the program must be graduates of an accredited U.S. or Canadian Dental School, demonstrate proficiency in the English language, submit National Dental Board Examination scores for Part 1, and register and participate in the Postdoctoral Dental Matching Program. Further information can be obtained by contacting the Residency Program Coordinator, Department of Oral and Maxillofacial Surgery, Box 357134, University of Washington, Seattle, WA 98195-7134, (206) 543-7722.

The General Practice Residency (GPR) is a one-year training program with a second optional year that emphasizes the general dentist's role in a hospital setting and the management of medically, physically, and mentally compromised patients. It also provides multiple resources for enhancement of dental clinical skills in the dental setting, applying management techniques through minimal, moderate sedation and general anesthesia in the operating room. Applicants to the program must be graduates of an ADA-accredited dental school, submit National Dental Board Examination scores for Part 1, and register and participate in the Postdoctoral Application Support Service (PASS) and Postdoctoral Dental Matching Program (MATCH). Further information can be obtained by visiting the website at dental.washington.edu/departments/gpr/general-practice-residency.html.

Postdoctoral Fellowships

Postdoctoral training fellowships are available in behavioral or public-health Research in dentistry in addition to those in oral biology. Programs vary in duration and many accommodate degree-seeking or Research fellows pursuing an academic career. NIH-sponsored partial tuition and a stipend for up to three years are provided for U.S. citizens, noncitizen nationals, and those foreign nationals with permanent-residency status in the United States. Members of ethnic minorities and women are especially invited to apply. Application, selection, and administration of the program are provided through the Departments of Dental Public Health Sciences and Oral Biology.

Graduate Training in Dental Public Health

Opportunities exist for pursuing graduate degrees in public health which emphasize applications to Research in dentistry. Master of Public Health (MPH) programs in the Departments of Epidemiology and Health Services of the School of Public Health can be pursued in conjunction with postdoctoral training in the School of Dentistry's Department of Dental Public Health Sciences. Didactic coursework is taken in the School of Public Health and Community Medicine, augmented with independent study and thesis Research on selected topics in the School of Dentistry. Similar opportunities exist for pursuing the PhD in epidemiology or biostatistics with an emphasis on Research in dentistry. Further information may be obtained from the Office of Academic Affairs, Box 357480, School of Dentistry, University of Washington, Seattle, WA 98195-7480, (206) 221-6887.

The Office of Continuing Dental Education, School of Dentistry, offers programs and courses throughout the year to provide dentists, auxiliary personnel, and others involved in healthcare with current scientific knowledge and methodology of patient treatment. Utilizing local, national, and

international experts, these programs provide a broad spectrum of information relevant to the needs of dental-health professionals. The instructional program consists of lectures, clinical courses, study clubs, extended clinical training, correspondence, and participation courses, some of which are offered in the simulated-patient laboratory. Various programs are presented throughout the year in the Pacific Northwest, Alaska, and Hawaii.

A list of courses offered may be obtained from the Office of Continuing Dental Education, Box 357137, University of Washington, School of Dentistry, Seattle, WA 98195-7137, (206) 543-5444, dental.washington.edu/cde/current-course-listings.html.

PROFESSIONAL PROGRAM

Doctor of Dental Surgery

The Doctor of Dental Surgery (DDS) curriculum provides students opportunities to learn the fundamental principles significant to the entire body of oral health. Students (approximately 63 per class) learn the basic health sciences, attain proficiency in clinical skills, develop an understanding of professional and ethical principles, and develop reasoning and critical decision-making skills that enable implementation of the dental knowledge base. The first year is divided among lecture, laboratory, and preclinical activities in basic sciences, dental anatomy, occlusion, and dental materials. There are also early clinical experiences in preventive dentistry and periodontics. In the second year, students develop additional preclinical skills, learn how basic science principles are applied to the clinical setting, and begin clinical patient treatment. In the third and fourth years, students primarily concentrate on providing clinical treatment and attend lectures that refine diagnostic and technical skills. Additionally, students are required to participate in elective clinical and didactic courses. Students choose elective courses offered by all departments, including opportunities in independent study, Research, seminars on various topics, and specialty clinical topics.

The DDS curriculum extends for 42 months or 14 quarters, including two summer quarters. Twelve of the academic year quarters are ten weeks of instruction and one week of examination, while the two required summer quarters following years two and three are each nine weeks long. If needed, students may be allowed additional time to complete required coursework beyond 42 months.

Admission

Requirements include all undergraduate courses listed below; Dental Admission Test; personal interview. The Admissions Committee encourages diversity in majors. Courses in the social sciences and the humanities are included in the committee evaluation. Dental experience, community service, and non-cognitive factors are given consideration as part of the whole file review.

The School of Dentistry is a state-supported institution and participates in the student exchange program provided by the Western Interstate Commission for Higher Education (WICHE) which supports students from western states without dental schools. Although all applications are carefully reviewed, preference in admission is given to residents of Washington and WICHE states, followed by residents of other states.

Required Courses: General chemistry - two quarters or one semester; organic chemistry - two quarters or one semester; general biochemistry - two quarters or one semester; general physics - three quarters or two semesters; general biology or zoology - three quarters or two semesters; general microbiology - two quarters or one semester. Recommended: medical microbiology.

Transfer Applicants: The school rarely, and only under exceptional circumstances, admits transfer students from other dental schools.

Foreign Applicants: The school does not provide a special program for foreign-trained dentists.

Health Sciences Minority Student Programs: To increase diversity of students, the school participates in the Health Sciences Minority Student Program. In addition to advising and career counseling, this office works with Health Sciences schools to provide student development and support programs, networking opportunities, and summer Research programs. The HSMSP office activities include participation on several health sciences and campus-wide committees for purposes of collaborating and exchanging strategies on effective methods for recruiting and retaining a diverse student body, as well as promoting and celebrating diversity.

Regional Initiatives in Dental Education (RIDE) is a strategic expansion of the University of Washington School of Dentistry in conjunction with Eastern Washington University, designed to help meet the oral health needs of rural and underserved communities in the Northwest. RIDE creates regional training sites in areas lacking dental schools by partnering with regional universities, dentists and dental associations, community health centers, and others. Student admission to the RIDE program in Spokane is limited to residents of Washington State.

The School belongs to the American Association of Dental Schools Application Service (AADSAS). November 1 of the year prior to matriculation is the AADSAS priority filing deadline. Only applications received in the AADSAS Washington, D.C. office by the priority filing date are forwarded to the UW for consideration by the Admissions Committee. There are no exceptions. AADSAS applications are available online at www.adea.org. The UW Dental School's DAT deadline is October 31 of the year prior to matriculation. Information regarding the Dental Admission Test may be found at www.ada.org.

For information on admission to the UW School of Dentistry, contact the Office of Student Life and Admissions, School of Dentistry, University of Washington, Box 356365, Seattle, WA 98195-6365, (206) 543-5840, askuwsod@uw.edu, or www.dental.washington.edu (click on the "prospective student" link). University of Washington undergraduates may contact the Predental Advising Office, University of Washington, 141 Mary Gates Hall, Box 353760, Seattle, WA 98195-3760.

Once the AADSAS application has been received, a preliminary screening determines if an applicant meets the Admissions Committee's criteria to receive a supplemental application and request for the following materials:

1. A supplementary application which includes a short personal statement
2. A non-refundable application fee of \$35
3. Three letters of recommendation are required: one from a science instructor who can evaluate the applicant's academic and intellectual qualifications, a second from a dentist who is familiar with the applicant's knowledge of and motivation toward the dental profession, and a character reference from someone who can indicate the applicant's contribution to the community, etc.
4. If a predental committee exists on the applicant's campus, a combined recommendation from that committee may be used to replace all three recommendations. The School of Dentistry accepts letters of recommendation processed by AADSAS, or directly from recommenders.
5. Dental Admission Test scores. **Test must be taken by October 31 of the year prior to entry.**
6. Transcripts from all higher education institutions attended
7. A list of current and future courses
8. Acknowledgment of having read, understood, and being able to meet, with or without reasonable accommodation, the Essential Requirements of Dental Education at

the University of Washington School of Dentistry (to be sent with the supplemental application form)

9. **Conviction/criminal history information.** Washington state law requires that all faculty, students, and staff disclose background information concerning crimes and offenses against vulnerable populations. A complete copy of the law is available from the School's Office of Student Life and Admissions and is forwarded upon request. Applications are not considered until completed disclosure forms have been returned to student admissions.

The application is considered complete once all materials noted above (1-9) are returned. Upon receipt of the completed application, invitations for an interview are sent to applicants based on an additional screening of the whole file. The interview is an opportunity for an open, friendly discussion of the applicant's interests, background, and reasons for selecting dentistry as a profession. During the interview day, applicants have numerous opportunities to learn about UW programs, faculty, and student life. In addition to the interview, the School provides the applicant with financial aid and cost information. During the lunch hour, applicants meet with enrolled students and tour the School. Applicants also meet with the deans to learn about programs, Research, and cultural opportunities.

The admissions committee, composed of faculty and community dentists, determines admission status after considering the following:

1. **Grades.** Overall GPA and GPA in required pre dental science courses. Committee members look for a strong, consistent GPA without withdrawals, incompletes, repeated courses, or non-graded options. Grade trends are reviewed.
2. **DAT (Dental Admission Test).** The test, sponsored by the American Dental Association, covers several areas: reading comprehension, quantitative reasoning, survey of natural sciences (including biology, general, and organic chemistry), and perceptual ability (including form development, apertures, angles, cubes, and orthographic projections). At the UW, scores are reviewed to identify an applicant's areas of strength. The test must be taken no later than October 31, one year prior to admission.
3. **Level of Pre-professional Education.** The majority of applicants have completed a baccalaureate degree by the time of entry. Consideration is given to applicants who have not or do not expect to complete a baccalaureate degree, but who have completed all pre dental requirements, have a highly competitive academic record, and a minimum of three years' full-time coursework.
4. **Dental Knowledge.** Includes knowledge of the field of dentistry through volunteer experience in a dental setting (dentist's office, clinic, etc.), introductory dental coursework, and exploration of the dental literature. A qualified applicant has a clear understanding of the profession, a demonstrated interest in the field, and a minimum of 100 volunteer hours in a dental setting.
5. **Contribution to Diversity.**
6. **Unique Life Experiences.** Among other things, Research and teaching efforts, travel, and work experience are some of the life experiences considered.
7. **Personal Attributes.** In addition to motivation, the applicant's poise and communication skills are examined. Personal attributes such as integrity, responsibility, leadership, initiative, community service, perseverance, and diversity of interests are important.
8. **Demonstrated Community Service.**

Interviews begin in October and typically end in February. The American Dental Association Traffic Rules allow dental schools to begin making offers of acceptance on December 1. The School uses a "rolling admission" format, so

interviews and committee decisions continue to be made between December and March.

The Admissions Committee makes one of three decisions:

1. **Offer of Acceptance.** Admission application has been accepted. The applicant has a specified time to reply to reserve enrollment in the entering first-year class. In addition, enrollment is contingent on timely submission of the following: registration deposit, transcripts showing completion of all required pre dental courses, registration for autumn quarter of the upcoming academic year, and completion of required immunizations.
2. **Alternate Status.** Applicant is offered a position on the alternate list. The applicant has a specified time to reserve a position on this list, maintained until the beginning of the school year.
3. **Denial of Admission.** The Committee has considered the application but cannot offer a position or alternate status.

Accepted applicants receive follow-up information about registration procedures, financial aid, and the orientation program throughout the spring and summer. Attendance at orientation is mandatory and provides an opportunity for newly enrolled students to learn about the upcoming curriculum, student rights and responsibilities, financial aid information, student organizations, challenge examinations, and the start of academic coursework. Orientation begins in late August. New students attend an off-campus student retreat to interact with peer advisers and meet classmates in an informal setting.

Western Interstate Commission for Higher Education (WICHE): The school participates in a program administered by WICHE for students who reside in western states not served by a dental school (Alaska, Arizona, Hawaii, Montana, New Mexico, North Dakota, and Wyoming). Such students should seek requests for certification and information about benefits of the program from the WICHE commission office in their state of residence.

Projected costs can be found at dental.washington.edu/prospective-students/projected-costs.html.

Information on loans and scholarships may be obtained from the Director of Financial Aid, D323 Health Sciences, Box 356365. Information relating to student life, including the Academic Regulations Manual and Professional Ethics Code may be obtained from the Associate Dean for Student Life and Admissions, D323 Health Sciences, Box 356365.

Degree Requirements

285-333 credits minimum, as follows:

1. **Year 1 (71 credits, plus electives):** B STR 431, B STR 530, B STR 541; DENT 610; DPHS 510; ORALB 510 (3, 3), ORALB 520; ORALB 521; ORALM 513, ORALM 514, ORALM 515; ORALM 516, ORALM 517; P BIO 505; P BIO 506 (4, 4); PATH 544 (3, 2); PERIO 517; RES D 510 (1, 2), RES D 511, RES D 515, RES D 516, RES D 517, RES D 519
2. **Year 2 (86 credits, plus electives):** DENT 520; DENT 521, DENT 522; DENT 523; ENDO 521; O S 520; ORALM 520 (2, 2, 2), ORALM 525, ORALM 526, ORALM 527, ORALM 528, ORALM 529; ORTHO 520, ORTHO 521, ORTHO 522; PEDO 520, PEDO 525; PERIO 525, PERIO 526 (2, 2); PERIO 620; PHCOL 434, PHCOL 435; PROS 520, PROS 523, PROS 525; RES D 520, RES D 521, RES D 522 (3, 3, 3); RES D 525, RES D 526, RES D 527 (3, 3, 3); RES D 620
3. **Year 3 (74 credits, plus electives):** DENT 533, DENT 534 (1, 1), DENT 537, DENT 543; DENT 551, DENT 552, DENT 553, DENT 554; DPHS 535, ENDO 534, ENDO 535, ENDO 630 (1, 1, 1, 1); O S 530 (1, 1, 1), O S 532, O S 630 (2, 2); ORALM 531, ORALM 532, ORALM 533; ORALM 630 (1, 1, 1, 2); ORTHO 630; ORTHO 631; PEDO 630 (1, 1, 1, 1); PERIO 530, PERIO 531; PERIO 630, PERIO 631, PERIO 632; PERIO 639; PROS 630 (1, 1, 1, 2);

RES D 530, RES D 531, RES D 532; RES D 535, RES D 630 (2, 3, 3), RES D 635

4. **Year 4 (55 credits, plus electives):** DENT 547, DENT 548, DENT 549 (2, 2, 2); DENT 555, DENT 556, DENT 557 (1, 1, 1); DENT 640, DENT 645; DPHS 541, DPHS 640; ENDO 630 (1, 1, 1); O S 630; ORALB 540; ORALM 540 (2, 2), ORALM 545 (1, 1), ORALM 640 (1, 1, 1); PEDO 630 (1, 1, 1); PERIO 540; PERIO 640, PERIO 641, PERIO 642 (1, 1, 1); PROS 640 (1, 1, 1); RES D 540, RES D 541, RES D 542, RES D 640 (3, 3, 3)

5. **Electives:** A minimum of two elective courses must be taken during the course of the program. Elective credits may not exceed a total of 50 credits.

Facilities

School clinics, teaching laboratories, and lecture halls are up-to-date, well maintained, and periodically renovated. Clinical modules are assigned to students for use in patient treatment. The D-1 Simulation Clinic is a state-of-the-art teaching facility used for preclinical and laboratory courses.

School Accreditation and Licensure

The school is fully accredited by the Commission on Dental Accreditation, the recognized accrediting body for dentistry and the related dental fields. For information, write to the Commission on Dental Accreditation, 211 East Chicago Ave., Chicago, IL 60611-2678. Admission to the practice of dentistry in any state is conditional upon meeting the requirements of the individual state dental licensure requirement. In order to practice in the State of Washington, the candidate for licensure must have a dental degree from a U.S. or Canadian dental school, and have successfully completed the American Dental Association National Board Examinations and the Western Regional Examining Board Examination. Additional information about licensure requirements should be requested from the Washington State Department of Health, Dental Quality Assurance Commission, PO Box 1099, Olympia WA 98504-1099, (360) 586-6898.

Health Care and Immunization Policy

Enrolled students at the UW School of Dentistry are eligible for healthcare services provided by the Hall Health Primary Care Center. In addition, the University has arranged for an Accident and Sickness Insurance Plan specifically designed for students, their dependents, and their domestic partners for which the Hall Health Primary Care Center is the preferred provider. The UW Health Sciences Center requires that its students, staff, and faculty show documentation of protection against a number of vaccine-preventable diseases. Additional information is available via the Hall Health Primary Care Center website at depts.washington.edu/hhpcweb/

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsclat/

Dentistry

DENT 520 P-Clinical Practice Management 1 (1) Designed to provide the student with the knowledge required to manage a patient pool during the clinical program and in future dental practice including: obtaining a patient pool, authorized treatment planning, patient management in accordance with professional codes, risk management strategies, patient financial account management, and contemporary biohazardous materials guidelines. Offered: S.

DENT 533 Introduction to Interprofessional Education and Collaborative Practice ([0-1]-, max. 1) Kim, Phillips Case

based sessions that address the Interprofessional Education Collaborative competencies. Includes opportunities to gain knowledge about different health professions, team and teamwork, and develop skills in team communication provided by working with health professions students on a variety of cases to develop a team based plan of care. Credit/no-credit only. Offered: AWSp.

DENT 534 P-Geriatric Dentistry (1, max. 2) Part 1: Physiological, sensory, and cognitive changes that occur with aging. Part 2: Dental treatment of geriatric patients considering their special needs and economic constraints. Offered: WSp.

DENT 537 P-Hospital Dentistry (1) Introductory course presenting hospital procedures and protocol and the role of the dentist in the hospital. Offered: Sp.

DENT 540 Pharmacology Updates (1) *Grubbs* Review of the current 50 most prescribed drugs on the market with examples of patient, case-based, pharmacology. Prerequisite: PHCOL 434; PHCOL 435. Offered: Sp.

DENT 547 Dental Practice Administration (2) Material essential to persons entering dentistry in a time of rapid change in health care systems, including practice management, career opportunities, and starting out in a private practice. Offered: Sp.

DENT 548 Dental Practice Administration (2) Material essential to persons entering dentistry in a time of rapid change in health care systems, including practice management, career opportunities, and starting out in a private practice. Offered: A.

DENT 549 Dental Practice Administration (2) Material essential to persons entering dentistry in a time of rapid change in health care systems, including practice management, career opportunities, and starting out in a private practice. Offered: W.

DENT 550 P-Special Studies in Dentistry (*, max. 12) Offered by the various departments from which students may elect study in areas of special interest to them. Includes subject matter applicable to all phases of dentistry. Credit/no-credit only. Offered: AWSpS.

DENT 551 P-Clinical Practice Management 2 (1) Designed to provide the student with the experience required to manage a patient pool during the clinical program and in future dental practice including obtaining a patient pool, treatment planning, patient management in accordance with professional codes, risk management strategies, patient financial account management, and contemporary biohazardous materials guidelines.

DENT 552 P-Clinical Practice Management 2 (1) Designed to provide the student with the experience required to manage a patient pool during the clinical program and in future dental practice including: obtaining a patient pool, treatment planning, patient management in accordance with professional codes, risk management strategies, patient financial account management, and contemporary biohazardous materials guidelines.

DENT 553 P-Clinical Practice Management 2 (1) Designed to provide the student with the experience required to manage a patient pool during the clinical program and in future dental practice including: obtaining a patient pool, treatment planning, patient management in accordance with professional codes, risk management strategies, patient financial account management, and contemporary biohazardous materials guidelines.

DENT 554 P-Clinical Practice Management 2 (1) Designed to provide the student with the experience required to manage a patient pool during the clinical program and in future dental practice including: obtaining a patient pool, treatment planning, patient management in accordance with professional codes, risk management strategies, patient financial account management, and contemporary biohazardous materials guidelines.

DENT 555 P-Clinical Practice Management 2 (1) Designed to provide the student with the experience required to manage a patient pool during the clinical program and in future dental practice including: obtaining a patient pool, treatment planning, patient management in accordance with professional codes, risk management strategies, patient financial account management, and contemporary biohazardous materials guidelines.

DENT 556 P-Clinical Practice Management 2 (1) Designed to provide the student with the experience required to manage a patient pool during the clinical program and in future dental practice including: obtaining a patient pool, treatment planning, patient management in accordance with professional codes, risk management strategies, patient financial account management, and contemporary biohazardous materials guidelines.

DENT 557 P-Clinical Practice Management 2 (1) Designed to provide the student with the experience required to manage a patient pool during the clinical program and in future dental practice including: obtaining a patient pool, treatment planning, patient management in accordance with professional codes, risk management strategies, patient financial account management, and contemporary biohazardous materials guidelines.

DENT 562 Elective Offering in Advanced Cardiac Life Support (1) Introduction to airway management (masking/intubation/oropharyngeal airways/nasopharyngeal airways/cricothyrotomy), 12-lead EKG recognition and diagnosis, cardiac physiology and pathophysiology, and pharmacologic action of several different medications. Students who pass AHA guidelines for completion of an ACLS course are awarded ACLS certification. Credit/no-credit only. Offered: W.

DENT 563 Elements of Conscious Sedation (1-2) Details theory and techniques for rendering oral, inhalation, transmucosal, intramuscular, and intravenous forms of conscious sedation. Focuses on pharmacology and pharmacokinetics of nitrous oxide, benzodiazepines, narcotics, and barbiturates. Addresses usual applications, special considerations, legal issues, and proper record keeping. Emphasizes prevention and management of emergencies. Credit/no-credit only. Offered: A.

DENT 565 Dental Photography (1) Provides student with sufficient knowledge and experience to select and use correct photographic equipment for photographing patients (facial and interoral), casts, instruments, x-rays, charts, and objects. Credit/no-credit only. Offered: A.

DENT 566 Physical Diagnosis (1) Seminar on performing complete physical examination including basic assessment of overall patient, vital signs, cardiac, pulmonary, abdominal, extremities, neurologic, and head/neck. Examination techniques include observation, auscultation, percussion. Writing findings and interpreting physical examinations. Offered: S.

DENT 568 Internal Medicine for Dentistry ([1-3]-, max. 6) Review of major organ systems, including normal anatomy and physiology, common pathophysiologies, medical interventions. Details modifications necessary for dental treatment and medical emergency management. Credit/no-credit only. Offered: S.

DENT 569 Contemporary Dental Practice Management (1) Didactic study designed to update dental graduate students in recent developments in the management of a modern dental practice. Focuses on the business and legal aspects of dental practice. Credit/no-credit only. Offered: A.

DENT 610 Introduction to Clinical Dentistry (2) Introduction to clinical dental training including infection control, personal dental hygiene, oral anatomical landmarks, medical histories, fluoride application, fabrication on athletic mouth guards, and professional ethics. Students participate in classroom exercise followed by rotations in functioning dental clinics. Offered: W.

DENT 613 Summer Rural and Underserved Opportunities Program (1-6, max. 6) Provides students a 2-6 week clinical training opportunity and early exposure to provision of dental care in rural and underserved locations in Washington state. Offers an opportunity for students to gain an understanding of how community health care systems function for provision of dental care. Credit/no-credit only.

DENT 640 P-Extramural Clinics in Geriatric Dentistry (2) Extramural geriatric clinical experience, including three days at a nursing home or senior center dental clinic. Credit/no-credit only. Offered: AWSpS.

DENT 641 Service Learning Rotation (6) *Nagasawa* Students practice clinical dentistry for 4 weeks at a designated rural and/or underserved community health center. The student further develops an understanding of cultural competence by analyzing and reflecting on the social and cultural factors that contribute to the oral health needs of these diverse populations. Credit/no-credit only. Offered: AWSpS.

DENT 650 P-Extramurals (*, max. 12) Extramural sites arranged to provide dental students, at varying levels of their education, with opportunities to treat a wide variety of patients in the delivery systems outside the school. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

DENT 651 P-Anesthesia Rotation (6) 1.5-month rotation in anesthesia at one of three local hospitals. Objectives: administration of anesthesia, management of emergency situations and airway problems, familiarization with pharmacology of anesthetic drugs; increased efficiency with venipuncture. Credit/no-credit only. Offered: AWSpS.

DENT 652 P-Clinical Medicine Clerkship (4) One-month clinical rotation in clinical medicine at a local hospital. Objective is to increase the student's ability in physical evaluation of patients as well as to give in-depth knowledge of hospital procedures and commonly prescribed medications. Credit/no-credit only. Offered: AWSpS.

DENT 655 Medical Emergency Management: Basic Life Support (1) Review of principles and practical applications for the management of medical emergencies in dental practice in conjunction with training and certification in Basic Life Support. Offered: S.

DENT 657 Comprehensive Clinic (1-10, max. 10) Clinical comprehensive care for patients. Offered: S.

DENT 659 Comprehensive Clinic (1-10, max. 10) Clinical comprehensive care for patients. Credit/no-credit only. Offered: S.

DENT 660 Temporomandibular Joint Diagnosis and Treatment (2, max. 8) Seminar and clinic sequence for comprehensive examination, diagnosis, and treatment of patients with temporomandibular joint problems. Includes management of dysfunction and morphologic alterations in associated muscles and occlusion. Prerequisite: permission of instructor. Offered: AW.

DENT 690 P-Extended Clinical Dentistry (1) Educational experiences in clinical dentistry. Available to students who have successfully completed the University of Washington Doctor of Dental Surgery curriculum and seek additional supervised experience in the delivery of oral health care services within three quarters of graduation and prior to licensure. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

DENT 700 Master's Thesis (*-) Offered: AWSpS.

Dental Hygiene

D HYG 500 Dental Hygiene Program Seminar (1-3, max. 15) Credit/no-credit only.

D HYG 501 Dental Hygiene Capstone I ([2-8]-, max. 8)

D HYG 502 Dental Hygiene Capstone II (-[2-8]-, max. 8)

D HYG 503 Dental Hygiene Capstone III (-[2-8], max. 8)

D HYG 594 Principles of Teaching for Oral Health Professionals (3) Application of principles of learning to teaching methods and techniques used in education, with opportunity for course planning, demonstration, and practice teaching. Prerequisite: graduate program admission.

D HYG 595 Internship (*, max. 12) Clinical and/or didactic teaching experience or program administration. Teaching and administration responsibilities assigned according to student's previous experience, education needs, and interest. Seminar required. Prerequisite: D HYG 494 or D HYG 594 and permission of instructor. Offered: AWSpS.

Dental Public Health Sciences

DPHS 201 Planning a Career in Dentistry for the Future (2) *Weinstein* Future-oriented overview of important concepts in dental science, contemporary modes of patient treatment, and dental-care delivery systems. Provides firsthand exposure to practice of dentistry and prerequisite materials in oral anatomy, epidemiology, and other basic sciences subjects. Open to all second-, third, and fourth-year undergraduate students. Offered: Sp.

DPHS 449 P-Directed Studies in Dental Public Health Sciences (*) Students and faculty with common academic interests pursue them together within the curriculum by means of independent study and a tutorial student-faculty relationship. Credit/no-credit only. Offered: AWSpS.

DPHS 510 Social and Historical Perspectives in Dentistry (2) *Chi* Examines dental care problems involving biological, behavioral, and community elements using a problem-based learning approach. Students develop hypotheses regarding nature and complexity of problem, set objectives, seek resources and information, and contribute to development of outcomes. Offered: A.

DPHS 531 P-Ethics in Dentistry (2) *Coolidge* Seminar improving ethical reasoning skills and conveying ethical and legal standards of the profession. Offered: S.

DPHS 535 P-Scientific Literature in Clinical Decision Making (1) *Hujoel* Introduction to critical reading of individual articles in professional journals and integrating the findings of several articles. Use of the literature to assist the practicing dentist in making clinical decisions. Offered: Sp.

DPHS 550 P-Directed Studies in Dental Public Health Sciences (*, max. 17) Students and faculty members who have common academic interests can pursue them together within the curriculum by means of independent study and a tutorial student-faculty relationship. Credit/no-credit only. Offered: AWSpS.

DPHS 568 Biostatistics in Dentistry (3) *Spiekerman* Introduction to concepts and methods of descriptive and inferential statistics with applications in dentistry emphasized. Topics include comparison of means and proportions, hypothesis testing, confidence intervals, non-parametric methods, linear regression, and correlation. Prerequisite: enrollment in School of Dentistry or permission of instructor. Offered: jointly with BIOST 510; S.

DPHS 569 Clinical Epidemiology and Study Design in Dentistry (2) *Hujoel* An introduction to epidemiological methods as they relate to dental research. Topics covered include the estimation of dental disease occurrence at patient level and site level and the design and analysis of clinical trials with special emphasis on designs unique to dentistry, such as split-mouth designs. Offered: S.

DPHS 640 P-Professional Issues: Clinical Management of the Fearful and Phobic (1) *Heaton* Introduction to assessment process and treatment strategies for successful management of anxious, fearful, or phobic patient, combined with clinical observation of diagnostic and treatment appointments of active patients. Offered: AWSp.

DPHS 650 P-Community Dentistry Clinical Electives (*, max. 12) Credit/no-credit only.

DPHS 660 Dental Fear Clinic (2) *Weinstein* Clinical instruction in the care of the severely anxious or phobic adult or child. Strategies from behavioral and cognitive psychology. Prerequisite: graduate standing in dentistry or permission of instructor. Credit/no-credit only. Offered: AWSpS.

Endodontics

ENDO 521 Introduction to Clinical Endodontics (4) Lecture component covers the biology, pathology, diagnosis, treatment, and outcome of the dentin-pulp complex and pulpal-related periradicular pathology. Preclinical laboratory component covers endodontic treatment techniques on extracted and artificial teeth from different tooth groups as practice for clinical cases. Offered: Sp.

ENDO 534 P-Endodontic Clinical Procedures (1) Lecture course dealing with clinical procedures particular to endodontics, diagnosis and treatment of endodontic emergencies, and surgical management of endodontic problems. Offered: A.

ENDO 535 P-Clinical Management of Endodontic Treatment Problems (1) Management of a variety of technical problems frequently encountered in the treatment of endodontic cases and the diagnosis and treatment of impact injuries to teeth. Offered: W.

ENDO 545 Honors Endodontics (2, max. 4) Seminar discussions of advanced endodontic diagnosis and treatment planning issues as well as clinical sessions on treatment of calcified negotiable canals, alternate instrumentation procedures and obturation systems. Credit/no-credit only.

ENDO 550 P-Directed Studies in Endodontics (*, max. 6) See DPHS 449 for course description. Credit/no-credit only.

ENDO 560 Advanced Endodontic Diagnosis and Treatment (2) Current concepts are presented and discussed relating to the diagnosis and treatment of pulpal and periapical pathosis. Criteria for evaluation of success or failure of root canal therapy are presented.

ENDO 561 Anatomical Basis for Clinical Endodontics (2) Root canal anatomy of significance in clinical endodontics is discussed in a seminar format. Offered: S.

ENDO 562 Anatomical Bases for Surgical Endodontics (2) Diagnosis and treatment of acute symptoms of dental origin, surgical endodontic therapy, traumatic dental injuries, and the relationship between periodontal and pulpal pathosis, including differential diagnosis and appropriate treatment planning.

ENDO 563 Radiographic Interpretation (2) Various aspects of radiographic interpretation of particular relevance to endodontics, including interpretation of normal structures, acquired and developmental abnormalities, infections, sialoliths, dysplasias, cysts, malignant lesions, benign tumors, and various diseases other than tumors.

ENDO 566 Advanced Radiographic Interpretation (2) Various aspects of radiographic interpretation of particular relevance to endodontics, including malignant lesions, benign tumors, various diseases other than tumors, soft-tissue calcifications, and radiographic technique.

ENDO 568 Endodontic Practice Management (1) Essential elements for establishing and managing a successful specialty practice in Endodontics. Prerequisite: ENDO 562.

ENDO 580 Endodontic Seminar (2) Ongoing weekly seminar devoted to review of endodontic and related literature and discussion of research methods. Offered: S.

ENDO 581 Endodontic Seminar (2) Ongoing weekly seminar devoted to review of endodontic and related literature and discussion of research methods. Offered: A.

ENDO 582 Endodontic Seminar (2) Ongoing weekly seminar devoted to review of endodontic and related literature and discussion of research methods. Offered: W.

ENDO 583 Endodontic Seminar (2) Ongoing weekly seminar devoted to review of endodontic and related literature and discussion of research methods. Offered: Sp.

ENDO 584 Endodontic Seminar (2) Ongoing weekly seminar devoted to review of endodontic and related literature and discussion of research methods. Offered: S.

ENDO 585 Endodontic Seminar (2) Ongoing weekly seminar devoted to review of endodontic and related literature and discussion of research methods. Offered: A.

ENDO 586 Endodontic Seminar (2) Ongoing weekly seminar devoted to review of endodontic and related literature and discussion of research methods. Offered: W.

ENDO 587 Endodontic Seminar (2) Ongoing weekly seminar devoted to review of endodontic and related literature and discussion of research methods. Offered: Sp.

ENDO 590 Treatment Planning Seminar (2, max. 16) Weekly seminar to discuss controversial treatment problems, difficult diagnostic cases, and presentation of endodontic treatment cases. Offered: AWSpS.

ENDO 593 Clinical Practice Teaching (1, max. 3) Closely supervised experience in teaching clinical endodontics to the undergraduate dental student. Offered: SpS.

ENDO 594 Current Endodontic Literature (1) A review and critical evaluation of the current literature relative to endodontics. Credit/no-credit only. Offered: AWSpS.

ENDO 595 Endodontic Surgery (2) Reviews biological and technical aspects of endodontic surgery with emphasis on both the classic and current scientific surgical literature. Lectures and topic seminar discussion along with surgical case presentations.

ENDO 597 Endodontics Teaching Seminar (2) Weekly seminars devoted to an examination of general problems of teaching and learning and specific problems of endodontics teaching.

ENDO 598 Endodontics Teaching Seminar (2) Weekly seminars devoted to an examination of general problems of teaching and learning and specific problems of endodontics teaching.

ENDO 600 Independent Study or Research (*-) Prerequisite: permission of Graduate Program Adviser. Offered: AWSpS.

ENDO 630 P-Clinical Endodontics (1-, max. 7) Student is required to complete endodontic treatment of anterior, premolar, and molar teeth. In addition to nonsurgical treatment of several endodontic cases, the student assists with a periapical surgery. Student must complete seven quarters of ENDO 630 and all course requirements before a grade is awarded. Offered: AWSpS.

ENDO 658 Endodontic Emergency Rotation (1) Clinical experience in managing and treating patients in pain. Credit/no-credit only. Offered: AWSpS.

ENDO 659 P-Endodontics Extended Learning (*, max. 4) Supplemental work in endodontics to correct an area of student deficiency. Credit/no-credit only.

ENDO 660 Clinical Endodontics (4, max. 32) Clinical diagnosis and treatment of pulpal pathosis and related sequelae. Offered: AWSpS.

Oral Biology

ORALB 449 Undergraduate Research Topics in Oral Biology (*, max. 30) Individual research on topics selected in collaboration with a faculty member. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

ORALB 510 P-Development, Structure, and Function of Oral Tissues (3-, max. 6) *Popowics* Development, microscopic and submicroscopic structure, functional aspects of hard and soft oral tissues. Embryonic development of head and neck; morphodifferentiation of face and oral structures. Structure-function relationships in descriptions of development and histology-ultrastructure of oral tissues

by integration of traditional oral histology and oral physiology topics. Offered: WSp.

ORALB 520 P-Molecular Microbiology and Oral Diseases (3) *Darveau* Applies students' background knowledge in basic sciences to an understanding of the molecular bases of the interactions between microorganisms and oral tissues that lead to plaque formation and dental diseases. Principles of clinical asepsis and diagnosis of caries and periodontal diseases also covered. Offered: A.

ORALB 521 Medical Microbiology and Immunology (2) Bacterial structure, physiology and genetics. Viral structure and function. Bacterial and viral diseases of the respiratory tract, skin, GI tract, UG tract. Innate and adaptive immunity. Immune responses to infection, immunodeficiencies, and autoimmunity. Offered: Sp.

ORALB 540 P-Clinical Care of Oral and Maxillofacial Pathology (2) *Chang* Presents the clinical treatment modalities used to care for patients with various diseases that present in the oral and maxillofacial area. Offered: jointly with O S 540; A.

ORALB 550 P-Directed Studies in Oral Biology (*, max. 12) Selected readings and seminars on a topic chosen by individual arrangement in collaboration with a faculty member. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

ORALB 561 Oral Tissue Development, Structure, and Function (3, max. 6) *Popowics* Selected readings and discussions explore recent advances in cellular and molecular biology relevant to oral biology and medicine. Special emphasis on craniofacial and dental development, oral mucosa and periodontal tissues, salivary gland function, and olfaction and gustation. Prerequisite: permission of instructor. Offered: WSp.

ORALB 562 Supervised Teaching in Oral Biology (1-5, max. 10) Directed and guided experience in selected topics in teaching techniques, teaching philosophy, and design of courses given by the Department of Oral Biology. Students are required to participate in lecture and laboratory teaching under the supervision of the course director. Prerequisite: permission of instructor. Offered: AWSpS.

ORALB 564 Clinical and Histopathological Correlation I (1-3, max. 10) *Oda* Four quarter advanced oral pathology course designed to interpret the clinical changes of a disease through the lenses of a microscope. Covers around 200 soft tissue disease of the mouth to include epithelial and mesenchymal reactive and neoplastic conditions. Offered: jointly with O S 564; AWSpS.

ORALB 565 Clinical and Histopathological Correlation II (1-3, max. 10) *Oda* Three quarter advanced oral pathology course designed to interpret the clinical changes of a disease through the lenses through a microscope. Covers around 200 jaw bone and soft tissue disease to include cysts and neoplasms of the jaws and blood diseases of the jaws and soft tissue. Prerequisite: permission of instructor. Offered: jointly with O S 565; AWSpS.

ORALB 566 Surgical Oral Pathology (2-4, max. 16) Students are trained to interpret microscopic slides of lesions from the oral cavity and related areas, and to correlate these with the clinical findings. Each student is responsible for the grossing of specimens and the preparation of histology reports. Primarily designed for students with DDS, MD, or DVM. degrees. Prerequisite: permission of instructor. Offered: AWSpS.

ORALB 569 Advanced Oral Microbiology (2) *Darveau* Viral, bacterial classification; physiology; toxicity mechanisms reviewed. Formation and composition of plaque and calculus, and chemical methods of control discussed. Specific microbial floras of acute and chronic gingivitis, early onset forms of periodontitis, and adult periodontitis studied. Principles of antibiotic use reviewed. Offered: W, even years.

ORALB 572 P-Oral Pathology (3-, max. 6) *Oda* Survey of the diseases of the oral facial regions in lecture and laboratory sessions. Diseases of teeth and their supporting

structures and diseases of the oral and paraoral soft tissues and bones. Correlations between clinical findings and histopathologic features. Attendance in the laboratory is required. Offered: jointly with O S 521; AW.

ORALB 574 Clinical Stomatology (3) *Oda* Diseases of the oral cavity and jaw are presented as the practitioner encounters them - detailed clinical pictures, laboratory tests, radiographic findings, surgical exploration for the establishment of a therapeutic diagnosis. Offered: jointly with O S 574; Sp.

ORALB 575 Oral Biology Seminar (1-3, max. 30) *Presland* Presentation and discussion of current research problems by members of the staff, investigators from other departments in the University, visiting scientists, and trainees. Prerequisite: permission of instructor. Offered: AWSp.

ORALB 578 Research Techniques in Oral Biology (2-4, max. 15) Introduction to biochemical, analytical, or morphological techniques employed in biochemical cytology or molecular pathology as well as in vitro techniques of tissue and organ culture. Prerequisite: permission of instructor. Offered: AWSpS.

ORALB 579 Molecular Biology (2) *Presland* Applications of molecular biology and recombinant DNA methodologies to oral biology topics of interest in dental sciences. Prerequisite: BIOC 405 or BIOC 406 or equivalent, and permission of instructor. Offered: S.

ORALB 580 Introduction to Molecular Biology Laboratory (4) *Presland* Includes laboratory experiences involving use of restriction enzymes, cloning of DNA into plasmid vectors and plasmid DNA isolation, RNA isolation from cells and tissues, PCR, DNA sequence analysis, and web-based DNA, and protein sequence analysis. Prerequisite: either BIOC 405, BIOC 406, or permission of instructor. Offered: A, even years.

ORALB 581 Secretory Process in Exocrine Glands (1-3, max. 3) *Jeffrey* Biostructural, physiological, and biochemical aspects of individual secretory systems as integrated units. Faculty members with appropriate expertise participate in discussions and presentations during each of the three quarters. Offered: Sp.

ORALB 591 Advanced Topics in Oral Biology I - Teeth and Bones (1-2, max. 2) *Herring* Covers aspects of biology basic to the dental sciences. Focuses on developmental biology of the craniofacial region, structure and function of teeth, bone, and the periodontium, and dental/oral sensation and pain. Offered: jointly with ORTHO 591; W.

ORALB 600 Independent Study or Research (*-) Prerequisite: permission of instructor. Offered: AWSpS.

ORALB 700 Master's Thesis (*-) Offered: AWSpS.

ORALB 800 Doctoral Dissertation (*-) Offered: AWSpS.

Oral Medicine

ORALM 404 Considerations in Care of the Patient with a Disability (*, max. 6) Role of auxiliaries in dental treatment of the special patient, including psychosocial issues, communication techniques, wheelchair transfers; dental prevention, medical and dental management of specific disabilities; drug therapy, sedation, and anesthesia. Offered: AWSpS.

ORALM 460 Clinical Management of Patients with Disabilities (*, max. 10) Participation in chair/bedside dental treatment of a broad range of disabled populations, including homebound and institutionalized patients. Offered: AWSpS.

ORALM 465 Dental Care of the Disabled Literature Review (1) Review of the current scientific literature pertaining to disability issues, research, clinical management, resources, and legislation relating to oral health of persons with disabilities. Credit/no-credit only. Offered: AWSpS.

ORALM 513 Communication Skills I - Techniques (1) Different aspects of verbal and non-verbal communication, recognizing obstacles to effective communication, and de-

veloping strategies to overcome communication obstacles. Clinical interviewing exercises.

ORALM 514 Communication Skills II - Cultural Competency (1) Continuation of basic communication skills. Credit/no-credit only. Offered: A.

ORALM 515 Communication Skills III - Interviewing and History-taking (1) Provides early clinical experience, and develops skills necessary to learn from patients what the practitioner needs to know about their social, medical, and dental histories to effectively understand the "whole patient" so as to diagnose, plan, and provide appropriate treatment. Credit/no-credit only. Offered: A.

ORALM 516 Physical Exam I (1) Addresses techniques of initial patient assessment including general survey of the patient and vital signs assessment. Includes development of skills through participation in clinical sessions. Credit/no-credit only. Offered: W.

ORALM 517 Physical Examination II (2) Lectures, clinical rotations, and seminars addressing techniques of patient assessment including history-taking, physical examination, and interpretation of findings. Includes development of skills through participation in clinical sessions.

ORALM 520 P-Introduction to Oral Radiology (2) Physical, biological, technical, and diagnostic aspects of dental x-ray procedures. Offered: AWSp.

ORALM 525 Physical Examination III (1) Intensive review and application of techniques of patient assessment including history-taking, physical examination, and interpretation of findings. Includes development of skills through participation in clinical sessions.

ORALM 526 General Medicine (2) Addresses medical, physical, and psychological conditions that impact the practice of dentistry. Provides information regarding collection of appropriate medical and physical data and integration of information into plans and practices relevant to the routine management of patients in dental practices. Instruction occurs via lectures, videos, assigned readings, and case scenarios.

ORALM 527 Introduction to Treatment Planning (1) Problem-oriented record system with basic concepts of treatment planning. Students prepare treatment plans in advance of seminar. Offered: Sp.

ORALM 528 Dental Education and Care of the Disabled (1) Addresses the special needs and dental management of patients with developmental disabilities such as Down's syndrome, cerebral palsy, mental retardation, and other conditions such as head trauma. Utilizes instructional videos.

ORALM 529 Stomatology (4) Focuses on ability to recognize, diagnose, and treat non-dental oral diseases and conditions that are commonly encountered in clinical practice. Rotations through the oral medicine undergraduate clinic where students take history and examine patients presenting for comprehensive care or urgent care. Interpretation and management of non-dental oral pathology and medical/psychological issues. Offered: S.

ORALM 531 P-Acute and Chronic Orofacial Pain (1) Essential clinical and technical information and skills for diagnosis and treatment of acute and chronic pain, including differential diagnosis, and behavioral factors. Offered: A.

ORALM 532 P-Acute and Chronic Orofacial Pain (1) Essential clinical and technical information and skills for diagnosis and treatment of acute and chronic pain, including differential diagnosis, and behavioral factors. Offered: W.

ORALM 533 P-Acute and Chronic Orofacial Pain (2) Essential clinical and technical information and skills for diagnosis and treatment of acute and chronic pain, including differential diagnosis, and behavioral factors. Offered: Sp.

ORALM 540 P-Oral Medicine Senior Seminar (2-, max. 4) Clinical conference devoted to case presentations of patients with dental treatment needs and complicating medical problems. Offered: AW.

ORALM 545 P-Clinical Conference in Oral Medicine (1-, max. 2) Clinical pathologic conference utilizing interdisciplinary approach to patient care and emphasizing basic science application. Offered: AW.

ORALM 550 P-Directed Studies in Oral Diagnosis (*, max. 12) See DPHS 449 for course description. Credit/no-credit only. Offered: AWSpS.

ORALM 560 Advanced Diagnostic Techniques (2) Advanced diagnostic procedures used to identify oral and perioral diseases. Included are in-depth discussions of history analysis, methods for psychologic evaluation, soft and hard tissue diagnostic procedures, neurologic, salivary gland, and other tissue analyses requiring special procedures. Offered: AWSpS.

ORALM 564 Dental Care of the Disabled I (*, max. 10) Advanced topics in rehabilitation dentistry including psychosocial issues; characteristics and needs of patients with specific disabilities; patient management and use of portable equipment; drug therapy, sedation and anesthesia; dental prevention, and emergency procedures. Seminars and self-directed study. Prerequisite: permission of instructor. Offered: AWSpS.

ORALM 565 Oral Medicine Clinical Conference (*, max. 16) Clinical conference in which diagnostic data concerning patients seen in the oral medicine clinic are presented for evaluation. When possible, the patient is present with laboratory findings, radiographs, and the results of special tests. Offered: AWSpS.

ORALM 567 Adult Psychopathology (2) Overview of adult psychopathology and illness behavior as it relates to psychosomatic concepts and chronic pain. review of assessment and behavioral management strategies for the dental practitioner. Open to graduate students, postdoctoral fellows, residents in dentistry, medicine, psychology. Offered: Sp.

ORALM 570 Oral Medicine and Therapy (2-, max. 6) Lecture directed toward the presentation and discussion of oral diseases and oral manifestations of systemic disease. Primarily the clinical manifestations' relationship to generalized disease processes and patient management with in-depth discussions of therapy. Offered: AWSpS.

ORALM 576 Oral Medicine Literature Review (1) Seminar analyzes the recent literature concerning the area of oral medicine, diagnosis, and therapy for oral disease. Offered: AWSpS.

ORALM 578 Dental Care of the Disabled Literature Review (1, max. 3) Review of the current scientific literature pertaining to disability issues, including research, clinical management, resources, and legislation pertaining to oral health of persons with disabilities. Credit/no-credit only. Offered: AWSpS.

ORALM 580 Current Concepts in Oral Radiology (2) Lecture/seminar covering current concepts in oral radiology including technical factors, radiation risks, observer characteristics and variation, radiographic localization, interpretation, and overview of current extraoral techniques. Offered: AWSpS.

ORALM 581 Advanced Seminars in Oral Radiology (2, max. 8) Explores aspects of oral and maxillofacial radiology and related fields. Offered: AWSpS.

ORALM 584 Dental Care of the Disabled III (*, max. 10) Field practice in community outreach to facilities and agencies serving disabled populations. Includes observation, dental screenings, patient education and in-service training of direct care staff. Prerequisite: ORALM 404 or ORALM 664. Offered: AWSpS.

ORALM 600 Independent Study or Research (*-) Credit/no-credit only. Offered: AWSpS.

ORALM 601 Oral Medicine Research Seminar (1, max. 10) Presentation and discussion of current research problems by graduate students, faculty, and investigators from other

departments in the university. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

ORALM 630 P-Clinical Diagnosis and Oral Medicine ([1/2]-, max. 5) Develops skills in assessment of patients requiring comprehensive dental care. Includes interviewing and physical examination, radiographic interpretation, problem list formation, and chart documentation. Students participate in diagnosis and treatment of patients requiring emergency and specialized dental care. Offered: AWSpS.

ORALM 640 Advanced Clinical Diagnosis and Oral Medicine ([1/2]-, max. 3) Advanced instruction in diagnosis and management of patients requiring emergency and specialized care. Includes participation in clinical rotations to oral medicine specialty clinics. Offered: AWSpS.

ORALM 650 P-Oral Medicine Clinical Elective (1-6, max. 6) Opportunities for students to work in various clinical activities at local hospitals or other sites outside the school. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

ORALM 651 Oral and Systemic Health Issues in the Homeless in Seattle (1-, max. 12) Addresses oral and systemic health issues in the homeless in Seattle. Service based learning and includes presentations, readings, reflections, health education, and dental care delivery with the goal of preparing dental students to work in an interprofessional environment with other healthcare providers. Credit/no-credit only. Offered: AWSpS.

ORALM 660 Rotations in Medical Disciplines (1-4, max. 24) Clinic, oriented to the hospital practice of oral medicine, deals with examination and nonsurgical therapy of hospital patients. The conditions treated include primary oral diseases, oral manifestations of systemic diseases, and oral defects resulting from medical treatment of serious systemic disease. Credit/no-credit only. Offered: AWSpS.

ORALM 663 Introduction to Educational Methods in Dentistry (2) Principles of teaching and learning, their applications in dental education. Basic principles include learning theory and cognitive processing, identifying prerequisite knowledge of learners, determining objectives of outcomes of learning, selecting appropriate methods and materials, using evaluation procedures. Increases understanding of instruction process to provide a sound foundation for teaching. Offered: AWSpS.

ORALM 664 Dental Care of the Disabled II (*, max. 10) Practicum in chair/bedside delivery of dental care to different disabled populations. Includes rotations to institutions, long-term care facilities, and homebound service, using mobile equipment. Prerequisite: ORALM 564 and permission of instructor. Offered: AWSpS.

ORALM 665 Clinical Oral Medicine (*, max. 33) Clinic involving the diagnostic evaluation of patients with difficult and unusual oral diseases. The student diagnoses and treats the patient. Types of therapy include medications and chemical agents, functional physical therapy, and counseling. Offered: AWSpS.

ORALM 670 Clinical Oral Medicine Teaching (1-4, max. 16) Clinic designed to give the student experience and instruction in the teaching of clinical oral diagnosis. Treatment of emergency dental problems as well as routine and special diagnostic procedures is emphasized. Offered: AWSpS.

Oral Surgery

O S 520 P-Local Anesthesia (2) Pharmacology, physiology, anatomy, and techniques of local anesthesia for dental students. Offered: W.

O S 521 P-Oral Pathology (3-, max. 6) Oda Survey of the diseases of the oral facial regions in lecture and laboratory sessions. Diseases of teeth and their supporting structures and diseases of the oral and paraoral soft tissues and bones. Correlations between clinical findings and histopathologic features. Attendance in the laboratory is required. Offered: jointly with ORALB 572; AW.

O S 523 Medical Emergencies in the Dental Setting (1) Initial emergency training, focusing primary upon recertification in BLS (Basic Life Support). Emphasizes intellectual and psychomotor skills for universal treatment of emergencies (including BLS). Credit/no-credit only. Offered: A.

O S 530 Oral Surgery: Didactic (1, max. 3) Covers the scope of oral and maxillofacial surgery as practiced in the United States today. Introductory course for predoctoral dental students. Offered: AWSpS.

O S 532 P-Sedation and Pain Control (2) Techniques of sedation (oral, inhalational, intravenous) and pain control. Offered: A.

O S 540 P-Clinical Care of Oral and Maxillofacial Pathology (2) Chang Presents the clinical treatment modalities used to care for patients with various diseases that present in the oral and maxillofacial area. Offered: jointly with ORALB 540; A.

O S 543 Medical Emergencies in the Dental Setting III (1) Comprehensive review/refreshment of medical emergency training, including recertification in BLS. Students review intellectual and psychomotor skills for emergency care situations. Credit/no-credit only. Offered: S.

O S 550 P-Directed Studies in Oral Surgery (*, max. 16) See DPHS 449 for course description. Credit/no-credit only.

O S 564 Clinical and Histopathological Correlation I (1-3, max. 10) Oda Four quarter advanced oral pathology course designed to interpret the clinical changes of a disease through the lenses of a microscope. Covers around 200 soft tissue disease of the mouth to include epithelial and mesenchymal reactive and neoplastic conditions. Offered: jointly with ORALB 564; AWSpS.

O S 565 Clinical and Histopathological Correlation II (1-3, max. 10) Oda Three quarter advanced oral pathology course designed to interpret the clinical changes of a disease through the lenses through a microscope. Covers around 200 jaw bone and soft tissue disease to include cysts and neoplasms of the jaws and blood diseases of the jaws and soft tissue. Prerequisite: permission of instructor. Offered: jointly with ORALB 565; AWSpS.

O S 574 Clinical Stomatology (3) Oda Diseases of the oral cavity and jaw are presented as the practitioner encounters them - detailed clinical pictures, laboratory tests, radiographic findings, surgical exploration for the establishment of a therapeutic diagnosis. Offered: jointly with ORALB 574; Sp.

O S 630 P-Clinical Oral Surgery (2, max. 6) Clinical experience in simple and complex dentoalveolar and pre-prosthetic surgery. A problem-based course using an auto-tutorial approach covering the extraction of teeth, impaction surgery, medications, surgical complications, treatment of infections, bone cysts, maxillary sinus complications, and salivary gland and mucosal pathology. Credit/no-credit only. Offered: AWSpS.

O S 645 P-Hospital Rotation (2) Clinical experience that puts into practice the material presented in DENT 537. The student is involved in hospital procedures and protocol and in dental care of the hospital patient as well as after-hours call duty. Offered: AWSpS.

O S 651 P-Harborview Clerkship (2-10, max. 10) Four to six-week rotation at Harborview Medical Center, including intensive instruction in oral surgery procedures and observing and assisting oral and maxillofacial surgery in the operating room. Prerequisite: permission of the Director of Harborview Medical Center's Oral and Maxillofacial Surgery Department. Credit/no-credit only.

Orthodontics

ORTHO 449 Directed Studies in Orthodontics (*) Students and faculty with common academic interests pursue them together within the curriculum by means of independent

study and a tutorial student-faculty relationship. Credit/no-credit only. Offered: AWSpS.

ORTHO 520 P- Growth and Development of the Face and Dentition (2) Covers basic concepts in orthodontic work. Exposes students to the growth and development of the dento-facial structures and how orthodontists can predict and use growth to treat malocclusion. Reviews concepts from basic biology and covers specific topics related to orthodontic tooth movement and orthopedic treatment. Offered: A.

ORTHO 521 Diagnosis and Treatment Planning in Orthodontics (3) Basic principles of pre and postnatal growth and development integrated with the recognition, analysis, and treatment of planning of problems encountered in dental and skeletal malocclusions.

ORTHO 522 P-Beginning Adjunctive Orthodontics (2) Lecture/laboratory instruction fabrication of orthodontic study models, clinical photography, and construction and use of removable and fixed orthodontic appliances. Prerequisite: ORTHO 520. Offered: S.

ORTHO 550 P-Directed Studies in Orthodontics (*, max. 6) See DPHS 449 for course description. Credit/no-credit only. Offered: AWSpS.

ORTHO 551 Review of Selected Literature in Orthodontics (1) Students select a topic for review, review appropriate literature, and prepare written critique. Credit/no-credit only. Offered: WSp.

ORTHO 552 Journal Club (1, max. 6) Graduate students review the current orthodontic literature. Credit/no-credit only. Offered: AWSp.

ORTHO 560 Orthodontics Seminar (1-5, max. 25) Methods of diagnosis, analysis, and treatment planning of malocclusion; analysis of methods and theoretical principles used in the treatment of malocclusion. The student presents a detailed case analysis and plan of treatment for each clinical patient supervised. Offered: AWSpS.

ORTHO 562 Orthodontic Theory (1) Lecture-seminar sequence dealing with interpretation and application of orthodontic principles and concepts. Pertinent literature, research findings, and current orthodontic theory are analyzed in depth. Offered: AWSpS.

ORTHO 563 Orthodontic Theory (2) Lecture-seminar sequence dealing with interpretation and application of orthodontic principles and concepts. Pertinent literature, research findings, and current orthodontic theory are analyzed in depth. Offered: AWSpS.

ORTHO 564 Orthodontic Theory (2) Lecture-seminar sequence dealing with interpretation and application of orthodontic principles and concepts. Pertinent literature, research findings, and current orthodontic theory are analyzed in depth. Offered: AWSpS.

ORTHO 565 Orthodontic Theory (2) Lecture-seminar sequence dealing with interpretation and application of orthodontic principles and concepts. Pertinent literature, research findings, and current orthodontic theory are analyzed in depth. Offered: AWSpS.

ORTHO 566 Orthodontic Theory (2) Lecture-seminar sequence dealing with interpretation and application of orthodontic principles and concepts. Pertinent literature, research findings, and current orthodontic theory are analyzed in depth. Offered: AWSpS.

ORTHO 570 Roentgenographic Cephalometry (2) Basic principles, history, and techniques of roentgenographic cephalometry. Offered: AS.

ORTHO 575 Interceptive and Preventive Orthodontics (1, max. 10) Seminar for clinicians in limited-goal treatment of children. Emphasizes public health implications of interceptive orthodontics in reducing disparities and improving compromising malocclusions. Teaches rationale and mechanics of orthodontics in the mixed dentition; and insight to treatment of child. Topics include professional responsi-

bility, cultural competence, nutrition, government aid, and child development. Offered: AWSpS.

ORTHO 580 Functional Cranial Anatomy (2) *Herring* Lecture and laboratory dissection concentrating on clinical and functional anatomy of the head and neck. Offered: S.

ORTHO 582 Adult Orthodontics Seminar (1) Seminar for orthodontic, periodontic, and restorative dentistry graduate students in comprehensive, integrated diagnosis and treatment planning of the dental problems of the adult patient. Offered: AWSpS.

ORTHO 584 Clinical Management of Cleft Lip and Palate and Craniofacial Anomalies (1) Management of these complex patients involves members of a dedicated, highly specialized multidisciplinary team. Insight gained into specific evaluation and treatment modalities of each discipline through lectures, seminars, assigned readings. Integrated approach to management is illustrated by attendance at craniofacial staffing and clinics. Prerequisite: enrollment in graduate orthodontics program. Credit/no-credit only. Offered: AW.

ORTHO 585 Surgical Orthodontic Diagnosis and Treatment Planning (1) Seminar for orthodontic graduate students and oral surgery residents in comprehensive, integrated diagnosis, and treatment planning for patients with major facial deformities. Offered: AWSpS.

ORTHO 587 Management of Debilitated Dentitions (1-, max. 2) Integrated diagnosis and treatment planning for patients with edentulous spaces, emphasizing use of osseointegrated implants and temporary anchorate devices. Offered: SpS.

ORTHO 589 Applied Psychology in Orthodontics and Pediatric Dentistry (1) Application of psychological theories, research, and intervention strategies to orthodontics and pediatric dentistry. Topics include the principles of behavior change, patient compliance with therapeutic regimens, and motivations for orthodontic treatment. Prerequisite: graduate standing in dentistry or permission of instructor. Offered: A.

ORTHO 590 Scientific Methodology in Dental Research (2) Formulates and discusses hypothetical research projects related to orthodontics. Includes review of the scientific method, evaluation of the dental literature, and discussion of proposed master's degree research projects.

ORTHO 591 Advanced Topics in Oral Biology I - Teeth and Bones (1-2, max. 2) *Herring* Covers aspects of biology basic to the dental sciences. Focuses on developmental biology of the craniofacial region, structure and function of teeth, bone, and the periodontium, and dental/oral sensation and pain. Offered: jointly with ORALB 591; W.

ORTHO 597 Preclinical Technique (2) Techniques of construction and manipulation of appliances used in orthodontic therapy for graduate students. Offered: S.

ORTHO 598 Archwire Formation (1) Principles of wire bending and the use of orthodontic pliers. Offered: ASpS.

ORTHO 599 Biomechanics (1) Principles of biologic reactions to application of orthodontic forces. Credit/no-credit only. Offered: W.

ORTHO 600 Independent Study or Research (*-) Managing the experimental protocol; data collection and analysis; and preparation and writing of a thesis or publishable manuscript. Prerequisite: permission of instructor. Offered: SpS.

ORTHO 630 P-Introduction to Clinical Orthodontics (1, max. 6) Direct clinical application of principles of orthodontic diagnosis and treatment planning for simple orthodontic appliances to modify tooth position in preparation for definitive restorative and/or periodontal therapy. Prerequisite: ORTHO 522. Offered: AW.

ORTHO 631 Minor Orthodontic Treatment (1) Clinical treatment of minor orthodontic problems suitable for the general dentist, i.e., direct clinical application of principles of orthodontic diagnosis and treatment planning for simple

orthodontic appliances to modify tooth position in preparation for definitive restorative or periodontal therapy. Offered: AWSpS.

ORTHO 660 P-Clinical Orthodontics (1-6, max. 24) Clinical application of the techniques in the treatment of malocclusion. Prerequisite: students enrolled in the graduate orthodontics program. Offered: AWSpS.

ORTHO 682 Adult Orthodontics Clinic (1) Clinic for orthodontic graduate students in the treatment of the dental problems of the adult patient. Offered: AWSpS.

Pediatric Dentistry

PEDO 520 P-Pediatric Dentistry (4) Introduction to clinical pediatric dentistry, including behavior management, oral diagnosis, preventive dentistry, dental anomalies, radiography, anesthesia, restorative procedures, pulpal therapy, interceptive orthodontics, and traumatic dental injuries of the child patient. Offered: S.

PEDO 550 P-Directed Studies in Pediatric Dentistry (*, max. 6) See DPHS 449 for course description. Credit/no-credit only. Offered: S.

PEDO 560 Fundamentals of Pediatric Dentistry (1) Pre-clinical laboratory, lecture course covering fundamentals of primary care in pediatric dentistry, including behavior management, dental emergencies, prevention, diagnosis and treatment planning, and infection control. Offered: S.

PEDO 570 Pediatric Dentistry Seminar I (2) Series of seminars covering principles and theory of child development and behavior management for pediatric patient, including sedation, general anesthesia, and principles of informed consent, pathology of oral manifestations of diseases of children and adolescents, pediatric radiology, and use of computers in didactic, clinical, and research endeavors, and the scientific basis for the prevention and treatment of dental caries, periodontal disease, and developmental anomalies. Offered: S.

PEDO 571 Pediatric Dentistry Seminar II (2) Series of seminars covering principles and theory of child development and behavior management for pediatric patient, including sedation, general anesthesia, and principles of informed consent, pathology of oral manifestations of diseases of children and adolescents, pediatric radiology, and use of computers in didactic, clinical, and research endeavors, and the scientific basis for the prevention and treatment of dental caries, periodontal disease, and developmental anomalies. Offered: A.

PEDO 572 Pediatric Dentistry Seminar III (2) Series of seminars covering principles and theory of child development and behavior management for pediatric patient, including sedation, general anesthesia, and principles of informed consent, pathology of oral manifestations of diseases of children and adolescents, pediatric radiology, and use of computers in didactic, clinical, and research endeavors, and the scientific basis for the prevention and treatment of dental caries, periodontal disease, and developmental anomalies. Offered: W.

PEDO 573 Pediatric Dentistry Seminar IV (2) Series of seminars covering principles and theory of child development and behavior management for pediatric patient, including sedation, general anesthesia, and principles of informed consent, pathology of oral manifestations of diseases of children and adolescents, pediatric radiology, and use of computers in didactic, clinical, and research endeavors, and the scientific basis for the prevention and treatment of dental caries, periodontal disease, and developmental anomalies. Offered: Sp.

PEDO 574 Pediatric Dentistry Seminar V (2) Series of MCH (Maternal and Child Health) seminars covering principles and theory of child development and behavior management for pediatric patient, including sedation, general anesthesia, and principles of informed consent, pathology of oral manifestations of diseases of children and adolescents, pediatric radiology, and use of computers in didactic, clinical,

cal, and research endeavors, and the scientific basis for the prevention and treatment of dental caries, periodontal disease, and developmental anomalies. Offered: S.

PEDO 575 Pediatric Dentistry Seminar VI (2) Series of MCH (Maternal and Child Health) seminars covering principles and theory of child development and behavior management for pediatric patient, including sedation, general anesthesia, and principles of informed consent, pathology of oral manifestations of diseases of children and adolescents, pediatric radiology, and use of computers in didactic, clinical, and research endeavors, and the scientific basis for the prevention and treatment of dental caries, periodontal disease, and developmental anomalies. Offered: A.

PEDO 576 Pediatric Dentistry Seminar VII (2) Series of MCH (Maternal and Child Health) seminars covering principles and theory of child development and behavior management for pediatric patient, including sedation, general anesthesia, and principles of informed consent, pathology of oral manifestations of diseases of children and adolescents, pediatric radiology, and use of computers in didactic, clinical, and research endeavors, and the scientific basis for the prevention and treatment of dental caries, periodontal disease, and developmental anomalies. Offered: W.

PEDO 577 Pediatric Dentistry Seminar VIII (2) Series of MCH (Maternal and Child Health) seminars covering principles and theory of child development and behavior management for pediatric patient, including sedation, general anesthesia, and principles of informed consent, pathology of oral manifestations of diseases of children and adolescents, pediatric radiology, and use of computers in didactic, clinical, and research endeavors, and the scientific basis for the prevention and treatment of dental caries, periodontal disease, and developmental anomalies. Offered: Sp.

PEDO 580 Developmental Disabilities Seminar (1) Multidisciplinary approach to managing children with developmental disabilities. Offered: S.

PEDO 581 Developmental Disabilities Seminar (1) Multidisciplinary approach to managing children with developmental disabilities. Offered: A.

PEDO 582 Developmental Disabilities Seminar (1) Multidisciplinary approach to managing children with developmental disabilities. Offered: W.

PEDO 583 Developmental Disabilities Seminar (1) Multidisciplinary approach to managing children with developmental disabilities. Offered: Sp.

PEDO 584 Pediatric Dentistry Seminar (2) In-depth knowledge and understanding of the topics related to, and supportive, of, the clinical practice of pediatric dentistry.

PEDO 600 Independent Study or Research (*-) Prerequisite: permission of instructor. Offered: AW.

PEDO 610 Clinical Pediatric Dentistry (3) Major clinical experience for graduate pediatric dental students in basic through advanced pediatric dentistry. Offered for the length of the program (two or three years) in the University of Washington pediatric dental program.

PEDO 630 P-Clinical Pediatric Dentistry (1-, max. 7) Educational experiences in comprehensive clinical pediatric dentistry. Students register third and fourth years for 24 sessions in the pediatric dentistry clinic, a 3-day rotation at a community clinic, computer assisted clinical simulations, behavioral change projects, and a written analysis of videotaped patient/student clinic encounters. Offered: AWSpS.

PEDO 650 P-Pediatric Dentistry Extramurals (1-6, max. 6) Clinical extramurals in the field of children's dentistry. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

PEDO 660 P-Clinical Pediatric Dentistry (1-3, max. 3) Clinical experience for graduate pediatric dental students in basic through advanced pediatric dentistry. Offered: S.

PEDO 661 P-Clinical Pediatric Dentistry (1-3, max. 3) Clinical experience for graduate pediatric dental students in basic through advanced pediatric dentistry. Offered: A.

PEDO 662 P-Clinical Pediatric Dentistry (1-3, max. 3) Clinical experience for graduate pediatric dental students in basic through advanced pediatric dentistry. Offered: W.

PEDO 663 P-Clinical Pediatric Dentistry (1-3, max. 3) Clinical experience for graduate pediatric dental students in basic through advanced pediatric dentistry. Offered: Sp.

PEDO 664 P-Clinical Pediatric Dentistry (1-3, max. 3) Clinical experience for graduate pediatric dental students in basic through advanced pediatric dentistry. Offered: S.

PEDO 665 P-Clinical Pediatric Dentistry (1-3, max. 3) Clinical experience for graduate pediatric dental students in basic through advanced pediatric dentistry. Offered: A.

PEDO 666 P-Clinical Pediatric Dentistry (1-3, max. 3) Clinical experience for graduate pediatric dental students in basic through advanced pediatric dentistry. Offered: W.

PEDO 667 P-Clinical Pediatric Dentistry (1-3, max. 3) Clinical experience for graduate pediatric dental students in basic through advanced pediatric dentistry. Offered: Sp.

PEDO 668 Clinical Clerkship in Pediatric Dentistry: Yakima Valley (*, max. 5) Comprehensive dental care for economically-disadvantaged children in a rural community health center. Offered: AWSpS.

PEDO 669 Supervised Clinical Teaching (1-3, max. 4) Graduate pediatric dental students provide clinical instruction for predoctoral dental students by supervising clinical sessions. Offered: AWSpS.

PEDO 670 Hospital Pediatric Dentistry (1-3, max. 3) Diagnosis, management, and treatment of patients with disabilities in Seattle Children's Hospital Dental Clinic. Offered: S.

PEDO 671 Hospital Pediatric Dentistry (1-3, max. 3) Diagnosis, management, and treatment of patients with disabilities in Seattle Children's Hospital Dental Clinic. Offered: A.

PEDO 672 Hospital Pediatric Dentistry (1-3, max. 3) Diagnosis, management, and treatment of patients with disabilities in Seattle Children's Hospital Dental Clinic. Offered: W.

PEDO 673 Hospital Pediatric Dentistry (1-3, max. 3) Diagnosis, management, and treatment of patients with disabilities in Seattle Children's Hospital Dental Clinic. Offered: Sp.

PEDO 674 Hospital Pediatric Dentistry (1-3, max. 3) Diagnosis, management, and treatment of patients with disabilities in Seattle Children's Hospital Dental Clinic. Offered: S.

PEDO 675 Hospital Pediatric Dentistry (1-3, max. 3) Diagnosis, management, and treatment of patients with disabilities in Seattle Children's Hospital Dental Clinic. Offered: A.

PEDO 676 Hospital Pediatric Dentistry (1-3, max. 3) Diagnosis, management, and treatment of patients with disabilities in Seattle Children's Hospital Dental Clinic. Offered: W.

PEDO 677 Hospital Pediatric Dentistry (1-3, max. 3) Diagnosis, management, and treatment of patients with disabilities in Seattle Children's Hospital Dental Clinic. Offered: Sp.

PEDO 679 Care of the Disabled Pediatric Patient (1) Clinical experiences in the management of disabled patients. Offered: S.

PEDO 680 Pediatric Dentistry under General Anesthesia (1-4, max. 4) Clinical course involving preoperative assessment of comprehensive dental treatment under general anesthesia and follow-up care. Offered: S.

PEDO 681 Pediatric Dentistry under General Anesthesia (1-4, max. 4) Clinical course involving preoperative assessment of comprehensive dental treatment under general anesthesia and follow-up care. Offered: A.

PEDO 682 Pediatric Dentistry under General Anesthesia (1-4, max. 4) Clinical course involving preoperative assessment of comprehensive dental treatment under general anesthesia and follow-up care. Offered: W.

PEDO 683 Pediatric Dentistry under General Anesthesia (1-4, max. 4) Clinical course involving preoperative assessment of comprehensive dental treatment under general anesthesia and follow-up care. Offered: Sp.

PEDO 684 Pediatric Dentistry under General Anesthesia (1-4, max. 4) Clinical course involving preoperative assessment of comprehensive dental treatment under general anesthesia and follow-up care. Offered: S.

PEDO 685 Pediatric Dentistry under General Anesthesia (1-4, max. 4) Clinical course involving preoperative assessment of comprehensive dental treatment under general anesthesia and follow-up care. Offered: A.

PEDO 686 Pediatric Dentistry under General Anesthesia (1-4, max. 4) Clinical course involving preoperative assessment of comprehensive dental treatment under general anesthesia and follow-up care. Offered: W.

PEDO 687 Pediatric Dentistry under General Anesthesia (1-4, max. 4) Clinical course involving preoperative assessment of comprehensive dental treatment under general anesthesia and follow-up care. Offered: Sp.

PEDO 690 Craniofacial Anomalies Clinic (1-4, max. 4) Multidisciplinary clinic in which children with craniofacial anomalies are evaluated and complex treatment plans developed and assessed. Offered: A.

PEDO 691 Craniofacial Anomalies Clinic (1-4, max. 4) Multidisciplinary clinic in which children with craniofacial anomalies are evaluated and complex treatment plans developed and assessed. Offered: W.

PEDO 692 Craniofacial Anomalies Clinic (1-4, max. 4) Multidisciplinary clinic in which children with craniofacial anomalies are evaluated and complex treatment plans developed and assessed. Offered: Sp.

PEDO 693 Craniofacial Anomalies Clinic (1-4, max. 4) Multidisciplinary clinic in which children with craniofacial anomalies are evaluated and complex treatment plans developed and assessed. Offered: S.

PEDO 694 Craniofacial Anomalies Clinic (1-4, max. 4) Multidisciplinary clinic in which children with craniofacial anomalies are evaluated and complex treatment plans developed and assessed. Offered: A.

PEDO 695 Craniofacial Anomalies Clinic (1-4, max. 4) Multidisciplinary clinic in which children with craniofacial anomalies are evaluated and complex treatment plans developed and assessed. Offered: W.

PEDO 696 Craniofacial Anomalies Clinic (1-4, max. 4) Multidisciplinary clinic in which children with craniofacial anomalies are evaluated and complex treatment plans developed and assessed. Offered: Sp.

PEDO 697 Craniofacial Anomalies Clinic (1-4, max. 4) Multidisciplinary clinic in which children with craniofacial anomalies are evaluated and complex treatment plans developed and assessed. Offered: S.

PEDO 699 Pediatric Orthodontic Clinic (1-4, max. 4) Clinical orthodontic care for pediatric patients. Offered: AWSpS.

Periodontics

PERIO 449 Directed Studies in Periodontics (*) See DPHS 449 for course description. Credit/no-credit only.

PERIO 517 Introduction to Periodontics (2) Epidemiology, natural history, etiology, histopathology, and genetics of various periodontal diseases. Offered: Sp.

PERIO 525 P-Prevention/Periodontics (2-) Introduction to periodontal therapy. Offered: W.

PERIO 526 P-Prevention/Periodontics (-2) Overview of preventive dentistry, introduction to periodontal therapy. Offered: Sp.

PERIO 530 P-Principles of Periodontics (2-) Helps to develop an understanding of types of periodontal diseases, natural course of periodontitis, clinical assessment of periodontal diseases, decision making in the management of

periodontal diseases, adjunctive treatments to non-surgical periodontal therapy, concepts of periodontal surgery, management of advanced periodontal lesions, biology of periodontal regeneration, and evidence based approach in treatment planning. Prerequisite: PERIO 525-PERIO 526 and PERIO 527. Offered: A.

PERIO 531 P-Principles of Periodontics (-2) Helps to develop an understanding of diagnosis and management of furcation invasion, clinical and anatomical outcomes of periodontal therapy, supportive periodontal therapy, diagnosis and management of periodontitis associated with endodontic lesions, diagnosis and management of periodontal emergencies, diagnosis and management of non-plaque induced gingival diseases, management of gingival recessions, biologic width considerations in restorative dentistry, pre-orthodontic considerations, diagnosis and management of periimplant diseases, and periodontal treatment planning as an inherent part of integrated dental care. Offered: W.

PERIO 540 Advanced Periodontics (1) Designed to improve the understanding of sequencing of patient care and providing periodontal therapy into the perspective of a comprehensive care system. Offered: A.

PERIO 550 P-Directed Studies in Periodontics (*, max. 6) See DPHS 449 for course description. Credit/no-credit only.

PERIO 561 Periodontal Case Management (2-, max. 8) Didactic presentation of clinical periodontics to provide a comprehensive view of the field and a grasp of modern therapeutics. Offered: AWSp.

PERIO 566 Practice Management (1) Aspects of setting up and administering a private periodontal practice. Financing, insurance, office design, equipment, employees, professional forms, marketing strategies, and patient management. Prerequisite: PERIO 561. Credit/no-credit only. Offered: S.

PERIO 567 Oral Medicine Case Studies (1, max. 3) Weekly seminar discussing series of unknown oral and perioral conditions. Discussion of history taking, differential diagnoses, relevant tests, therapeutic approaches, and outcomes. Offered: AWSp.

PERIO 574 Periodontal Microbiology (2) Viral, bacterial classification; physiology; toxicity mechanisms reviewed. Formation and composition of plaque and calculus, and chemical methods of control discussed. Specific microbial floras of acute and chronic gingivitis, early onset forms of periodontitis, and adult periodontitis studied. Principles of antibiotic use reviewed. Offered: A.

PERIO 575 Immunologic Aspects of Oral Diseases (2) Acquaints students with basic concepts of immunology and immunopathology. Topics include elements of innate and acquired immunity, genetic bases of antibody structure and function, immunopathologic mechanisms, transplantation immunology, immunologic manifestations in mucocutaneous oral lesions, caries and periodontal disease, principles of vaccination, and critical evaluation of the dental stem cells potential for oral tissue engineering. Offered: A.

PERIO 576 The Molecular and Cellular Biology of the Periodontium (2) Nucleic acid, protein, and carbohydrate biochemistry reviewed. Roles of collagens and proteoglycans in gingival tissues and the organization of oral epithelia discussed. Structures of human and animal periodontal lesions compared. Cellular and molecular inflammatory and immunological mechanisms in periodontal disease discussed. History, classification, and epidemiology of periodontal diseases described. Offered: Sp.

PERIO 577 Review of Literature (2, max. 16) Concise review of the scientific periodontal literature with specific focus on studies of periodontal diagnosis, wound healing, periodontal regeneration, microbiology, and implant procedures. Offered: AWSpS.

PERIO 578 Implant Literature Review (1) *Verardi* Reviews several topics related to dental implantology such as: his-

tory of dental implants, osseointegration, properties of materials, bone healing, bone augmentation procedures, success rates, pathogenesis of implant failures, and aesthetics in implantology. Discusses the relationship between surgical and restorative treatment phases. Credit/no-credit only. Offered: AWSp.

PERIO 580 Foundations in Implant Dentistry (1) *London, Raigrodski* Details the core surgical and prosthetic considerations in dental implant patient care. Topics include case planning, anatomy, radiography, surgery, componentry, occlusion, and applications for implant dentistry. Offered: S.

PERIO 582 Periodontic Treatment Planning Seminar (1-, max. 12) Weekly seminar involved with the presentation, discussion, and tentative solution of moderate to complex problems in diagnosis and treatment. Offered: AWSpS.

PERIO 585 Periodontal Therapy Seminar (1-, max. 12) Weekly seminar utilizing the case review method and dealing with the treatment of moderate to advanced periodontal disease. Offered: AWSpS.

PERIO 586 Longitudinal Evaluation of Periodontal Therapy (1-, max. 9) Helps to develop in-depth knowledge and analytical skills in estimating prognosis, assessing comprehensive treatment plans, evaluating long-term treatment outcomes, and evidence-based clinical decision making. Offered: AWSp.

PERIO 592 Prescription Surgery (1-, max. 3) Clinical course in periodontal surgery in which surgical procedures are performed on prescription basis for patients undergoing therapy in the undergraduate dental clinic. Exposes student to a wider spectrum of patients and simulates an environment in which the student can encounter the problems in communication and patient management that occur in the private sector.

PERIO 600 Independent Study or Research (*-) Prerequisite: permission of Graduate Program Adviser.

PERIO 620 P-Introduction to Clinical Periodontics (1) Clinical periodontics, with emphasis on examination, assessment, and treatment planning. Credit/no-credit only. Offered: S.

PERIO 630 P-Periodontics (1-) Students diagnose periodontal disease and plan and perform periodontal therapies, treating patients in a stepwise manner, describing clinical conditions, and integrating periodontal therapy in a comprehensive plan of care. Prerequisite: PERIO 517 and PERIO 525-PERIO 526. Offered: A.

PERIO 631 P-Periodontics (-1-) Students diagnose periodontal disease and plan and perform periodontal therapies, treating patients in a stepwise manner, describing clinical conditions, and integrating periodontal therapy in a comprehensive plan of care. Prerequisite: PERIO 517 and PERIO 525-PERIO 526. Offered: W.

PERIO 632 P-Periodontics (-1) Students diagnose periodontal disease and plan and perform periodontal therapies, treating patients in a stepwise manner, describing clinical conditions, and integrating periodontal therapy in a comprehensive plan of care. Prerequisite: PERIO 517 and PERIO 525-PERIO 526. Offered: Sp.

PERIO 639 Advanced Clinical Periodontics (1-) Maintenance and treatment of patients with more complex periodontal involvement. Development of skill in comprehensive treatment planning and execution by the individual student. Allowance made for surgical periodontics and experience in assisting in the treatment of advanced cases.

PERIO 640 P-Advanced Clinical Periodontics (-1-) Maintenance and treatment of patients with more complex periodontal involvement. Development of skill in comprehensive treatment planning and execution by the individual student. Allowance made for surgical periodontics and experience in assisting in the treatment of advanced cases. Offered: A.

PERIO 641 P-Advanced Clinical Periodontics (-1-) Maintenance and treatment of patients with more complex

periodontal involvement. Development of skill in comprehensive treatment planning and execution by the individual student. Allowance made for surgical periodontics and experience in assisting in the treatment of advanced cases. Offered: W.

PERIO 642 P-Advanced Clinical Periodontics (-1) Maintenance and treatment of patients with more complex periodontal involvement. Development of skill in comprehensive treatment planning and execution by the individual student. Allowance made for surgical periodontics and experience in assisting in the treatment of advanced cases. Offered: Sp.

PERIO 659 P-Periodontics Extended Learning (*, max. 4) Supplemental work in periodontics to correct an area of student deficiency. Credit/no-credit only.

PERIO 660 Clinical Periodontics ([2-6]-, max. 60) Clinical experience in diagnosis and treatment of periodontal disease.

PERIO 661 Advanced Root Preparation (1) *Daubert* Advanced skill development in the use of the periodontal probe, gracey curettes, files and instrument sharpening. Includes laboratory sessions on dentofoms leading up to treatment of initial therapy patients. Offered: S.

PERIO 662 Stomatology Clinic (1, max. 4) The diagnosis and treatment of oral and perioral lesions including history taking, biopsies, hematological laboratory tests and chemotherapy. Periodontal therapy in medically compromised patients in the hospital setting. Microscopic review of biopsy specimens. Offered: AWSpS.

PERIO 663 Pre-Prosthodontics Clinical Periodontics (*) Clinical diagnosis and treatment of periodontal disease for nonperiodontics student. Prerequisite: permission of department chairperson. Credit/no-credit only.

PERIO 665 Clinical Practice Teaching (*, max. 9) Supervised experience in teaching clinical periodontics to undergraduate dental students.

PERIO 685 Hospital Periodontics (1) Preparation in periodontics to practice in hospital situations, including experience in operation of nitrous oxide analgesia, general anesthesia, intravenous premedication, treating of out- and inpatients.

Prosthodontics

PROS 520 P-Complete Dentures (4) Deals with the basic principles of complete denture fabrication as well as the didactic portion of diagnosis and treatment of a completely edentulous patient. Offered: A.

PROS 523 P-Removable Partial Denture Design (2) Focuses on the basic principles of removable partial denture design. Covers technical aspects of design procedures in the pre-clinic laboratory using casts of real patients. Introduces some advanced designs using attachments and implants. Offered: A.

PROS 524 P-Immediate Dentures (3) Deals with the basic principles of immediate denture fabrication as well as the didactic portion of diagnosis and treatment of partial edentulous patient. Covers the principles in immediate complete denture design and fabrication. Offered: W.

PROS 525 P-Removable Partial Dentures (4) Deals with those procedures the dentist must perform to fabricate a physiologically acceptable removable partial denture. Student gains experience via laboratory exercises prior to beginning prosthodontic treatment of a partially edentulous patient. Offered: Sp.

PROS 560 Complete and Immediate Dentures (2) Lecture/seminar devoted to the diagnosis and treatment of the completely edentulous patient and the immediate denture patient, with emphasis on management of patients with difficulties in treatment. Offered: S.

PROS 563 Maxillofacial Prosthetics I (1) Introductory lecture/seminar series with emphasis on diagnosis and prosthodontic rehabilitative treatment of patients who

have experienced trauma or have congenital or acquired defects in the oral region. Offered: S.

PROS 564 Maxillofacial Prosthetics II (1) Introductory lecture series focusing on the prosthodontic rehabilitation of patients with loss and compromise of facial anatomy, i.e., ocular, orbital, nasal, auricular, combination intraoral/extraoral, and other related facial deformities. Offered: A.

PROS 571 Review of Literature Seminar (1, max. 12) Weekly seminar devoted to the review of prosthodontic and related literature. Offered: AWSp.

PROS 572 Special Topics Related to Prosthodontics (1) Lecture-seminar series focusing on relating principles of basic science to clinical application in prosthodontics. A wide and varied range of topics including surgery, psychology, speech, pharmacology, practice management, physiology, temporomandibular/myofascial joint dysfunction. Offered: S.

PROS 600 Independent Study or Research (*-) Prerequisite: permission of Graduate Program Adviser. Offered: AWSpS.

PROS 630 P-Clinical Prosthodontics ([1-2]-, max. 5) Clinical course involving the diagnosis and management of completely and partially edentulous patients. Removable partial dentures and immediate dentures are fabricated. Follow-up care provided for patients previously treated. Offered: AWSpS.

PROS 640 P-Clinical Prosthodontic Maintenance (1-, max. 3) Clinic involving additional patient treatment with complete, partial, or intermediate dentures, plus indirect relines, managing adjustment chair, peer review, recall clinic, and follow-up care for patients previously treated. Offered: AWSp.

PROS 650 P-Extramurals in Prosthodontics (*, max. 12) Elective clinical experiences or clinical practice teaching. Prerequisite: permission of instructor. Credit/no-credit only.

PROS 660 Clinical Prosthodontics (1-2, max. 6) Practical application of material covered in PROS560 and PROS 562. Offered: AWSpS.

PROS 665 Clinical Practice Teaching (1-, max. 4) Supervised experience in teaching clinical prosthodontics to the undergraduate dental student.

Restorative Dentistry

RES D 510 P-Dental Materials Science ([1/2]-, max. 3) Basic concepts of dental materials science including physical, mechanical, chemical, and biological properties of restorative dental materials. Clinical use of restorative dental materials also presented. Offered: WSp.

RES D 511 P-Applied Dental Materials (3) Lecture/laboratory emphasizing proper use of restorative dental materials through simulated clinical projects. Student self-evaluation also emphasized. Offered: Sp.

RES D 515 P-Dental Anatomy (3) Lecture and laboratory on the morphology and nomenclature of individual teeth of the adult human dentition. Introduction to function and the influence of tooth anatomy on clinical dental procedures. Offered: A.

RES D 516 P-Introduction to Occlusion (3) Introduces first-year dental students to the occlusion of permanent teeth. Students gain an depth of understanding of occlusal concepts, details of tooth anatomy, and expand motor skills and perceptual skills. Students also learn to candidly and accurately self-assess their work. Offered: W.

RES D 517 P-Functional Analysis of Occlusion (3) Clinical and laboratory experiences in examination and charting of patient's occlusion, record-taking for analysis of occlusion on a dental articulator, and preclinical diagnostic correction of problems of occlusion on articulated clinical casts. Provides basic background or technique information relative to laboratory and clinical experiences. Offered: Sp.

RES D 519 P-Operative Dentistry (1) Lecture series introducing operative dentistry. Nomenclature, assessment of disease risk, disease classification, instrumentation, pulp protection, and principles of cavity preparation. Offered: Sp.

RES D 520 P-Introduction to Operative Dentistry Technique (3) Covers the most current surgical techniques to restore one-surface carious lesions in permanent teeth. Cognitive and motor competency exams present clinical scenarios requiring application of didactic principles, perceptual skills, self-assessment, and application of the literature for successful completion. Offered: A.

RES D 521 P-Introduction to Operative Dentistry Technique (3) Introduces processes of restoring diseased or damaged tooth structure to proper health, form, function, and esthetics. Emphasis on basic principles of cavity preparation for multiple-surface direct filling restorations. Other considerations include restoration design, proper selection and use of restorative materials, and clinical considerations for restorative treatment planning. Requires demonstration of competence in didactic and practical aspects. Limited opportunity available for introduction to restorative care. Offered: W.

RES D 522 P-Introduction to Operative Dentistry Technique (3) Introduces processes of restoring diseased or damaged tooth structure to proper health, form, function, and esthetics. Emphasis on basic principles of cavity preparation for proper coverage cast gold, ceramic, and foundation buildup restorations. Other considerations include restoration design, proper selection and use of restorative materials, and clinical considerations for restorative treatment planning. Following demonstration of competence in didactic and practical aspects. Limited opportunity available for introduction to restorative care. Offered: Sp.

RES D 525 P-Fixed Prosthodontics (3) Serves as introduction to area of restorative dentistry dealing with indirect partial-coverage restorations and complete coverage restorations. Preclinical experience provided in tooth preparation, provisional restoration, and fabrication for various crown designs. Projects emphasize the various designs of single-tooth preparations and restoration. Offered: A.

RES D 526 P-Fixed Prosthodontics (3) Serves as introduction to area of fixed prosthodontics dealing with multiple-unit restorations. Preclinical experience provided with multiple tooth preparations and provisional restoration. Fabrication for various crown designs, singly and in conjunction with various pontic and connector types, to serve as fixed partial denture prostheses. Projects emphasize multiple-tooth preparation/restoration and implant-supported restorations. Offered: W.

RES D 527 P-Fixed Prosthodontics (3) Serves as introduction to area of fixed prosthodontics dealing with esthetic veneer indirect restorations. Preclinical experience provided in tooth preparation and restoration, fabrication for various esthetic veneer crown designs, singly and in conjunction with various pontic types to serve as fixed partial denture prostheses. Projects emphasize anterior single- and multiple-tooth preparation/restoration, provisional prostheses, and esthetic veneer restorations. Offered: Sp.

RES D 529 Implant Dentistry (3) Includes history of implantology; basic science of osseointegration; surgical, prosthetic, and restorative considerations for the partially and fully edentulous patient; occlusal considerations of implant treatment; surgical placement and restorative procedures; management of patients; surgical and prosthetic considerations; developing a treatment plan on assigned case; and restoring a single implant and mandibular implant overdenture.

RES D 530 P-Restorative Dentistry (2) Lecture series related to RES D 630 presenting restorative dentistry principles, including supportive material on clinical procedures. Emphasis on single-unit gold and esthetic veneer clinical procedures. Offered: A.

RES D 531 P-Restorative Dentistry (2) Lecture series related to RES D 630 presenting restorative dentistry principles, including supportive material on clinical procedures. Emphasis on multiple-unit gold and esthetic veneer clinical procedures. Offered: W.

RES D 533 Advanced Restorative Dentistry (2) Introduces new techniques and materials. Presents complex restorative/prosthodontics treatment options involving dental specialties. Broadens base of treatment planning and restorative implant procedures. Offered: Sp.

RES D 540 P-Restorative Dentistry (2) Lecture series related to RES D 630 presenting restorative dentistry principles, including supportive material on clinical procedures. Offered: A.

RES D 541 Contemporary Topics in Restorative Dentistry (2) Broadens base of restorative procedures. Introduction of new techniques and presentation of complex restorative treatment involving dental specialties. Credit/no-credit only. Offered: W.

RES D 542 P-New Developments in Dental Materials (1) Dental materials recently introduced to dental profession reviewed, compared to current materials, and clinically evaluated. Offered: Sp.

RES D 550 P-Directed Studies in Restorative Dentistry (*, max. 6) See DPHS 449 for course description. Credit/no-credit only. Offered: AWSpS.

RES D 570 Review of Literature Seminar (1, max. 6) Continuous weekly seminar devoted to a review of restorative and related literature, and discussion of teaching methods, philosophy of teaching, and treatment. Offered: AWSp.

RES D 580 Restorative Treatment Planning Seminar (1-, max. 8) Continuous weekly seminar to discuss controversial treatment problems and difficult diagnostic cases selected for graduate students. Offered: AWSp.

RES D 585 Advanced Dental Materials Science (2) Advanced concepts of dental materials science including physical, mechanical, chemical, and biological properties of restorative dental materials. Emphasis also on research design, testing methods, and proper selection of dental materials for clinical practice. Offered: W.

RES D 588 Masticatory Functional Analysis and Occlusal Adjustment (2) Lecture/seminar and clinical sessions in the study of the physiology of occlusion. Pertinent literature reviewed and discussed from the multidisciplinary viewpoint. The clinical sessions include training in masticatory functional analysis and treatment of occlusally related diseases. Offered: A.

RES D 589 Review of Literature in Occlusion (2) Seminar to review pertinent literature in occlusion. Offered: S.

RES D 590 Fundamentals of Fixed Prosthodontics (2-, max. 4) Lecture/laboratory/clinical sessions in the study of gnathological principles and procedures as they pertain to the treatment of comprehensive cases assigned to the students. Use and application of several articulators. Offered: A.

RES D 600 Independent Study or Research (*-) Prerequisite: permission of Graduate Program Adviser. Offered: AWSpS.

RES D 620 P-Comprehensive Treatment Planning in Restorative Dentistry (3) Orientation to restorative clinical operations, administrative procedures associated with patient management, and formulation of treatment plans. Emphasizes problem-based learning, treatment outcomes, the sequence of clinical treatment, and the diagnosis and management of dental disease. Offered: S.

RES D 630 P-Clinical Restorative Dentistry ([1-3]-, max. 9) Clinical training in fundamental restorative dentistry procedures, including diagnostic, treatment planning, and therapeutic aspects of restorative dentistry. Offered: AWSp.

RES D 635 Clinical Restorative Dentistry (3) Knowledge and experience in the diagnosis and restoration of dis-

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eased, damaged, unesthetic, or missing teeth. Experience in management of complex, inter-disciplinary treatment plans. Skills in patient communication and management. Utilization of broader range of restorative materials and techniques. Offered: S.

RES D 640 P-Advanced Clinical Restorative Dentistry ([1-3]-, max. 12) Clinical training in restorative dentistry procedures, including diagnostic, treatment planning, and therapeutic aspects of restorative dentistry. Offered: AWSp.

RES D 650 Restorative Dentistry Clinical Elective (1-6, max. 12) Elective offering in clinical areas related to discipline. Credit/no-credit only. Offered: AWSpS.

RES D 659 P-Restorative Dentistry Extended Learning (*, max. 4) Supplemental work in restorative dentistry to correct an area of student deficiency. Credit/no-credit only. Offered: S.

RES D 660 Oral Rehabilitation ([1-6]-, max. 32) Clinical course to provide experience in diagnosis and treatment of patients requiring restorative procedures from single restorations to complex oral rehabilitative methods. Special emphasis is directed toward the integration of periodontics and occlusion as they relate to restorative dentistry. Offered: AWSpS.

RES D 665 Clinical Practice Teaching (1, max. 4) Supervised experience in teaching restorative dentistry to undergraduate dental students. Offered: AWSpS.

College of Education

Dean

Tom Stritikus

222 Miller

Associate Deans

Carol David

Elham Kazemi

Deborah E. McCutchen

Joy Williamson-Lott

The College of Education is primarily a graduate and professional school dedicated to equity and excellence in education through the preparation and on-going renewal of education professionals, the promotion of social justice, the advancement of knowledge through research, and the connection of research to inform policy and improve practice. In its graduate programs the College has four broad curricular areas: Curriculum and Instruction, Educational Leadership and Policy Studies, Educational Psychology, and Special Education. Graduate degrees conferred include the MEd, EdS, EdD, and PhD. Certification can be earned in teaching (elementary, secondary, and special education), school administration (principals, program administrators, and superintendents), and school psychology.

In addition, the College offers a BA with a major in early childhood and family studies, in both the traditional classroom format and through an online degree completion program. In collaboration with the College of Arts and Sciences, the College also offers an undergraduate minor in education, learning, and society.

The College of Education at the University of Washington believes that an effective public education system for a diverse citizenry is the cornerstone of a democratic society. To that end, the College dedicates its resources to helping make an excellent education an everyday reality for every student in every community across the state and country. As part of a major university located in a metropolitan area, the College is able to work in collaboration with a number of school districts in the area to provide teaching, research, and field experiences for its students.

Special Offices and Services

The College of Education maintains a number of specialized offices to assist in the fulfillment of its goals. Among these are the Office of Teacher Education, the Office of Student Services, the Office of Minority Recruitment and Retention, and a Writing Support Center. In addition, the College of Education maintains formal relationships with a number of school districts in the area to provide research and field experience opportunities for students in the various programs. Individuals interested in teacher certification, in graduate degree programs, or in the early childhood and family studies major, may visit the College's website, education.uw.edu, or e-mail edinfo@uw.edu, for additional information.

UNDERGRADUATE PROGRAM

Adviser

206 Miller Hall

(206) 221-3527

ecfsinfo@uw.edu

The College of Education offers the following programs of study:

- The Bachelor of Arts degree with a major in early childhood and family studies

- A minor in education, learning, and society (with the College of Arts & Sciences)

Bachelor of Arts

The Bachelor of Arts in early childhood and family studies is a challenging, inspiring academic path. ECFS majors study early childhood development, early learning, and family studies from a variety of perspectives across a range of disciplines. Students participate in fieldwork and/or research throughout their junior and senior years. Alumni pursue careers in social services/mental health, education, childcare, or research. They may also pursue graduate studies in education, speech and hearing sciences, physical therapy, occupational therapy, nursing, psychology, nutrition, and social work.

Suggested First- and Second-Year Coursework: A course in biological sciences (BIOL 100, BIOL 104, or similar); a course in biological bases of development (BIOL 118, B STR 301, PSYCH 202, or similar); a college-level mathematics or statistics course, EDUC 170, EDPSY 490, or EDPSY 491; ECFS 200 recommended, but not required

Department Admission Requirements

1. Satisfactory progress toward completion of general education requirements
2. Admission is competitive, based on the following criteria. Completion of requirements does not guarantee admission.
 - a. Two-to-three page personal statement reflecting an interest in the early childhood and family studies major and a commitment to learning about the field
 - b. Overall academic performance reflected in copies of unofficial transcripts.
 - c. Other evidence of interest in and commitment to the field (e.g., work experience, volunteer experience, or internships)
3. Grades in any completed recommended courses and courses applied to major requirements
4. Applications are due April 15 for autumn quarter start. Applications may be considered after that date on a case-by-case basis, depending on program capacity.

Students accepted into the major typically have a minimum cumulative 2.50 GPA and a minimum grade of 2.0 for any prior college coursework that can be applied toward the major.

Information Sessions: Prospective students are encouraged to attend an ECFS information session to learn more about the major and how to apply. For a schedule of information sessions, visit the early childhood and family studies website at education.uw.edu/programs/undergraduate.

For further information on requirements/procedures, see education.uw.edu/programs/undergraduate, or inquire at 210 Miller.

General Education Requirements

See College of Arts and Sciences requirements. A maximum 15 credits in ECFS-prefix courses from the University Areas of Knowledge list may be counted toward the UW Areas of Knowledge requirements. The following courses must be taken as part of general education requirements, either prior to or after admission to the program.

1. Biology Science and Development (7-10 credits): See website for complete list of acceptable courses.
2. Mathematics/Statistics (5 credits): Any college-level mathematics or statistics course, EDUC 170, EDPSY 490, or EDPSY 491.

Major Requirements

84 credits, to include the following:

1. Early Childhood and Family Studies Core Courses (28 credits): ECFS 301, ECFS 302, ECFS 400, ECFS 401, ECFS 402, EDPSY 402
2. General Development (18 credits): EDUC 305 or EDUC 310; EDPSY 304, EDSPE 404, and EDSPE 419
3. Service Learning and Research Experiences (18 credits): ECFS 303, ECFS 304, ECFS 305, ECFS 454, ECFS 455, ECFS 456
4. Electives (minimum 20 credits): Minimum one course each from theoretical foundations of early childhood development, methodology, and social policy and organization. See website for current list of electives.
5. Minimum 2.00 cumulative GPA in courses used to satisfy program requirements
6. Senior Project: Students identify interest areas, develop research skills, and prepare for future pursuits. Provides evidence that students have the ability to finish similar projects in work or graduate school. Students develop communication skills necessary for sharing knowledge and ideas with others. Presentation required.

Bachelor of Arts (Online Option)

Suggested First- and Second-Year Coursework: A course in biological sciences (BIOL 100, BIOL 104, or similar); a course in biological bases of development (BIOL 118, B STR 301, PSYCH 202, or similar); a college-level mathematics or statistics course, EDUC 170, EDPSY 490, or EDPSY 491; ECFS 200 recommended, but not required

Department Admission Requirements

1. Satisfactory progress toward completion of general education requirements
2. Admission is competitive, based on the following criteria. Completion of requirements does not guarantee admission.
 - a. Two-to-three page personal statement reflecting an interest in the early childhood and family studies major and a commitment to learning about the field
 - b. Overall academic performance reflected in copies of unofficial transcripts.
 - c. Other evidence of interest in and commitment to the field (e.g., work experience, volunteer experience, or internships)
 - d. Grades in any completed recommended courses and courses applied to major requirements
 - e. Completion of an academic associate degree with at least 70 transferable credits to apply to University's general education requirements.
 - f. A course in biological sciences (BIOL 100, BIOL 104, or similar); a course in biological bases of development (BIOL 118, B STR 301, PSYCH 202, or similar); a college-level mathematics or statistics course, EDUC 170, EDPSY 490, or EDPSY 491; ECFS 200 recommended, but not required

3. Applications are due May 15 for autumn quarter start. Applications may be considered after that date on a case-by-case basis, depending on program capacity.
4. This is a limited admission program. Students admitted to the ECFS online program are not allowed to transfer to another onsite or online major/degree program or complete a minor without reapplying to the UW through the normal admission review process.

Students accepted into the major typically have a minimum cumulative 2.50 GPA and a minimum grade of 2.0 for any prior college coursework that can be applied toward the major.

Information Sessions: Prospective students are encouraged to attend an ECFS information session to learn more

about the major and how to apply. For a schedule of information sessions, visit the Early Childhood and Family Studies website at education.uw.edu/programs/undergraduate.

For further information on requirements/procedures, see education.uw.edu/programs/undergraduate, or inquire at 210 Miller.

General Education Requirements

See College of Arts and Sciences requirements. A maximum of 15 credits in ECFS-prefix courses from the University Areas of Knowledge list may be counted toward the UW Areas of Knowledge requirements. The following courses must be taken as part of general education requirements, prior to admission to the program.

1. Biology Science and Development (7-10 credits): See website for complete list of acceptable courses.
2. Mathematics/Statistics (5 credits): Any college-level mathematics or statistics course, EDUC 170, EDPsy 490, or EDPsy 491.

Major Requirements

84 credits, to include the following:

1. Early Childhood and Family Studies Core Courses (28 credits): ECFS 301, ECFS 302, ECFS 400, ECFS 401, ECFS 402, EDPsy 402
2. General Development (18 credits): EDUC 305 or EDUC 310; EDPsy 304, EDSPE 404, and EDSPE 419
3. Service Learning and Research Experiences (18 credits): ECFS 303, ECFS 304, ECFS 305, ECFS 454, ECFS 455, ECFS 456
4. Electives (minimum 20 credits): Minimum one course each from theoretical foundations of early childhood development, methodology, and social policy and organization. See website for current list of electives.
5. Minimum 2.00 cumulative GPA in courses used to satisfy program requirements
6. Senior Project: Students identify interest areas, develop research skills, and prepare for future pursuits. Provides evidence that students have the ability to finish similar projects in work or graduate school. Students develop communication skills necessary for sharing knowledge and ideas with others. Presentation required.
7. Minimum 64 credits of coursework applied to the major taken from the UW Seattle campus.

Student Outcomes and Opportunities

- **Learning Objectives:** The early childhood and family studies major immerses students in the study of child and family development and education. Students learn about child development, early learning, and family studies from a variety of perspectives. They receive a strong grounding in reading and understanding the theory and evidence that provide the foundation for the field and drive current research and policy efforts.
- **Expected Outcomes:** Students apply their knowledge and skill as they work alongside community-based teachers, community leaders, and care providers. The degree provides excellent preparation for a wide variety of careers in early learning, childcare, parent and family support and education, child and community advocacy and organization, and social/mental health services. It also serves as a pathway for graduate studies in education, child and family studies, educational policy, special education, and other areas. This interdisciplinary major is offered at the sophomore, junior, and senior level.
- **Service Learning and Research:** Two sequences of field-based experiences provide students with real life-learning opportunities in community-based early childhood or family support/education settings. Students participate in both an introductory seminar experience as well as a sequenced field experience during their

first year in service learning. During the second phase, students participate in a three-quarter senior service learning, research, and senior project that provides advanced opportunities to integrate theory and practice in community-based early childhood or family support programs, and/or research settings. The seminar ties together research and practice, demonstrating how research informs evidence-based decision-making in programs and services. Students also receive guidance in career options and current events in the field, tying in major experiences with their own developmental and career goals. Learning objectives are outlined in class.

- **Honors Options Available:** With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- **Department Scholarships:** See departmental website for undergraduate scholarship information.
- **Student Organizations/Associations:** Associated Students of the College of Education (ASCE) and International Educators of the College of Education (IECE).

GRADUATE DEGREE PROGRAMS

Graduate Program Coordinator

206 Miller, Box 353600

(206) 543-7834

edinfo@uw.edu

The College of Education currently offers five advanced degrees: Master in Teaching (MIT), Master of Education (MEd), Educational Specialist (EdS), Doctor of Education (EdD), and Doctor of Philosophy (PhD). The MIT degree is awarded to elementary and secondary certification students at the completion of their program. The EdS degree is awarded to school psychology certification students at the completion of their program. Graduate students working toward other degrees may specialize their degree studies in curriculum and instruction, educational psychology, educational leadership and policy studies, or special education. Questions regarding graduate study in education should be directed via email to edinfo@uw.edu, or to the College's website

Master in Teaching

The Master in Teaching (MIT) degree program results in a Washington residency teaching certificate for elementary or secondary (specific subjects) school teaching. The program is an integrated sequence of full-time, daytime coursework and field experiences spanning four quarters. Field experiences are in partner schools in the Seattle/Puget Sound area chosen to provide experience working with children from racially and culturally diverse communities.

Admission Requirements

1. A bachelor's degree from an accredited institution with a minimum 3.00 GPA for the last 90 quarter (60 semester) credits
2. Goal statement
3. 40 or more hours in a classroom that most closely matches the subject and grade level the applicant wishes to teach
4. Two letters of recommendation from faculty or professional references
5. Passing scores from all three subtests of the WEST-B examination. Passing scores on the ACT and/or the SAT may be submitted in lieu of the WEST-B.
6. Official transcripts from all community colleges and universities attended.

7. Secondary applicants: complete required content courses in the endorsement subject they wish to teach.
8. Elementary applicants: complete prerequisite courses in child development and math for elementary teachers.
9. Secondary & Elementary applicants: complete one prerequisite course in education of an ethnic group.

Degree Requirements

60-101 credits, to include:

1. Elementary Education Focus

- a. Courses: EDC&I 324; EDC&I 494; EDC&I 586; EDLPS 496; EDSPE 526; EDTEP 501, EDTEP 502, EDTEP 503; EDTEP 505; EDTEP 511; EDTEP 521, EDTEP 522; EDTEP 523; EDTEP 531, EDTEP 532, EDTEP 533; EDTEP 541; EDTEP 542; EDTEP 543; EDTEP 551; EDTEP 552; EDTEP 601; UCONJ 510.

- b. Note: The current Washington state endorsement for elementary teachers is "elementary education." Graduates of this program may be hired to teach specific or multiple subjects in middle or junior high school through grade 8. Those interested in teaching in the middle schools are encouraged to discuss this option with advisers in the Office of Student Services.

2. **Elementary Special Education Focus:** EDC&I 324; EDC&I 494; EDC&I 586; EDLPS 496; EDSPE 404; EDSPE 414; EDSPE 496; EDSPE 496; EDSPE 500; EDSPE 513; EDSPE 514; EDSPE 526; EDSPE 545; EDSPE 601; EDTEP 501, EDTEP 502, EDTEP 503; EDTEP 505; EDTEP 511; EDTEP 521, EDTEP 522; EDTEP 523; EDTEP 531, EDTEP 532, EDTEP 533; EDTEP 541; EDTEP 542; EDTEP 543; EDTEP 551; EDTEP 552; EDTEP 601; UCONJ 510.

3. **Secondary Education Focus:** EDC&I 494; EDC&I 586; EDTEP 551; EDTEP 561; EDTEP 562, EDTEP 563; EDTEP 564; EDTEP 565; EDTEP 571; EDTEP 573; either EDTEP 580, EDTEP 582, EDTEP 584, EDTEP 586, or EDTEP 588; either EDTEP 581, EDTEP 583, EDTEP 585, EDTEP 587, EDTEP 589; EDTEP 591; EDTEP 592; EDTEP 593; EDTEP 595; EDTEP 601; elective outside education

Master of Education

The Master of Education (MEd) degree requires a minimum of 45 credits, including at least 15 credits in a specialized area of study in education; 9 credits related to, but outside the area of specialization, some coursework outside education; 9 thesis credits or, for the non-thesis option, 9 credits in a field study or other approved project; and a final examination.

Admission Requirements

1. A baccalaureate degree from an accredited institution
2. Minimum 3.00 GPA for the last 90 graded quarter credits (or 60 semester credits)
3. Transcripts from each college or university attended
4. Graduate Record Exam (GRE) scores
5. Personal goal statement
6. At least two letters of recommendation
7. Prerequisites stipulated by the area of specialization within the College

Degree Requirements, Curriculum and Instruction Programs

45 credits, to include:

1. Common Area Requirements

- a. **Foundations of education (9 credits):** Students gain an understanding of the complex issues that influence teaching and learning. Students work with advisers to select from courses such as: history of education, education as a moral endeavor, human learning, curriculum design, special topics in curriculum and instruction.

- b. *Thesis, non-thesis, or project option (9 credits)*: The non-thesis option may be satisfied by a 9-credit culminating project or 9 credits at the 500 level or above related to the student's teaching and research interests.
 - c. *Colloquium presentation*: At the end of the program, students present their work at the curriculum and instruction colloquium. Students prepare a visual representation of their work (usually a poster). During the colloquium, students talk to faculty and students about and answer questions about their thesis, project, or other work conducted during the program. In addition, students attend one other colloquium prior to presenting.
2. *Language, Literacy, and Culture Study Option*
- a. *Core studies (9 credits)*: Selected from the following: EDC&I 453, EDC&I 455, EDC&I 460, EDC&I 462
 - b. *Assessment and inquiry (3 credits)*: In consultation with adviser, select one course that focuses on issues of assessment and inquiry
 - c. *Concentrations (15 credits)*: Literacy specialists, in consultation with advisers, select a minimum of three courses in the literacy strand and a minimum of one course in each of the other strands. ESL specialists, in consultation with advisers, select a minimum of three courses in ESL and a minimum of one course in each of the other strands.
3. *Mathematics Education Study Option*
- a. At least 27 credits in mathematics and mathematics education. Courses, selected in consultation with the student's adviser, must be appropriate for future career goals. Of the 27 credits, 9 credits chosen from mathematics education courses (below).
 - b. *Mathematics education courses*: EDC&I 478, EDC&I 479; EDC&I 575, EDC&I 576, EDC&I 577
4. *Multicultural Education Study Option*
- a. *Ethnic diversity outside the College of Education (15 credits)*: Selected in ethnic diversity subject matter fields outside of the College of Education. Courses can be taken from those offered by various departments in the College of Arts and Sciences. All course choices are negotiated with advisers.
 - b. *Multicultural education (15 credits)*: EDC&I 424, EDC&I 569; remainder to be chosen from the following: EDC&I 464; EDC&I 469; EDC&I 474; EDPSY 536; EDLPS 566; EDC&I 573; EDC&I 574
5. *Science Education Study Option*: At least 21 credits, approved by the faculty supervisor, in fields such as, biology, chemistry, physics, earth science, oceanography, or other science-related courses
6. *Social Studies Education Study Option*: 12-15 credits of core social studies courses, negotiated with adviser. 15-21 credits of history/social science courses related to teaching interests, or additional educational courses
7. *Teaching and Curriculum Study Option*: 27 credits, including 9-18 credits of required study in teaching and curriculum, to be chosen in consultation with adviser
- requires preparation of a scholarly paper of publishable quality (9 credits minimum).
2. *Foundations of education courses (12 credits)*: either EDLPS 521, EDLPS 540, or EDPSY 580; either EDPSY 501 or EDPSY 510; EDPSY 490; EDPSY 591
3. *Measurement, Statistics, and Research Design Study Option (50 minimum total credits)*
- a. *Required courses*: One or more from each of the following content fields with options to consist of courses listed below or alternative courses (including courses outside education) approved by the faculty adviser
 - i. *Measurement and evaluation*: EDPSY 495, EDPSY 512, EDPSY 584, EDPSY 592, EDPSY 595, EDPSY 596, EDPSY 597
 - ii. *Human development*: EDPSY 502, EDPSY 531, EDPSY 532, EDPSY 582
 - iii. *Cognition and learning*: EDPSY 510, EDPSY 524, EDPSY 525, EDPSY 583, PSYCH 414
 - iv. *Language processes*: EDPSY 520, EDPSY 521
 - b. *Research (9 credits)*:
 - i. *Thesis option*: Report of a research investigation that requires the student to design and execute an empirical study.
 - ii. *Non-thesis option*: Preparation of a scholarly review of the research literature; should be of publishable quality.
4. *Learning Sciences and Human Development Option (45 minimum total credits)*
- a. *Required courses (17 credit hours)*: One or more from each of the following areas to consist of the courses listed below:
 - i. *Required Foundations (11 credit hours)*: EDPSY 501; EDPSY 581; EDPSY 502 or EDPSY 503; EDLPS 540, EDLPS 530, or EDLPS 521
 - ii. *Required Research Methods (6 credit hours)*: EDPSY 490; EDPSY 591; other recommended courses include EDPSY 491, EDPSY 495, EDLPS 588, and EDC&I 581.
 - b. *Strands or Specializations (17 credit hours)*: minimum one course in at least two different strands. Courses determined in conjunction with faculty adviser. Sample courses from each strand are available on College website.
 - i. *Learning Within and Across Disciplines - Literacy*
 - ii. *Learning Within and Across Disciplines - STEM*
 - iii. *Human Development, Families, and Communities*
 - iv. *Contexts, Culture, and Equity*
 - c. *Research (9 credits)*:
 - i. *Thesis option*: Report of a research investigation that requires student to design and execute an empirical study.
 - ii. *Non-thesis option*: Preparation of a scholarly paper of publishable quality.

Degree Requirements, Educational Psychology Programs

Minimum 45 credits, to include:

1. *General Requirements*
 - a. Minimum 45 quarter credits, exclusive of prerequisites and specific requirements listed for each study option
 - b. Written or oral examination upon completion of coursework
 - c. *Research*: two options available, thesis, or non-thesis. Thesis option requires design and accomplishment of an empirical study. Non-thesis option

Degree Requirements, Education Leadership and Policy Studies Programs

48 credits, as follows:

1. *Common Area and Distribution Requirements (18 credits minimum)*: Minimum 18 credits of coursework in EDLPS. Of these, 12 credits are distributed as follows:
 - a. Social and cultural foundations, 6 credits minimum
 - b. Organizations and policy, 6 credits
2. *Specialization Requirement (9 credits minimum)*: In conjunction with the adviser, students develop an area of specialization.
3. *Breadth Requirement (6 credits minimum)*:

- a. At least 3 credits in one or more other areas in the College of Education (EDC&I, EDPSY and/or EDSPE)
 - b. At least 3 credits outside the College of Education
4. *Research/Inquiry Requirement (6 credits minimum)*:
- a. At least 3 credits in basic statistics (EDPSY 490 or the equivalent)
 - b. At least 3 credits in research/inquiry methods (e.g., EDPSY 588, EDPSY 591, EDLPS 524, EDLPS 535, EDLPS 543, EDLPS 568, or the equivalent)
5. *Completion of Thesis or Non-Thesis Option (9 credits minimum)*
6. *Specific courses determined in consultation with adviser*

Degree Requirements, Special Education

48 credits, as follows:

1. *Foundations of Education (6 credits)*: Minimum 6 credits of courses in or out of the College of Education, or equivalent as determined in consultation with the adviser
2. *Special Education Major Field (21 credits)*: Specific sequence of courses determined by adviser, depending on student's background, educational goals, and type of disabled individual the student wishes to teach
3. *Assessment and Research Methodology (9 credits)*: Courses selected in consultation with adviser, to develop competency in assessment of learners with disabilities and familiarity with research tools
4. *Special Assignments in Special Education (12 credits minimum)*: Divided among at least two of the following options: EDSPE 500 (1-6, max. 6), EDSPE 600, EDSPE 601 (3-9, max. 9), EDSPE 700 (max. 9). Students entering an EdD or PhD program should select a thesis option.

Doctor of Education

Designed to prepare professionals whose primary interest is to deal directly with problems of educational practice. The program of study leading to the EdD, as a professional degree, focuses on the utilization of research and practitioners' knowledge, rather than on the production of research knowledge.

This professional degree requires a program of specialized study with credit in education and related fields, sufficient preparation in research methodology to interpret research findings for use in practice, an internship and leadership training, a general examination, a dissertation on a problem of educational practice, and a final examination.

Admission Requirements

1. Graduate Record Exam (GRE) scores
2. Master's degree or equivalent from an accredited institution
3. Minimum GPA of 3.00 for the most recent 90 (60 semester) credits
4. Transcripts (sealed) from each college or university attended.
5. Goal statement
6. Three letters of recommendation
7. Resume/curriculum vita
8. Writing sample(s)
9. Interviews
10. Specific programs may have additional admission requirements. Visit the website or contact the program for further information.

Degree Requirements

102 credits, as follows:

1. *Educational Specialization (24 credits)*:

- a. Courses in one specialty within the area of specialization designed to provide student with knowledge of the field: 9 credits
- b. Courses in the general area or in the student's special interests within the area of specialization other than those selected to fulfill the 9 credits above: 15 credits
2. *Related Field(s) (24 credits)*: Courses selected from within education (minimum of 12 credits) or outside of education which complement the student's educational specialization and include multidisciplinary learning experiences
3. *Research/Evaluation Preparation (9 credits)*: Courses selected to enhance a student's ability to conduct field-based research/evaluation studies
4. *Leadership Training (9 credits)*: EDLPS 520, EDLPS 550, EDLPS 560
5. *Supervised Internships and Field Experiences (9 credits)*: Internships and field experiences are designed to work in education and the related field(s), and to conduct field-based research and evaluation studies.
6. *Dissertation (27 credits)*

NOTE: The Doctor of Education degree offered through the leadership for learning program is considered a practice doctorate. A dissertation is not required for this program; 12 credit hours of capstone experience are required instead. A corresponding increase in other areas (educational specialization, research preparation, etc.) is required in order to meet the 102-credit-hour requirement for the Doctor of Education.

Doctor of Philosophy

A degree offering preparation for a research career on issues fundamental to education - issues that range from fairly narrow questions about human learning to macro-questions regarding the form of societies' educational institutions. The scope is broad. The degree may be organized around traditional study areas such as educational psychology, curriculum and instruction, special education, or educational leadership and policy. A student may develop a course of study that integrates various elements of more than one study area (e.g., multiethnic education and literacy). One study option is school psychology, which prepares students for the professional practice of psychology with school-age children, as well as for research.

Admission Requirements

1. Graduate Record Exam (GRE) scores
2. Master's degree or equivalent from an accredited institution
3. Minimum GPA of 3.00 for the most recent 90 (60 semester) credits
4. Transcripts (sealed) from each college or university attended.
5. Goal statement
6. Three letters of recommendation
7. Resume/curriculum vita
8. Writing sample(s)
9. Interviews

Degree Requirements

Minimum 90 credits, to include:

Six academic areas and the dissertation. The PhD is specialized and highly individualized. Although the department prescribes a limited number of required courses, it does require that students demonstrate in-depth knowledge of education and selected related fields. For most students, this means study in a broad area, a specialization within that area, two cognates, and a specialization outside the department.

Degree requirements include a program of specialized study with credits both in education and in other academic units, preparation in research methodology adequate to design and assess research in the field of specialization, sufficient study in cognate fields inside and outside education to ensure that the candidate can place the specialized research in a broader context, a general examination, a research dissertation, and a final examination.

Accreditation

Within the College of Education, a number of degree programs have formal accreditation. The school psychology EdS program is accredited by the American Psychological Association (APA) and approved by the National Association of School Psychologists (NASP). The school psychology MEd program is also accredited by NASP and the Washington State Board of Education for initial residency and continuing/professional teaching certificates and initial/residency certification. Graduates qualify for certification in all states party to the Interstate Certification Compact.

Financial Aid

The College of Education offers a limited number of awards with varying stipends for graduate students in education. Primary consideration is given to doctoral students with a background of successful teaching or administrative experience. Specific information on the various types of remunerative appointments for graduate students in education, amounts of stipends, and application procedures may be obtained via the College's website at education.uw.edu/admissions/funding-and-financial-aid.

PROFESSIONAL PROGRAMS

Professional Certification

The College of Education is authorized by the State Board of Education to offer professional certificate programs in education for administrators, educational staff associates, and teachers. Program-design specialists are available to help with pre-program counseling, long-range planning, applications, registration, referrals to other campus resources, general program advising, and continuing/professional certificate requirements.

Administrator Certificates

Administrator certificate preparation programs for superintendents, principals, and program administrators are offered through the College of Education. The following websites contain specific information about admissions, curriculum, faculty, and general advising:

For principals and program administrators, the Danforth Educational Leadership program, education.uw.edu/programs/leadership/danforth.

For superintendents, the Leadership for Learning program, education.uw.edu/141/.

Educational Staff Associate Certificates

Educational staff associate certificate preparation programs are offered for the school psychologist. Information concerning requirements and admission may be obtained from the Office of Student Services, 206 Miller Hall, edinfo@uw.edu.

The College of Education is authorized by the State Board of Education to prepare and recommend individuals for Residency Teaching Certificates. Title II of the Higher Education Act requires institutions of higher education and states that approve such programs to develop and publish an annual report on their teacher preparation programs. The College of Education publishes an annual Higher Education Opportunity Act report based on Title II data. That report may be viewed on the College's website: education.uw.edu/my-coe/oir/heoa.

The full Title II report may be requested via email from coeir@uw.edu.

Residency Teaching Certification Program

The College of Education offers residency teaching certification for individuals desiring careers as elementary or middle/secondary school teachers, or as special education teachers working with students with moderate and severe disabilities or emotional and behavioral disorders, and with infants, toddlers, and preschool children with disabilities. All programs are offered at the master's level. For additional information, e-mail edinfo@uw.edu, or visit the College's website at education.uw.edu/programs/teacher.

An undergraduate or postbaccalaureate program leading to certification in music education, grades K-12, is offered through the School of Music. For additional information contact the School of Music Advising Office, 116 Music, Box 353450, University of Washington, Seattle, WA 98195-3450.

Professional Teaching Certificates

For information on the Professional Certificate Assessment (ProTeach), visit the Office of the Superintendent of Public Instruction (OSPI): www.k12.wa.us/certification/Teacher/Residency3.aspx#Professional.

Endorsements on Teaching Certificates

Teachers holding an initial/residency or continuing/professional teaching certificate may add endorsements to their certificates which qualify them to teach additional subjects. Information on endorsement requirements is available on the web at education.uw.edu/programs/teacher/endorsements, or contact the Office of Student Services, 206 Miller Hall, or via e-mail at edinfo@uw.edu.

SPECIAL RESEARCH AND SERVICE FACILITIES

Within the College of Education, opportunities exist for students to gain research and service experience through one of the many research centers affiliated with the College. Below is a partial list of those centers; students should visit education.uw.edu/faculty-and-research/centers for a current and complete list.

The Center for Multicultural Education focuses on research projects and activities designed to improve practices related to equity issues, intergroup relations, and the achievement of students of color. Visit the center's website at education.uw.edu/cme/.

The Clinical Training Laboratory, operating under the aegis of Educational Psychology, offers observation rooms equipped with video recorders where counseling and psychology trainees and clients can be observed and taped through one-way mirrors.

The renowned *Experimental Education Unit* (EEU) offers an interdisciplinary approach to research, training, and service, providing integrated classes for 150-200 young children, toddlers, and infants with disabilities and their typically developing peers, and services for their families. Learn more about the EEU by visiting education.uw.edu/faculty-and-research/centers/haring.

The National Center for the Study of Teaching and Policy, a consortium of five universities headed by the University of Washington, conducts a wide range of studies aimed at local, state, and national policy strategies to promote teacher excellence. For more information, visit the center's website at depts.washington.edu/ctpmail, or e-mail ctp-mail@uw.edu.

The Learning Informal and Formal Environments (LIFE) Center is a collaborative effort among three primary partners — the University of Washington, Stanford University, and Stanford Research Institute — as well as other institu-

tions across the country. The overall purpose of the LIFE Center is to understand and advance human learning through a simultaneous focus on implicit, informal, and formal learning, thus cultivating generalizable interdisciplinary theories that guide the design of effective new technologies and learning environments. For more information visit education.uw.edu/research/center/life.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

Education

EDUC 170 Mathematics for Elementary School Teachers (5) NW Covers basic concepts of numbers and operations. Emphasizes problem solving, communication of mathematical ideas, and analysis of sources of difficulty in learning/teaching these concepts. Offered: WSp.

EDUC 210 Education and the Playfield (3) I&S Examines the intersection of education and sport from early childhood to college experiences. Explores educational themes related to physical development, sport's influence on individual and community development, access to physical activities, equity and inclusion within the sports environment, and the role of sports in social change.

EDUC 260 The Dream Project: Introduction to Mentoring Strategies (1, max. 8) I&S Taylor, Twitchell Introduces mentoring strategies and topics related to social mobility and educational access. Supports students' mentorship of high school students on college readiness and access to higher education. Corequisite: EDUC 369. Credit/no-credit only. Offered: AWSp.

EDUC 299 Education, Learning, and Society Colloquium (1) Provides a common learning experience where students learn from researchers and practicing educators about current pedagogical projects and theories. Fosters self-reflexive projects to build understanding of learning pathways. Credit/no-credit only. Offered: AWSp.

EDUC 300 Special Topics in Education, Learning, and Society (1-5, max. 20) Critical examination of current research and practice in education, learning, and society.

EDUC 301 Introductory Practice in Community Service Activity (1-10, max. 10) Observation and participation in a variety of activities in a K-12 classroom. Placement made according to participant interests and needs. Participation on a predetermined schedule plus scheduled orientation and debriefing sessions are required. Offered: AWSp.

EDUC 305 The Purpose of Public Schools in a Democracy (5) I&S Explores issues and questions pertaining to public schools in a democratic society through directed readings, dialogue, individual and group projects designed to engage students with a series of crucial issues in public schools. Offered: AWSp.

EDUC 310 Current Issues in Education (5, max. 20) I&S Covers a current issue and provides the opportunity to read and discuss educational issues with other students and faculty and to learn of opportunities in the College of Education programs. Offered: AWSp.

EDUC 360 The Dream Project: Mentoring and Education Policy (1, max. 8) I&S Discusses policy approaches to social mobility and educational access and supports development of communication and mentoring skills gained in EDUC 260. Supports students' mentorship of high school students on college readiness and access to higher education. Corequisite: EDUC 369. Credit/no-credit only. Offered: AWSp.

EDUC 361 The Dream Project: Special Topics (1, max. 8) I&S Taylor, Twitchell Provides discussion and exploration of a single topic related to social mobility and access to higher education. Designed for students who have already

completed EDUC or EDUC 360 who wish to examine a topic more closely. Corequisite: EDUC 369. Credit/no-credit only. Offered: AWSpS.

EDUC 369 The Dream Project: High School Visits - Field Experience (1, max. 8) Taylor, Twitchell Involves weekly travel to local high schools, mentoring low-income or first-generation juniors and seniors through the college readiness and admissions process. Corequisite: either EDUC 260, EDUC 360, or EDUC 361. Credit/no-credit only. Offered: AWSpS.

EDUC 401 Practicum in Community Service Activity (1-18, max. 20) VLPA/I&S Tutoring and teaching experiences in a school or community service organization. Placement made according to participant interests and needs. Participation on a predetermined schedule plus scheduled orientation and debriefing sessions are required. Offered: AWSp.

EDUC 402 Practicum in Classroom Teaching and Management: Primary (1-18, max. 20) Tutoring and teaching experiences in a primary school setting (grades K-3). Placements made according to participant's interest and needs. Participation on a predetermined schedule plus scheduled orientation and debriefing sessions.

EDUC 403 Practicum in Classroom Teaching and Management: Intermediate (1-18, max. 20) Tutoring and teaching experiences in an intermediate school setting (grades 4-8). Placements made according to participant's interest and needs. Participation on a predetermined schedule plus scheduled orientation and debriefing sessions.

EDUC 404 Practicum in Classroom Teaching and Management: Secondary (1-18, max. 20) Tutoring and teaching experiences in an intermediate school setting (grades 6-12). Placements made according to participant's interest and needs. Participation on a predetermined schedule plus scheduled orientation and debriefing sessions.

EDUC 502 Advanced Practicum in Classroom Teaching and Management (1-18, max. 20) In-depth classroom practicum experiences to certificated teachers working on additional endorsements. Arrangements must be made prior to enrolling with an adviser in the Teacher Education Office. Offered: AWSpS.

EDUC 700 Master's Thesis (*-) Prerequisite: permission of faculty adviser and Graduate Program Coordinator. Offered: AWSpS.

EDUC 750 Capstone Experience (2-10, max. 10) Provides advanced opportunities to integrate theory and practice through a capstone learning and research experience. Prerequisite: permission of faculty adviser and Graduate Program Coordinator. Credit/no-credit only. Offered: AWSpS.

EDUC 800 Doctoral Dissertation (*-) Prerequisite: permission of Supervisory Committee Chairperson and Graduate Program Coordinator. Offered: AWSpS.

EDUC 801 Practice Doctorate Project/Capstone (*-) Prerequisite: permission of Supervisory Committee Chairperson and Graduate Program Coordinator. Offered: AWSpS.

Curriculum and Instruction

EDC&I 324 Physical Education and Health in the Schools (2) Techniques and procedures for teaching physical education and health in elementary and secondary schools. For students in Teacher Education Program. Credit/no-credit only.

EDC&I 351 Teaching as a Profession (5) I&S, DIV Zeichner Helps students assess the profession of teaching. Explores what becoming a teacher means, assesses the organizational structure of teaching as a career and profession, examines social attitudes about education and the work of teachers, and thinks about teaching as social justice work.

EDC&I 352 Teaching to Change the World (5) I&S Barajas-Lopez Examines how value structures and political decisions affect systems of education. Considers particular inequalities based on race, class, and gender. Encourages

students to see the course as both an academic exercise, and a vantage point for considering their own past and possible future experiences in education.

EDC&I 353 Teaching in the Elementary School (3) Emphasizes selected teaching modes; lesson planning; classroom management procedures; grouping to accommodate pupils with special needs; utilization of learning resources; evaluation of teaching. Attention also given to school culture.

EDC&I 424 Multiethnic Curriculum and Instruction (3) I&S, DIV Primarily for preservice and in-service teachers who have little or no previous exposure to issues related to ethnicity and schooling. Designed to help teachers better understand the school's role in the ethnic education of students and acquire the insights, understandings, and skills needed to design and implement curricular and instructional strategies that reflect ethnic diversity.

EDC&I 438 Improvement of Teaching: Latin (5) VLPA Offered: jointly with LATIN 475.

EDC&I 453 Teaching the Bilingual-Bicultural Student (3) I&S, DIV Educational needs of bilingual students: research findings, special programs, materials, and methodologies that bilingual-bicultural education can provide to meet those needs. Cultural combinations of bilingual populations in American culture; historical, social, and linguistic factors affecting their K-12 education.

EDC&I 458 Content Area ESL Instruction (3) Exposes students and engages them in how to support their English Language Learners in their content areas through sheltered instruction, specifically through the framework, Sheltered Instruction Observation Protocol (SIOP). Focuses specifically on the academic language needs of these students.

EDC&I 459 Workshop in Instructional Improvement: Literacy (1-6, max. 18) Study of special topics in literacy with a focus on practical, classroom topics, and application.

EDC&I 460 Early Literacy Instruction (3) Theory, research, and practice in early literacy acquisition including emergent literacy, phonemic awareness, word identification, comprehension, invented spelling, and writing. Emphasis on classroom instruction strategies for first and second language learners. Offered: A.

EDC&I 461 Materials for Teaching Reading: Children's and Young Adults' Literature (3) Designed to provide acquaintance with materials used in the teaching of reading. Trade books and materials from content areas are examined.

EDC&I 462 Reading Comprehension Instruction in Elementary and Secondary School (3) I&S Research-based practices for explicit teaching of reading comprehension of both fiction and content-area texts including issues of reading strategies, text difficulty, teacher modeling, guided reading, discussion, assessment, and adaptations for struggling students. Offered: W.

EDC&I 464 Educating Native-American Youth (3) Assists students in understanding the North American Indian child from cultural, socioeconomic, and psychological points of view. Provides opportunities for the student to apply knowledge and skills gained in other courses to prepare programs and learning aids relevant to the educational situation of the Indian child.

EDC&I 465 Social Studies Education: Elementary School Programs and Practices (3) Stresses curriculum patterns, instructional procedures, resource materials, and the selection of content in social studies. For elementary and middle school teachers and students in Teacher Education Program.

EDC&I 468 Workshop in Instructional Improvement: Social Studies (1-6, max. 15) Individual or group study projects on the improvement of instruction in social studies.

EDC&I 469 Teaching African American Students and Culture (3) I&S Examination of sociocultural and pedagogical factors that influence African American students' learning

styles, opportunities, and outcomes; exploration of ways to reform teaching techniques to better accommodate cultural styles and experiences to improve the educational achievement of African American students. Offered: A.

EDC&I 471 Science Education: Secondary School Programs and Practices (3) Survey of the status and potential role of science in education; trends and their implications for the teaching of both biological and physical sciences in the junior and senior high schools; representative curricula and related teaching procedures; the psychology of concept formation and problem solving; and organization of science programs.

EDC&I 472 Environmental Education for Teachers (3) Status, selected problems, and role of environmental education in program of elementary, middle, and junior high schools. Opportunity to examine and receive instruction in use of existing environmental education instructional materials. Instruction is in the spirit of inquiry/discovery.

EDC&I 473 Workshop in Instructional Improvement: Science (1-6, max. 20) Individual or group study projects on the improvement of instruction in science.

EDC&I 474 Multi-Ethnic Studies: Methods, Content, and Materials (3) I&S, DIV Designed to help preservice and in-service teachers identify content and materials and devise methods for implementing ethnic studies programs and for incorporating ethnic content into regular K-12 social studies, language arts, and humanities curricula. Special attention is given to teaching about American Indians, Mexican Americans, African Americans, Asian Americans, Puerto Rican Americans, and white ethnic groups.

EDC&I 479 Workshop in Instructional Improvement: Mathematics (1-6, max. 20) Individual or group study projects for the improvement of instruction in mathematics.

EDC&I 482 Educational Technology in Schooling (3) Introduction to the application of technologies (computers, telecommunications, interactive video) in schools. Designed primarily for pre- and in-service teachers, but of interest to anyone involved in technology in education.

EDC&I 485 Workshop in Instructional Improvement: Educational Communication and Technology (2-6, max. 20) Individual or group study projects on the improvement of instruction through use of educational communication and technology.

EDC&I 488 Educational Technology and Learning in Alternative Settings (3) How educational technology can be used to encourage learning in nonschool environments, such as museums, radio and television broadcasts, parks and recreation centers, and distance education programs. Students investigate one of these areas and prepare a project.

EDC&I 494 Workshop in Improvement of Curriculum (1-6, max. 20) Stresses the application of procedures for curriculum development, maintenance, and evaluation. Opportunities furnished to develop and perfect strategies for program development with occasions given to utilize the strategies in master plan and materials preparation for simulated or real school situations. Specific focus of workshop is determined by instructor or by arrangement with district.

EDC&I 495 Workshop in Improvement of Teaching: Selected Topics, Issues, or Problems (1-6, max. 20) Individual or group projects to help teachers adapt instruction to selected topics, issues, or problems and to identify the approaches and instructional resources that provide the soundest learning experiences.

EDC&I 496 Workshop in Instructional Improvement (2-6, max. 20) Individual or group study projects on the improvement of instruction with attention to designing instructional plans.

EDC&I 499 Undergraduate Research (*) Students developing studies under this rubric should be advised that a

report or a paper setting forth the results of their investigations should be regarded as a basic part of the program.

EDC&I 500 Field Study (1-10, max. 20) Individual study of an educational problem in the field under the direction of a faculty member. Prerequisite: approved plan of study and permission of the instructor must be filed in the Office of Curriculum and Instruction in the College of Education.

EDC&I 503 Foundations of Curriculum and Instruction (4) Explores three critical elements of curriculum and instruction: the role of schooling in shaping students' opportunities to learn; content selection and structuring; and instruction.

EDC&I 505 Seminar in Curriculum and Instruction (1-5, max. 20) Seminar on advanced topics in curriculum and instruction. Critical examination of current research and practice. Content varies.

EDC&I 506 Special Topics in Research Methods (1-6, max. 20) Features a special topic in research design and execution such as a particular method of data collection, data analysis, data interpretation, honing a conceptual framework, or reviewing a literature. Prerequisite: EDLPS 525; EDLPS 526; EDPsy 490.

EDC&I 511 Current Issues in Technology and Education (3) Examines current genres of learning technology, novel approaches for integrating technology into curriculum and instruction, and recent theoretical perspectives that inform future work in educational technology.

EDC&I 512 Survey of Educational Technology Research (2-, max. 4) Critically examines active research projects in educational technology. Critiques of research practice.

EDC&I 520 Current Models in Early Childhood Education (3)

EDC&I 521 Problems and Issues in Early Childhood Education (3)

EDC&I 522 Practicum in the Training of Early Childhood Instructional Personnel (3)

EDC&I 524 Seminar in Teacher Education (3, max. 6) Focus on recent research, issues, and proposals for future development in teacher education, certification, and continuing professional growth. Alternate year offering focuses on either preservice or in-service issues.

EDC&I 525 Teacher Learning and School Change (3-4) Synthetic study of how researchers understand what enables teachers and schools to transform themselves. Examines how the fields of teacher learning and school change can inform each other in order to enrich research and development in professional and school learning.

EDC&I 526 Inside Teacher Communities (3-4) Examines different perspectives on professional communities, the roles of communities in teachers' learning, the challenges these communities face, and the possible ramifications of professional communities for students. Participants explore practical tools for studying, engaging in, and building professional learning communities in schools.

EDC&I 527 Pedagogies of Professional Education (3) Investigates the theories of learning, models of teaching, and contextual features that impact the design and enactment of a variety of pedagogies used in various professional education programs. Considers what particular pedagogies demand on the part of the professional educator.

EDC&I 528 Foundations of Language, Literacy, and Culture (4) Explores the nature of literacy by examining language acquisition and its impact on literacy; historical theories and research on reading and writing processes; and how recognition and appreciation of cultural variation has changed literacy instruction and curricula over the past decades. Draws on seminal historical and current research. Offered: A.

EDC&I 530 Approaches to Literacy Instruction (4) Designed to aid experienced teachers who possess background in the teaching of literacy, and presents a variety of

approaches and actual analysis of approaches. Prerequisite: teaching experience and a basic course in the teaching of reading.

EDC&I 531 Seminar: Critical Review of Literacy Materials (4) Students formulate and apply criteria for assessing materials, with emphasis on linguistic, cultural, and psychological factors; instruction effectiveness, interest level; and educational objectives. Prerequisite: teaching experience and one basic course in the teaching of reading.

EDC&I 532 Seminar in Literacy Research (4, max. 12) Focuses on understanding scholarly research including various research methodologies (e.g. descriptive, correlational, experimental, quasi-experimental, qualitative) and the research questions they are designed to address. Prerequisite: permission of instructor.

EDC&I 533 Seminar: Conducting Research in Reading (3, max. 6) Students design and conduct original research studies in the field of reading. Emphasis on research rationale, choice of productive research types, and reporting of research results and implications. Prerequisite: EDC&I 532.

EDC&I 534 Reading Comprehension Instruction K-12 (4) Focuses on research-based comprehension strategy instruction and text-based discussion of different types in K-12 classrooms. Examines various comprehension models, strategies for instruction, and assessments of comprehension. Prerequisite: one 400- or 500-level education curriculum and instruction course in reading or language arts or one graduate course in literature for children or young adults.

EDC&I 535 Doctoral Seminar in Literacy Research (1-2, max. 18) H. HEBARD, R. HUDSON, D. MCCUTCHEN, S. VALENCIA Discusses a literary topic of interest. Instruction and discussion focus on close reading of research from a variety of theoretical and research traditions. Prerequisite: EDC&I 534. Offered: AWSp.

EDC&I 536 Inquiry and Methods in Writing Instruction (3) Covers methods of assessment and teaching written composition, spelling, and handwriting to children and youth with, and without, disabilities. Particular attention is given to how to establish a strong writing program in elementary classrooms and how to teach writing strategies. Offered: jointly with EDSPE 528; Sp.

EDC&I 538 Discourse in the Mathematics Classroom (4) Examines ways of looking at discourse in mathematics classrooms as it relates to teaching practice and student learning. Includes reading both seminal and cutting-edge works in the study of discourse in the mathematics classroom, looking at multiple school contexts and across grade levels.

EDC&I 539 Students' Mathematical Thinking, Curriculum, and Pedagogy (4) Examines ways of understanding the development of students' mathematical thinking. Intensive study of classroom videos, mathematical curricula, and fieldwork enable students to study the relationship among students' mathematical thinking, curriculum, and pedagogy.

EDC&I 540 Immigrant Schooling (3) Educational needs of bilingual students: research findings, special programs, materials, and methodologies that bilingual-bicultural education can provide to meet those needs. Cultural combinations of bilingual populations in American culture; historical, social, and linguistic factors affecting their K-12 education.

EDC&I 542 Approaches to Assessing Second Language Students in K-12 Schools (3) Examines the multiple ways of assessing linguistically diverse students in K-12 schools, including standardized and alternative assessments of these students. Prerequisite: a course in ESL methods.

EDC&I 544 Immigration and Education: Immigrant Student Perspectives (3) Examines the multitude of factors that shape the immigrant student experience in U.S. schools. Takes an interdisciplinary perspective drawing on

research from sociology, anthropology, and education, to understand teaching and learning from the perspective of immigrant students. Prerequisite: EDC&I 540 or equivalent.

EDC&I 545 Multilingual Socialization and Development (3) Explores the research base examining second language acquisition, in and out of school contexts. Focuses on the home language practices of linguistically diverse students with the purpose of understanding how these processes influence school learning.

EDC&I 547 Sociolinguistics (3) The study of language in its social context and the study of social life through language. Explores issues in the field of sociolinguistics and sharpens tools to explore educational issues related to linguistic and cultural diversity. Prerequisite: EDC&I 540 or equivalent.

EDC&I 548 Methods in Teaching English as a Second Language (4) Prepares teachers to teach English as a second language to students who are acquiring English in K-12 settings. Emphasizes the scaffolding of the development of the four language domains; listening, speaking, reading, and writing. Prerequisite: EDC&I 540 and EDC&I 545 or permission of instructor.

EDC&I 549 Practicum in Teaching English Learners in Context (3) Provides experiences in the field observing and working with an experienced ELL-endorsed teacher. Consists of observation; planning, teaching, and reflecting on at least two weeks worth of ELL-focused instruction lessons; and continued development of the methodological competencies needed to teach ELL students through seminar sessions at the practicum site.

EDC&I 550 Educational Technology Research (3) Analysis, critique, and practical experience with research studies of all types (experimental, ethnographic, evaluation) concerning questions of interest to educational technologists. Prerequisite: EDC&I 480, a research methods course, or permission of instructor.

EDC&I 551 Introduction to Instructional Design (3) An experimental course in analyzing, designing, developing, and formatively evaluating instructional products using the Instructional Systems Design (ISD) Mode. Also, discussion of how to successfully implement an instructional product/program within an organization using change management principles. Business and industry training focus.

EDC&I 556 Elementary School Curriculum (4) Study of elementary school curriculum, its design, rationale, and delivery. Current trends and issues affecting elementary school curriculum analyzed.

EDC&I 558 Secondary School Curriculum (4) Systematic analysis of current curriculum practices, with particular emphasis on the social and historical forces affecting secondary-school curriculum.

EDC&I 559 Principles and Procedures of Curriculum Development (3) Intensive study of basic principles and procedures utilized in development of curricula. Participants have opportunities to apply such procedures in class activities. Attention given to curriculum foundations.

EDC&I 560 Social Studies Education Programs and Practices (3) Stresses powerful instructional strategies, materials, and a selection of content in social studies education. For experienced teachers and non-social studies students in the Teacher Education Program.

EDC&I 561 Instruction for Under-Achieving Readers (2-10, max. 20) Covers instructional techniques addressing the comprehension, decoding, vocabulary, and fluency needs for under-achieving readers as well as strategies for assessing students' reading abilities and planning for instruction.

EDC&I 562 Seminar in Reading and Language Arts: Secondary Emphasis (3) Study of recent research in listening, oral language, reading, and written language, emphasizing

psychological and interrelated aspects. Prerequisite: permission of instructor.

EDC&I 563 Current Issues in Literacy Education (1-3, max. 20) Discussion of problems and issues of current interest and importance in language arts education.

EDC&I 565 Seminar in Social Studies Education: Elementary Emphasis (3) Intensive study of the social studies curriculum, with particular emphasis on current literature and research. Prerequisite: EDC&I 465 or equivalent.

EDC&I 566 Seminar in Social Studies Education: Secondary Emphasis (3) Intensive study of the social studies curriculum, with particular emphasis on current literature and research.

EDC&I 567 Current Issues in Social Studies Education (1-3, max. 20) Discussion of problems and issues of current interest and importance in social studies education.

EDC&I 569 Educating Ethnic Minority Youths (4) Intensive analysis and review of the research and curricular programs related to the social, psychological, and political factors that influence the school experiences of ethnic minority youths. Special attention given to instructional and curricular programs for African American, American Indian, Mexican American, Puerto Rican American, and Asian American students. Prerequisite: graduate standing or permission of instructor.

EDC&I 570 Seminar in Science Education: Elementary Emphasis (3) Investigation of curriculum and instruction in science at elementary-school levels, with particular emphasis on current literature and research. Prerequisite: EDC&I 470 or equivalent.

EDC&I 571 Ambitious Learning by Design in Science Classrooms (4) Explores the frontiers of research in science learning environments that are both rigorous and equitable. Allows individuals to wrestle with the current problems of teaching and learning, including how to design opportunities for all students to participate in the discourses and practice of science. Prerequisite: EDC&I 471 or equivalent.

EDC&I 572 Current Issues in Science Education (1-5, max. 6) Discussion of topics and problems of current interest and importance in science education.

EDC&I 573 School Reform and Multicultural Education (3) Similarities and differences among the visions, goals, and strategies of proposals for school reform and multicultural education are analyzed; implications for practice in curriculum and instruction are deduced from these analyses. Prerequisite: one course in multicultural education or permission of instructor.

EDC&I 574 Race, Gender, and Knowledge Construction: Curriculum Considerations (3) Using historical and contemporary perspectives, considers ways in which knowledge related to race and gender has been and is constructed and the implications of ways in which knowledge is constructed for curriculum reform and teaching. Prerequisite: one course in ethnic studies, multicultural education, or women studies or permission of instructor.

EDC&I 575 Seminar in Mathematics Education: Elementary Emphasis (3) Investigation of curriculum and instruction in mathematics at the elementary-school level; review of research and preparation of proposals.

EDC&I 576 Seminar in Mathematics Education: Secondary Emphasis (3) Investigation of curriculum and instruction in mathematics at the secondary-school level; review of research and preparation of proposals.

EDC&I 577 Current Issues in Mathematics Education (1, max. 20) Discussion of problems and issues of current interest and importance in mathematics education.

EDC&I 580 Technology in Context (3) Focuses on development of appropriate methods and concepts for research on technology in schools, workplaces, and other naturalistic settings. Fieldwork exercises and reading exemplary studies from multiple disciplinary perspectives. Prerequisite: EDC&I 510, EDC&I 511.

EDC&I 581 Cognitive Systems Design (3) Covers the design of applied technology-based learning systems, informed by current views of learning, technology, and cognition. Emphasizes synthesizing students' knowledge of technology, learning and research in collaborative settings. Prerequisite: EDC&I 510, EDC&I 511, EDC&I 512, EDC&I 580, or permission of instructor.

EDC&I 582 Design Experimentation and Implementation in Context (3) Introduces theoretical, methodological, and practical issues involved with studying the designed use of learning technologies in real world settings. Focuses on engaging in empirical study of the designed system through partnerships involving education researchers, educators, and technologists. Prerequisite: EDC&I 510, EDC&I 511, EDC&I 512, EDC&I 580, EDC&I 581, or permission of instructor.

EDC&I 585 Technology and the Culture of Education (3) Social impact of technology on education in the United States and elsewhere: social, political, and cultural factors affecting educational communication and technology; roles and relationships among instructors and learners; appropriate technology in developing countries; technology's long-term influence on thought and values.

EDC&I 587 Design and Application of Interactive and Immersive Instructional Systems (3) Theoretical and empirical questions involved in design of interactive instructional systems using such technologies as virtual reality and CAI. Specific problems inherent in design of complex learning environments: immersion, control, structure, sequence of experiences, navigation, learner guidance. Educational uses of systems. Prerequisite: either EDC&I 583 or permission of instructor.

EDC&I 590 Seminar in Elementary Education (3) Exploration of the philosophy, history, purposes, curriculum, methods, and school organization of elementary education. Prerequisite: elementary-school teaching experience, EDC&I 556.

EDC&I 591 Seminar in Curriculum Research (3) Analysis of past and current empirical, historical, ethnographic research, and philosophical analysis of the curriculum field. Studies considered include research in curriculum development, the curriculum plan, contextual characteristics, and factors related to curriculum participants. Group and individual analyses focus on theory generation and practical applications of research. Prerequisite: EDC&I 559 or permission of instructor.

EDC&I 592 Seminar in Secondary Education (3) Research and study of secondary education. Primary focus on factors involving change in secondary-school curriculum and organization. Prerequisite: EDC&I 558.

EDC&I 593 Seminar in Curriculum: Theory and Practice (3) Investigation of curriculum theory and practice. Consideration is given to theoretical writings that address the relationships between various curricular variables. Theoretical positions are related to curricular practices and innovations. Prerequisite: EDC&I 559.

EDC&I 594 Seminar in Curriculum: Issues, Systems, Models (3) Emphasis on the current approaches to curriculum and curriculum innovation. Attention is given to major educational issues as they affect curricular activity. Prerequisite: EDC&I 559.

EDC&I 595 Seminar in Analysis of Teaching (3) Investigation of the ways in which classroom teaching has been analyzed from a variety of disciplinary perspectives. Focus on methods, findings, and implications of research on teaching. Prerequisite: teaching experience.

EDC&I 596 Seminar in Strategies of Instruction (3) Various instructional models applicable to all levels of schooling. Theoretical and philosophical bases for these instructional models are considered.

EDC&I 597 Curriculum Evaluation Seminar (3, max. 6) Focuses on the evaluators' roles, evaluation theory and models, and selected curricular evaluations. Examples are

drawn from the several disciplines commonly offered in the elementary and secondary schools. Students are expected to identify an evaluation problem and to develop an evaluation design that can be implemented as a practical solution to the problem. Prerequisite: EDC&I 559 and permission of instructor.

EDC&I 599 Independent Studies in Education (*) Independent studies or readings of specialized aspects of education. Prerequisite: permission of instructor.

EDC&I 600 Independent Study or Research (*-) Prerequisite: permission of instructor.

EDC&I 601 Internship ([1-10]-, max. 20) Prerequisite: permission based on approval of proposal submitted during quarter preceding the internship. Credit/no-credit only.

Early Childhood and Family Studies

ECFS 200 Introduction to Early Childhood and Family Studies (3) I&S

Explores current practices, programs, and research in the field of early childhood and family studies. Topics include: child development, early childhood education, parenting and family support, mental health, poverty, and other risk factors. Offered: AW.

ECFS 301 Early Childhood Curriculum (5) I&S Focuses on developmental foundations and theoretical and researched-based models of early childhood curriculum. Studies approaches to designing, organizing, and implementing early learning programs. Studies curricular content for supporting children's learning and development in physical development; social and emotional development; approaches to learning; cognition; and language and early literacy. Offered: W.

ECFS 302 Survey of Infant and Children at Risk (5) I&S *Sandall* Provides a survey of risk factors that can affect early childhood development, including prenatal and neonatal factors, and social/societal influences. Emphasizes understanding how risk factors can impact social-emotional, physical, and cognitive growth. Includes research-based principles and approaches to child guidance. Offered: Sp.

ECFS 303 Service Learning and Research I (1-6, max. 6) Provides students with opportunities in community-based early childhood or family support settings. Includes a field experience and a once-a-week seminar. The seminar ties together research and practice demonstrating how research informs evidence-based decision-making in programs and services for young children and families. Offered: AWSp.

ECFS 304 Service Learning and Research II (1-6, max. 6) Provides students with opportunities in community-based early childhood or family support settings. Includes a field experience and a once-a-week seminar. The seminar ties together research and practice demonstrating how research informs evidence-based decision-making in programs and services for young children and families. Recommended: ECFS 303. Credit/no-credit only. Offered: WSp.

ECFS 305 Service Learning and Research III (1-6, max. 6) Provides students with opportunities in community-based early childhood or family support settings. Includes a field experience and a once-a-week seminar. The seminar ties together research and practice demonstrating how research informs evidence-based decision-making in programs and services for young children and families. Credit/no-credit only.

ECFS 311 Teaching from the Inside Out: Being a Resilient Educator (3) I&S Equips students with skills and strategies to optimize their effectiveness as early childhood educators. Students learn how to be as healthy as possible; possess the confidence to manage stressful situations; connect effectively with others; and focus on the positive aspects of life.

ECFS 312 Positive Behavioral Support in Early Childhood (3-5) Addresses the significance of social and emotional development in the early years. Discusses the adoption of models and evidence-based practice strategies that focus on promoting social-emotional development, providing support for children's appropriate behavior and preventing challenging behavior. Examines how adult resiliency and wellness relates to improved early care and teaching. Offered: AWSp.

ECFS 321 ENGAGING INTERACTIONS AND ENVIRONMENTS (3) I&S *Joseph* Increases participants' knowledge about the importance of high quality early childhood education, and the specific types of environments and interactions that support the development of children's social-emotional, cognitive, and early academic skills. Offered: AWSp.

ECFS 399 Current Issues and Trends in Early Childhood and Family Studies (3-5, max. 10) I&S Explores current theory, research, policy, and practice in early childhood and family studies. Offered: AWSp.

ECFS 400 Child Observation and Assessment (5) I&S Focuses on observation and methods used to study and understand young children in the context of families and society. Develops skills to understand children's behavior in learning environments. Examines approaches to and purposes for assessment and documentation of children's development and learning. Explores approaches to assessing early learning environments. Offered: A.

ECFS 401 Understanding Early Childhood and Family Studies Research (5) I&S, QSR Focuses on the kinds of knowledge, ways of knowing, and modes of inquiry relevant to early childhood and family studies. Through identifying and reviewing substantive research in their areas of interest, students locate ideas for inquiry within the research literature in early childhood and family studies. Offered: A.

ECFS 402 Social Policy and Young Children and Families (5) I&S Seeks to deepen understanding of contemporary social issues and problems that impact families and young children. Discusses legislation and other policies form a local, national, and global perspective. Explores the complex web of social, private, and governmental organization that impact families and young children. Offered: W.

ECFS 410 Laying the Foundation for Reading: Supporting Language and Literacy Development in Preschool (5) VLPA Increases knowledge about language and literacy developments between ages 3 to 5 and the ways in which these developments are critical precursors to the emergence of and success with formal reading skills, and to build participants' use of evidence-based language and literacy practices within the preschool classroom.

ECFS 411 Fostering the Development of Young Children's Mathematics and Science Knowledge and Skills (5) I&S/NW Increases knowledge about cognitive developments between ages 3 to 5 and ways in which these developments are critical precursors to emergence and success with later content and skills in mathematics and science. Learn to design and implement effective instructional practices and interactions with children that support their learning and development.

ECFS 412 Learning with Digital Media in Early Childhood (3) Addresses how young children learn basic literacy and mathematics skills, and develop an interest in science from engaging with digital media. Examines how teachers of young children need to be prepared in instructional practices that can enhance learning from media in a developmentally appropriate way.

ECFS 454 Advanced Service Learning and Research I (3) Sandall First of a three-quarter sequence leading to the completion and presentation of the senior project during spring quarter. Provides advanced opportunities to integrate theory and practice in community-based early childhood or family support programs and research settings.

Includes a weekly seminar to reflect on and expand on applied experiences. Offered: A.

ECFS 455 Advanced Service Learning and Research II (3) Sandall Second of a three-quarter sequence leading to the completion and presentation of the senior project during spring quarter. Provides advanced opportunities to integrate theory and practice in community-based early childhood or family support programs and research settings. Includes a weekly seminar to reflect on and expand on applied experiences. Offered: W.

ECFS 456 Senior Project (3) Third of a three-quarter sequence leading to the completion and presentation of the senior project during the final quarter in the major. Provides advanced opportunities to integrate theory and practice in community-based learning and research experience continues during the quarter. Offered: WSp.

ECFS 480 Individualizing Teaching and Learning (5) I&S *Joseph* Introduction to effective practices that support the development of young children. Focuses on evidence-based, individualized instructional methods and strategies used in teaching and facilitation the development of young children in response to both their strengths and needs. Offered: AWSp.

ECFS 495 Advanced Seminar in Early Childhood and Family Studies (3, max. 9) Addresses current topics and critical issues in the field of early childhood and family studies in an advanced seminar format. Offered: AWSp.

ECFS 499 Undergraduate Research (*) Students conducting this research produce a report or a paper setting forth the results of their investigation which should be regarded as a basic part of the independent study plan. Credit/no-credit only. Offered: AWSp.

Educational Leadership and Policy Studies

EDLPS 444 Constitution and American Public Education (3-6, max. 6) I&S Examines the relationships between the Constitution of the United States and the American system of public education, excluding higher education, in areas of constitutional freedom and legal controls, racial desegregation, and equal educational opportunity, including equal financing of the public schools. Credit/no-credit only. Offered: jointly with LAW 444.

EDLPS 458 Education in the Forming of American Society (5) I&S *Beadie* Covers the development of American education in cultural context; history of schools and non-school learning from colonial period to the twentieth-century; apprenticeship and learning societies; community and market-based schooling; liberal learning and the rise of the university; and schools as agencies of economic and political integration and mediators of culture and social status. Offered: jointly with HSTAA 458.

EDLPS 459 History of American Education Since 1865 (3) I&S Development of American education in cultural context: progressive education, recent criticism, continuing issues and trends. Offered: jointly with HSTAA 459.

EDLPS 479 Crucial Issues in Education (3) Selected educational issues, policies, and contexts. Evolution of the American education enterprise, legal issues, professionalism, finance, and other vital educational concerns.

EDLPS 496 Workshop: Education Programs and Problems (1-6, max. 10) Study of such topics as planning, development, supervision, organization, operation, or evaluation of current or emerging programs or problems in education.

EDLPS 499 Undergraduate Research (*) Students developing studies under this rubric should be advised that a report or a paper setting forth the results of their investigations should be regarded as a basic part of the program.

EDLPS 501 Introduction: Leadership Beyond the Classroom (3-6, max. 6) First course in principal certification program; explores Washington state laws, legal principles, context of public schools, multicultural issues, changing

population. Essential skills of leadership: communication, human relations, strategies for shared decision making, and dealing with conflict. (Open only to students admitted to the Danforth Principal/Program Administrator Preparation Program.)

EDLPS 502 Leadership Core ([3-6]-, max. 6) Topics include moral dimensions of leadership; modes of inquiry; organizational theory and change; instructional leadership and supervision; school-centered inquiry and decision-making; policy, planning, and program evaluation; issues on diversity and multicultural education; American and Washington State school law; school finance and resource allocation; school-community relations. Instruction occurs in units and seminar throughout the academic year. Prerequisite: admission to Danforth Principal/Program Administrator Preparation Program.

EDLPS 503 Leadership Core (-[3-6]-, max. 6) Topics include moral dimensions of leadership; modes of inquiry; organizational theory and change; instructional leadership and supervision; school-centered inquiry and decision-making; policy, planning, and program evaluation; issues on diversity and multicultural education; American and Washington State school law; school finance and resource allocation; school-community relations. Instruction occurs in units and seminar throughout the academic year. Prerequisite: admission to Danforth Principal/Program Administrator Preparation Program.

EDLPS 504 Leadership Core (-[3-6], max. 6) Topics include moral dimensions of leadership; modes of inquiry; organizational theory and change; instructional leadership and supervision; school-centered inquiry and decision-making; policy, planning, and program evaluation; issues on diversity and multicultural education; American and Washington State school law; school finance and resource allocation; school-community relations. Instruction occurs in units and seminar throughout the academic year. Prerequisite: admission to Danforth Principal/Program Administrator Preparation Program.

EDLPS 505 Transition to Leadership (3-6, max. 6) Completion seminar for Danforth Program Master's students. Focuses on leadership models and transition to a leadership role, including opening a school or program and dealing with student/school crises. Prerequisite: admission to Danforth Principal/Program Administrator Program.

EDLPS 510 School Finance (3) M. PLECKI Financial practices and problems in districts and schools considered, including state and federal support plans, school plant planning, school business management, resource allocation, and budgeting and educational accountability.

EDLPS 511 School-Community Relations (3) Examines the dynamics of the interface between the public schools and the community. Special attention is given to the findings of research in relation to school-community power, types, and organizational influences.

EDLPS 513 Seminar in Instructional Development and Supervision (3) Theory of the process of supervising instructionally effective school personnel, including an analysis of the techniques of supervision, theory of leadership and group process, interpersonal relations, and evaluation of teacher effectiveness.

EDLPS 516 Special Education and the Law (3) Brown Overview of major state and federal laws affecting the operation and management of special education programs in public schools. Emphasis upon procedural and substantive rights of children with disabling conditions. Offered: jointly with EDSPE 504.

EDLPS 519 Special Topics in Educational Leadership ([0-10]-, max. 20) Readings, lectures, and discussions pertaining to significant topics of special and current interest to educators. Focus is on issues of particular concern to K-12 administrators and other educators in leadership roles in districts and schools. Topics vary.

EDLPS 520 Education as a Moral Endeavor (3) J. WILLIAMSON-LOTT An exploration of fundamental questions that have faced educational leaders in the past and most likely will continue to face them in the future. Foundational studies in history, philosophy, and sociology provide the basis for discussion and writing about these fundamental questions.

EDLPS 521 Philosophy of Education (3) D. KERDEMAN Philosophy of education considered as a study of the conceptual basis for educational policy and practice. Emphasis on relationships between enduring educational problems and fundamental philosophic issues; concepts that feature centrally in educational discourse; and conceptual analysis as a means for clarifying decisions regarding educational policy and practice.

EDLPS 522 Contemporary Philosophies of Education (3) D. KERDEMAN Intensive study of the writings of selected contemporary philosophers of education. Offered: WS.

EDLPS 524 Seminar in Philosophy of Education (3, max. 6) D. KERDEMAN Philosophical examination of ways in which education might be studied. Uses and limits of conventional scientific approaches in education inquiry. Consideration of alternatives. Offered: WS.

EDLPS 525 Educational Inquiry (3) D. KERDEMAN General survey of epistemological issues underlying the several schools of thought or families of inquiry. Overview of various methods used in conduct of educational inquiry, examples of ways those methods are typically used, and exploration of strengths and weaknesses of those methods. Discussion throughout is in terms of assumptions regarding the nature of knowledge and purposes of inquiry. Must be taken in sequence. Prerequisite: doctoral status in education. Credit/no-credit only. Offered: A.

EDLPS 526 Educational Inquiry (3) D. KERDEMAN General survey of epistemological issues underlying the several schools of thought or families of inquiry. Overview of various methods used in conduct of educational inquiry, examples of ways those methods are typically used, and exploration of strengths and weaknesses of those methods. Discussion throughout is in terms of assumptions regarding the nature of knowledge and purposes of inquiry. Must be taken in sequence. Prerequisite: doctoral status in education. Credit/no-credit only. Offered: W.

EDLPS 528 Current Issues in Graduate Education (3) M. NERAD Examines recurrent forces impacting U.S. graduate education including but not limited to research funding, intra-institutional pressure, student unions, and accountability. Analyzes the current literature from different perspectives: historical, psychological, sociological, economic, and educational to illuminate the complexities of graduate education.

EDLPS 530 History of Education (3) N. BEADIE Historical survey of education. Emphasis on relationship between idea and practice. Topics include education and colonialism, formation of state school systems, progressive education, equal educational opportunity, changes in textbooks and curricula, education and social structure, and education in the history of cultures.

EDLPS 531 History of American Higher Education (3) Examination of the historical development of the American higher education enterprise, including pre-colonial origins. Includes attention to the colonial colleges, the rise of new institutions in the nineteenth century, and the further development of American colleges and universities in the twentieth century. Leaders in these developments are identified.

EDLPS 535 Historical Inquiry in Education Research (3, max. 6) N. BEADIE Methods and critique of historical research in education. Examination of landmark works in education history and historiography. Hands-on experience framing historical questions, finding historical sources, using historical evidence, substantiating historical claims, and addressing issues in the history of education.

EDLPS 536 Historical Problems in the Transfer of Culture (4) N. BEADIE Provides an analysis and interpretation of the history of education in its broadest sense: the transfer of culture across generations. Pays special attention to issues of cultural conflict, cultural change, and curricula as representations of culture. Examines problems of evidence and interpretation in exemplary historical works.

EDLPS 537 Perennial Debates in the History of Education (3) J. WILLIAMSON-LOTT Analysis of the historical underpinnings of debates about educational issues.

EDLPS 538 Education for Liberation (3) J. WILLIAMSON-LOTT Analyses of the different educational histories of American ethnic, social, gender, and religious groups and how they relate their own definitions of "education for liberation."

EDLPS 539 History of Urban Education (4) Beadie Examines the complex ways that race, class, real estate interests, the quest for social mobility, and a range of government policies have interacted to structure the social and spatial distribution of educational opportunity in cities historically. Includes a comparative historical analysis of urban case studies, including Seattle.

EDLPS 540 Sociology of Education (3) Examination of education and educational institutions by using the major conceptual tools of sociology. Emphasis on sociological thought and findings that have particular bearing on the understandings and judgments of educators.

EDLPS 542 Seminar in Educational Sociology (3) Application of sociological principles to school problems; individual problems and investigations. For teachers, administrators, and those using educational sociology as a field for advanced degrees.

EDLPS 544 Comparative Education: Introduction to Concepts and Methods (3) Introduction to research methods used in comparative education studies. Considers ways to study familiar and unfamiliar contexts, identifies the common pitfalls of international comparisons. Reviews ethnomethodological tools of interview construction, cross-cultural observation strategies, documentary analysis. Education policy and practice is primary focus; useful for comparing other public policy issues internationally.

EDLPS 545 Knowledge and Data in Relation to Action ([0/3]-, max. 3) Introduces Leadership for Learning (L4L) students to systematic inquiry - to fundamental ideas about knowing and knowledge, data and evidence, and to the applications of these ideas in settings that invite leadership action to address educational issues. Prerequisite: admission to the Leadership Learning program.

EDLPS 546 Leadership Inquiry I: The Design of Research on Local Problems of Practice ([0/3]-, max. 3) Examines evaluation design, action research, critical inquiry, and mixed method research. Equips L4L students to recognize and create viable, rigorous designs for action-oriented research into local problems of practice. Prerequisite: admission to the Leadership Learning program.

EDLPS 547 Leadership Inquiry II: Developing Useful Quantitative and Qualitative Evidence ([0/3]-, max. 3) Helps students, in the context of action-oriented research, develop data collection tools, produce high-quality quantitative and qualitative data, and construct evidence for claims the investigator wishes to make. Prerequisite: admission to the Leadership Learning program.

EDLPS 548 Leadership Inquiry III: Refining the Design and Analysis of Research that Informs Practice ([0/3]-, max. 3) Teaches how to critically evaluate and improve research designs so that they are internally consistent, fully developed, and well-anchored to both substantive and methodological literatures. Builds largely around the students' own emerging dissertation designs. Prerequisite: admission to the Leadership Learning program.

EDLPS 549 Special Topics in Educational Studies (1-6, max. 20) Readings, lectures, and discussions pertaining to significant and enduring ideas in the philosophy, history

and sociology of education. Specific topics are critically examined in light of contemporary problems in education. Topics vary.

EDLPS 550 The Dynamics of Educational Organizations (3) Exploration of the literature in organizational theory and leadership, the assumptions that underlie the development of various approaches to organizational theory and how these approaches are applied, and an acquaintance with different conceptual frames that can be used to determine how to improve and change organizations. Credit/no-credit only.

EDLPS 551 Organizational Theory and Educational Change (4) Introduces students to the interdisciplinary research literature on organizations and its applicability to the research and practice of educational organizations. Engages students in understanding and critiquing organizational research and using it to develop conceptual frameworks to guide educational research and practice.

EDLPS 552 Organizational Change in Education (3) Change and innovation in educational organizations. Theoretical approaches include sociopsychological, rational planning, political perspectives, and those associated with notion of organized anarchies. Specific topics related to change and innovation (e.g., roles of beliefs, symbols and norms, diffusion of innovations, and research issues).

EDLPS 554 Foundations I: Leading for Learning in Complex Educational Systems ([0/3]-, max. 3) Explores (1) the conceptions of educational leadership as it manifests itself and is exercised in large-scale education systems (districts, regional entities, states); and (2) the possible connections between leadership and learning. Prerequisite: admission to the Leadership Learning program. Credit/no-credit only.

EDLPS 555 Foundations II: Moral and Historical Contexts for the Leadership of Complex Educational Systems ([2-4]-, max. 4) Locates system-level educational leadership in a context of values, moral principles, and historical events and trends. Connects leadership to principles of social justice and enduring dilemmas in public education within a democratic society. Prerequisite: admission to the Leadership Learning program. Credit/no-credit only.

EDLPS 556 Foundations III: The Dynamics of Organizations, Policy, and Systems Change ([2-6]-, max. 6) Considers the nature and dynamics of organizations within large educational systems. Draws on theories concerning organizations, politics, administration, systems, and innovation. Explores how organizations are designed and function, how policy works, and how systems change, adapt, and learn. Prerequisite: admission to the Leadership Learning program.

EDLPS 557 Foundations IV: Fiscal and Legal Contexts for Leadership of Complex Educational Systems ([2-5]-, max. 5) Considers two major challenges facing leaders of complex educational systems: (1) securing and allocating resources (especially funds, but also time and expertise); and (2) conforming to the framework of legal principles and precedents that govern public education. Prerequisite: admission to the Leadership Learning program.

EDLPS 558 Introduction to Qualitative Research Methods in Education (3) A. ELFERS Provides a basic overview of qualitative research methods. Covers the purpose, design, and conduct of qualitative research.

EDLPS 560 Perspectives on Policy and Policy Making in Education (3) Introduces a variety of theoretical perspectives that can be used to analyze policy content, processes and outcomes. Includes a consideration of the power and limits of policy and a discussion of the many ways people in different positions in organizations can influence policy. Credit/no-credit only.

EDLPS 561 Education Policies and Leadership in Political Context (3) Systematic consideration of the structure and function of educational policies and problems of research in political context.

EDLPS 562 American School Law (3) Examination of persistent legal issues, including an analysis of how these issues are manifest in public policy debates.

EDLPS 563 Education, The Workforce, and Public Policy (3, max. 6) W. ZUMETA Examination of policy issues involving education, training, the economy, and the development of the nation's human resources. Relationship between education, training, and work, underutilized workers, race and gender discrimination issues, and the role of education and training in economic development. Offered: jointly with PB AF 571.

EDLPS 564 Seminar in Economics of Education (3) M. PLECKI Current problems in school finance, including costs, ability to support schools, and financial implications of educational principles. The economics of public education. Problems of federal, state, and local school support. Financing capital outlay, research, and public relations.

EDLPS 565 Power and Politics in Organizational Leadership and Decision Making (3) Focuses on conceptual frameworks that can be used to analyze power-influence processes in complex organizations and research methods that are well-suited to the study of these processes. Opportunities to design studies of power relations and political processes are provided.

EDLPS 566 Education Policy Serving Disenfranchised Groups (3) Examines programs and policies aimed at ameliorating conditions that face disenfranchised groups in contemporary K-12 schooling. Seminar members critically analyze the assumptions, design, and likely impact of these programs and policies on institutions and individuals. Designed for advanced doctoral students. Others admitted with permission of instructor.

EDLPS 567 Education Policy and the Improvement of Teaching and Learning (3) Examines connections between policies and classroom practice, in P-12 and higher education settings. Of particular concern is the capacity of policy to improve the quality of curriculum and instruction. Students design and critique policies, drawing on research and feedback from policymakers.

EDLPS 568 Policy Evaluation in Education (3) Examination of methods for evaluating educational policies across the educational continuum. Students design and conduct a policy evaluation which draws on the policy evaluation literature. Examination of the uses of policy evaluation information in shaping organization-decision making is also included.

EDLPS 569 Issues in P-12 School Reform (3-5, max. 20) Copland, Knapp Offers rigorous ways to explore the meaning and action implications of contemporary reform movements in the P-12 public school system. Examines a different topic each quarter concerning reform at school, district, state, or federal levels through readings, discussion, projects, and analytical writing assignments. Offered: AWSp.

EDLPS 571 Instructional Renewal and the Achievement Gap ([0/3]-, max. 3) Examines the meaning of the performance gap between relatively advantaged and disadvantaged students in contemporary American schools and school districts, and the possibilities for reducing and closing it, especially within classroom instruction. Prerequisite: admission to the Leadership Learning program.

EDLPS 572 Teaching, Learning, and Instructional Renewal in the Context of Learner Differences ([2-5]-, max. 5) Examines the nature of learning and learner differences, and how educators can work productively with these differences, in relation to particular subjects (literacy, mathematics), diversity (language, culture, disability), assessment, and instructional technology. Prerequisite: admission to the Leadership Learning program. Credit/no-credit only.

EDLPS 573 Professional Learning and Instructional Renewal (2-4, max. 4) Investigates professional learning and how to support it, based on cognitive research, sociocultural theory, and scholarship on teacher education (pre-

service and inservice). Offers system-level leaders ways to address the quality of teaching and learning in classrooms. Prerequisite: admission to the Leadership Learning program.

EDLPS 574 Mixed Methods in Educational Research (3) M. PLECKI Introduces the principles of mixed methods research design, whereby qualitative and quantitative components inform each other in sampling, data collection, and data analysis. Explores design issues and solutions primarily in the context of education policy research. Offered: W.

EDLPS 575 Education Policy Implementation (4) M. HONIG Analyzes influences on implementation outcomes. Focuses on how skilled use of theoretical frameworks can help reveal relationships between policy and practice and evidence-based decisions that may improve implementation. Credit/no-credit only. Offered: Sp.

EDLPS 579 Special Topics in Organizational and Policy Analysis ([0-6]-, max. 20) Readings, lectures, and discussions pertaining to significant topics of special and current interest to educators. Focus is on issues related to the analysis of educational organizations, policies, and policy making. Topics vary.

EDLPS 580 The American College and University (4) Introduction to contemporary United States higher education, with special emphasis on emerging trends, roles of the several kinds of institutions, the composition and character of student bodies and faculty, and the state coordination of colleges and universities.

EDLPS 581 Principles and Practices of Adult and Continuing Education (3) History and development of adult and continuing education in the United States: component parts of the field; issues, theory, and research; program planning for adults; professionalization of the field.

EDLPS 582 Seminar in the History and the Organization of Higher Education (3) Advanced seminar in the history and organization of higher education.

EDLPS 583 Higher Education and the Law (3) Legal implications of university operations and an explanation of the legal and constitutional rights of students, faculty, and staff within the university. Special attention given to faculty employment and termination decisions; student protections, including due process; and university liabilities.

EDLPS 584 Academic Governance and Collective Bargaining in Higher Education (3) Explores the concept and operation of collective bargaining in higher education: its origin; the reasons for its growing popularity as a governance mechanism; the legal framework within which it operates; the rights, powers, and duties subsumed under its operation; and its relationship to the traditional form of faculty governance mechanisms.

EDLPS 585 Resource Allocation in Higher Education (3) After attention to the basic tools of economic analysis, focus is on application of those tools to specific topics in higher education (e.g., access, budgeting, finance and policies, and funding alternatives).

EDLPS 586 Navigating the P-20 Pipeline (3) J. MYERS TWITCHELL Introduction to programs, policies, and challenges related to supporting students as they transition from K-12 schools to institutions of higher education. Exploration of localized/region-based efforts to decrease the post-secondary opportunity gap, including funding models, collaborations and networks, and data and measurement strategies to increase rates of post-secondary attainment. Offered: A.

EDLPS 587 Seminar in Teaching and Learning in Higher Education (3, max. 9) Theory and practice of instruction and learning in higher education.

EDLPS 588 Seminar in Administration of Community Colleges (3) For students preparing for administrative positions in community colleges. Principles and practices in organization and administration of community colleges.

EDLPS 589 The Community College (3) Intensive study of the community college—its history and present and future status. Curriculum, instruction, financial, and governance issues are also discussed.

EDLPS 590 Student Populations and Experiences in Higher Education (3) Examines foundational literature dealing with students in higher education. Primary focus is on how students change during college, how they make choices and decisions, what roles institutional climate and structure play in the students' experiences, and what impact college has on students.

EDLPS 591 Higher Education and Public Policy (3) Covers public policy processes affecting higher education. Issues examined vary, but typically include fiscal context of higher education policy, access, equity, distance learning, and accountability policies.

EDLPS 592 Higher Education Equity, Reform, and Policy (3) Develops the critical and analytical lens that students apply to public policy issues as they directly relate to higher education in the United States.

EDLPS 593 Assessment and Evaluation in Higher Education (3) Covers the key components of evaluation design and implementation, particularly what researchers and practitioners define as good assessment and evaluation approaches. Develops competencies in planning assessment and evaluation strategies using these approaches.

EDLPS 594 GLOBALIZATION & INTERNATIONALIZATION OF HIGHER EDU (3) Explores topics of globalization and international higher education to examine the impacts of a changing world on higher education issues.

EDLPS 596 Secondary Data Analysis (3-5) J. LOTT Introduces the conceptual and practical issues involved in conducting educational research using existing sources of data, commonly known as secondary data analysis. Covers several fundamental concepts in order to become an informed and competent researcher who uses secondary data. Prerequisite: basic understanding of educational statistics.

EDLPS 597 Advanced Secondary Data Analysis (3) J. LOTT Applied methods. Introduces the conceptual and practical issues involved in conducting educational research using existing sources of data, commonly known as secondary data analysis. Covers several fundamental concepts in order to become an informed and competent researcher who uses secondary data. Prerequisite: EDLPS 596.

EDLPS 598 Special Topics in Higher Education (1-6, max. 20) Readings, lectures, and discussions pertaining to significant topics of special and current interest to educators. Focus is on issues related to education in community colleges, four-year colleges, and universities. Topics vary.

EDLPS 599 Independent Studies in Education (1-10, max. 20) Registration must be accompanied by a study prospectus endorsed by the appropriate faculty adviser for the work proposed, and which with permission of the instructor, must be filed with the Office of Leadership and Policy Studies in the College of Education. Prerequisite: permission of instructor.

EDLPS 600 Independent Study or Research (*-) Registration must be accompanied by a study prospectus endorsed by the appropriate faculty adviser for the work proposed, and which with permission of the instructor, must be filed with the Office of Leadership and Policy Studies in the College of Education. Prerequisite: permission of instructor. Credit/no-credit only.

EDLPS 601 Internship ([1-4]-, max. 20) Name of faculty member responsible for supervising the student should be indicated on program of studies. Prerequisite: permission of Supervisory Committee Chairperson or Graduate Program Adviser. Credit/no-credit only.

Educational Psychology

EDPSY 304 Learning and Teaching in our Changing World: Insights from Experience and Research (5) I&S Human learning in the educational setting. Cognition, development, learning, motivation, affective processes, and socialization. Emphasis on skills in influencing classroom learning and discipline. Offered: A.

EDPSY 402 Child Development and Learning (5) I&S Uses readings, discussions, naturalistic observations, and "virtual" children to understand the different ways children develop - physically, cognitively, social-emotionally, in language and literacy, and in approaches to learning - during early childhood, the interplay between each of these domains and the environmental context, and the theories about the developmental mechanisms underlying these changes.

EDPSY 405 Adolescents and Media: Challenges in the 21st Century Classroom (3) I&S Encourages students to consider classrooms of the future while reflecting on their own classroom experiences. Examines adolescents' informal use of media today, some of the ways media can affect young people, and the implications of these effects in a classroom setting.

EDPSY 420 Bullies, Victims, and Bystanders: Social Power in School and Workplace (4) I&S, DIV Examines theories and research on bullying, revenge, and bystander behavior in classrooms and workplaces. Identifies the social-cognitive, emotional, and ethical correlates of bullying, and social processes that empower or deter it. Presents and evaluates practical interventions at the organization, peer group, and individual level. Prerequisite: either EDPSY 402, PSYCH 206, PSYCH 245, PSYCH 306, or PSYCH 345. Offered: W.

EDPSY 425 BULLIES, VICTIMS, AND BYSTANDERS: SOCIAL POWER IN (4) I&S

EDPSY 431 Strategies for Classroom Research and Evaluation (5) Techniques and strategies for the design and implementation of studies of classroom instruction. Directed toward classroom teachers as consumers of instructional research and as evaluators in their own classrooms. Credit/no-credit only.

EDPSY 447 Principles of Guidance (3) Study of guidance programs in elementary and secondary schools. Attention is given to the roles of specialists with emphasis on the role of the classroom teacher in school guidance programs. Designed for teachers, administrators, and prospective teachers.

EDPSY 449 Laboratory in Educational Psychology (2-6, max. 6) Special studies for counselors, teachers, administrators, and others concerned with student personnel and psychological services in schools and colleges. Focuses on special topics that have either local or contemporary significance.

EDPSY 471 Educational Neuropsychology (5) NW Berninger Covers brain systems underlying normal development and academic learning: sensory and motor, language, cognitive, social emotional, and executive-functions for self-regulation alone and interaction with the physical and social worlds in and out of school. Recommended: prior course on learning.

EDPSY 472 Teaching Reading, Writing, and Math with Brain in Mind (5) I&S Berninger Students learn evidence-based guiding principles for designing and implementing instruction with brain in mind (developing mental worlds through other -regulated and self-regulated interactions with external physical and social environments that are multi-culturally sensitive and support learning that creates reading, writing, and math brains). Prerequisite: EDPSY 471. Offered: Sp.

EDPSY 490 Basic Educational Statistics (3) NW, QSR Measures of central tendency and variability, point and interval

estimation, linear correlation, hypothesis testing. Offered: AWSpS.

EDPSY 491 Intermediate Educational Statistics (3) QSR Abbott, Sanders Covers intermediate-level concepts in analysis of variance and regression methods. Emphasizes understanding appropriate use of methods, conducting analyses using software, and correctly interpreting statistical results. Includes SPSS/PASW software instruction. Prerequisite: EDPSY 490. Offered: W.

EDPSY 495 Introduction to Educational Measurement (3) QSR Practical understanding of test reliability, validity, and derived scores as they apply to external educational assessments; concepts of criterion and norm-referenced testing; review of group administered norm-referenced and criterion-referenced tests and/or testing programs; test interpretation; issues and ethics in large scale assessment. Prerequisite: EDPSY 490. Offered: Sp.

EDPSY 499 Undergraduate Research (*) Students developing studies under this rubric should be advised that a report or a paper setting forth the results of their investigations should be regarded as a basic part of the program. Offered: AWSpS.

EDPSY 500 Field Study I (1, max. 3) Individual study of an educational problem in the field under the direction of a faculty member. Prerequisite: approved plan of study and permission of the instructor must be filed in the Office of Educational Psychology in the College of Education. Offered: AWSpS.

EDPSY 501 Human Learning and Educational Practice (3) Systematic examination of current research about human learning in educational settings, including the study of behavioral, information processing, social construction, and the developmental perspectives on learning. Offered: AWSpS.

EDPSY 502 Developmental Foundations of Early Learning (3) Perceptual-motor, language, and overall cognitive development in children from birth through primary-school age. Emphasis on Piagetian and Vygotskian approaches to development with a special focus on the connections between learning and development. Field-based course projects may be required. Prerequisite: EDPSY 501 or permission. Offered: Sp.

EDPSY 503 Theories of Intelligence (3) Bang Reading and discussion of theoretical and research papers from the extensive literature on Piagetian, psychometric, and information processing conceptions of intelligence. A historical approach to the topic is followed by analysis of current writings on intelligence and its measurement. Prerequisite: EDPSY 501 and graduate status in education or psychology. Credit/no-credit only.

EDPSY 505 Field Study II (1, max. 3) Individual study of an educational problem in the field under the direction of a faculty member. Prerequisite: second year standing in the School Psychology program. Credit/no-credit only. Offered: AWSpS.

EDPSY 506 Instructional Theory (3) Sources, current state, and utility of prescriptive instructional theories with emphasis upon theories having a potential for guiding the design of instruction. Prerequisite: EDPSY 501 or equivalent.

EDPSY 507 Reading, Writing, and Arithmetic: Educational Assessment and Consultation (5) Cook Students administer and interpret tests of reading, writing, arithmetic, and related developmental skills; integrate test, observational, interview, and portfolio information in staffings and written reports; and consult with teachers regarding educational interventions. Prerequisite: graduate standing in the school psychology specialization and permission of instructor. Offered: A.

EDPSY 508 Advanced Practicum in Supervision (2-6, max. 20) Bohlander, Grady Practicum in supervising field study students in counseling, group counseling & diagnostic interventions. Prerequisite: admission in the School Psychology program. Offered: AWSpS.

EDPSY 509 Educational Issues in Human Development (5) Human development theories and models. Educational implications of theory, methodology, and application. Current research complements the historical antecedents of current practice. Age range covered varies as function of current issues in professional literature. Prerequisite: 15 credits in educational psychology or psychology.

EDPSY 510 Cognition in the Context of the School Curriculum (3) *Bell, McCutchen* Contemporary issues and trends in human learning, with a focus on reasoning within subject-matter areas such as mathematics, history, and science. Prerequisite: EDPSY 501 or equivalent.

EDPSY 511 Seminar in Applied Educational Psychology (1, max. 6) Designed for graduate students in educational psychology. Applications of theoretical constructs to particular problems encountered in school counseling, practice.

EDPSY 512 Classroom Assessment Strategies (3) Development and evaluation of traditional, observational, essay, performance-based, portfolio assessments and grading models as they are used in classroom assessment; some review of current research on classroom-based assessment; classroom assessment ethics. Prerequisite: EDPSY 490 or equivalent.

EDPSY 513 Instrument Development (3) Instrument development techniques including construct development, test and item specifications, item writing, planning for reliability and validity studies; ethics in test administration and interpretation. Intended for doctoral or master's students to develop instruments for their own research. Prerequisite: EDPSY 490 or equivalent.

EDPSY 518 Assessment and Diagnosis of Reading Disabilities (3) *Valencia* Techniques for individual assessment of students with reading difficulties (K-12) including formal assessment using standard assessment tools and informal diagnostic teaching. Appropriate for classroom teachers, reading specialists, and school psychologists. Includes conducting and analyzing case studies. Prerequisite: EDC&I 460, EDC&I 462, other reading courses, or permission of instructor.

EDPSY 519 Vulnerable Children and Families in Comparative Perspective: Psychosocial Development Processes (3) *Jegatheesan* Research and theory examining the effects of disability, poverty, trauma, and immigration and its impact on child development across cultures, effective interventions in educational and non-educational settings, and the consequences of critical issues in the context of psychosocial and development processes in different cultural and international contexts. Offered: Sp.

EDPSY 520 Psychology of Reading (3) *McCutchen* Reviews current empirical research on cognitive processes in reading, including word and sub-word processes, syntax and comprehension, reading and perception, word recognition, concept development, and meaning in reading, psychology of reading interests, and skills. Prerequisite: EDPSY 501 or equivalent. Credit/no-credit only. Offered: WS.

EDPSY 521 Psychology of Writing (3) *McCutchen* Examines writing as a cognitive process and reviews current empirical research on writing, emphasizing primarily studies from a psychological perspective. Explores both developmental differences and individual differences in writing skills, together with instructional implications. Prerequisite: EDPSY 501 or equivalent. Credit/no-credit only. Offered: WS.

EDPSY 522 Teaching Reading, Writing, and Math with Brain in Mind (5) *Berninger* Students learn evidence-based guiding principles for designing and implementing instruction with brain in mind (developing mental worlds through other-regulated and self-regulated interactions with external physical and social environments that are multi-culturally sensitive and support learning that creates reading, writing, and math brains). Prerequisite: EDPSY 471, EDPSY 577, or permission of instructor. Offered: Sp.

EDPSY 523 Foundations of Ethnographic Research (3) *Jegatheesan* Exploration of the main components of

ethnographic endeavor. Students conduct ethnographic research including field entry, observing, listening, data analysis, and writing; typical issues and quandaries encountered in carrying fieldwork in a variety of settings, ethical issues, comprehension, intrusion, and access, experience and empathy, and power dynamics, and predicament.

EDPSY 524 Problem Solving and Critical Thinking in Education (3) Study of the classic and contemporary research literature concerned with human problem solving and critical thinking with emphasis upon applications to educational practice and further research. Prerequisite: EDPSY 501 or equivalent.

EDPSY 525 Creativity and Education (3) Study of the classic and contemporary research literature about creativity with emphasis upon applications to educational practice, evaluation of strategies to promote creativity in the schools, and further research. Prerequisite: EDPSY 501 or equivalent.

EDPSY 526 Seminar on Metacognition (3) *Nolan* Students read and discuss theoretical and research papers from the extensive literature on metacognition. Focuses on defining the concept of metacognition, establishing its range of applicability to educational matters, and becoming familiar with excellent examples of metacognitive research. Prerequisite: graduate status in education or psychology and permission of instructor.

EDPSY 527 Transfer of Teaching (3) *Bell, Shouse* Students read and discuss a representative sample of theoretical and research papers from extensive literature on teaching to promote transfer of what students learn to non-teaching environments. Historical approach to the topic is followed by analysis of current writings on transfer. Prerequisite: EDPSY 501 and graduate status in education or psychology. Credit/no-credit only.

EDPSY 528 Achievement Motivation in Education (3) *Nolan* Critical review of current research and major theories of achievement motivation in schools and other educational settings. Emphasis on the relationship of theories to the contexts and practice of education. Prerequisite: EDPSY 501 or permission of instructor. Offered: WS.

EDPSY 530 Vygotsky's Socio-Cultural Approach to Mind (5) *Herrenkohl* Critical reading and discussion of the work of L.S. Vygotsky as well as contemporary psychologists and educators who have investigated cognition in social context. Discusses the implications of these approaches for the design of learning environments. Prerequisite: EDPSY 501. Credit/no-credit only. Offered: W.

EDPSY 531 Socialization of School-Age Children (3) Study of personal social development and behavior from pre-school ages through adolescence. Developmental theory and research are reviewed on the socialization influences of parents and peers and on such topics as aggression, emotional regulation, and social cognition. Prerequisite: EDPSY 501 or equivalent.

EDPSY 532 Adolescence and Youth (3) Developmental processes and patterns examined with major theoretical and current research themes from behavioral sciences as applied to middle school and senior high students. Educational issues, social problems associated with adolescence in Western culture. Prerequisite: EDPSY 501 or equivalent.

EDPSY 533 Current Research in Adolescence (3) Contemporary trends and patterns of adolescent research are examined with emphasis upon theoretical foundations, contrasting methodologies, and implications for further research. Exemplary studies and integrative reviews of research on adolescence are featured. Prerequisite: EDPSY 532 and EDPSY 591 or equivalents.

EDPSY 534 School Problems of Adolescence (3) Study of the classic, contemporary, and emerging school problems of school age youth with emphasis upon problem solving strategies for educators and associated youth service personnel. Includes problems of academic achievement,

interpersonal relations, and social deviancy in the schools. Prerequisite: EDPSY 532 or equivalent.

EDPSY 535 Education and the Highly Capable Learner (3) *N. HERTZOG* Examination of major issues and problems in study and nurturance of highly capable children and youth in the educational setting. Emphasis placed on contributions of theory and research to educational problem solving for multiple aspects of advanced human capacity. Prerequisite: EDPSY 501 or equivalent.

EDPSY 536 Immigrant and Indigenous Children: Social Context of Learning (3) *Jegatheesan* Focuses on the broad context of family, school, and society of immigrant and indigenous young children in the United States. Introduces the complex interplay of socio-cultural and psychological factors that impact these children's learning. Offered: WS.

EDPSY 537 Teaching and Learning Science with Indigenous Students (3) *M. BANG* Provides an overview of the opportunities and challenges in teaching science to Indigenous learners. Students develop relevant pedagogical frameworks to approach problems of practice and develop high-leverage instructional practices for Indigenous students. Focused on Indigenous students however is relevant to other under-achieving populations. Offered: Sp.

EDPSY 540 School Psychological Assessment (5) *Jones* Study of assessment of human intelligence with supervised training in the administration, scoring, and interpretation of individual intelligence tests. Prerequisite: admission to School Psychology program. Offered: A.

EDPSY 544 Counseling (4) *J. MAZZA* Competency-based skills training for beginning counseling and school psychology students. Covers attending, listening, focusing, and intervening behaviors for use with adults and children. Introduction to theories of helping. Prerequisite: admission to School Psychology program. Offered: W.

EDPSY 545 Prepracticum (3) Competency-based skills training for beginning counseling and school psychology students. Attending, listening, focusing, and intervening behaviors for use with adults and children. Introduction to theories of helping. Prerequisite: graduate standing in school psychology or permission of instructor. Offered: A.

EDPSY 546 Counseling Practicum (3-5, max. 20) *J. MAZZA* Supervised practice in counseling. Prerequisite: admission to School Psychology program; EDPSY 544. Offered: Sp.

EDPSY 548 Educational Implications of Personality Theory (5) *J. MAZZA* Study of personality development and personality theories with continuous attention to the meaning of these in educational practice, testing, and counseling. Prerequisite: admission to the School Psychology program. Offered: A.

EDPSY 549 Seminar in Consultation Methods (3) *Cook* Theory and practice of process consultation in educational settings. Field practice in teams with clients. Prerequisite: admission to the School Psychology program. Offered: W.

EDPSY 550 Family Counseling (3) *Jones* Introduction to family counseling theory and practice, emphasizing family dynamics and communication analysis. Prerequisite: graduate standing in school psychology or permission of instructor. Offered: W.

EDPSY 551 Group and Behavioral Intervention (3) *Cook* Introduction to competency-based skills for beginning school psychology students. Includes basic processes of group management skills with children including group process in social skills training, problem-solving techniques, behavioral principles, and parent training. Prerequisite: admission to School Psychology program. Offered: Sp.

EDPSY 552 Multicultural Issues in School Counseling and School Psychology (3) Examination of multicultural issues as they relate to the delivery of services provided by school counselors and school psychologists. Theoretical and applied aspects emphasized and case study format utilized. Prerequisite: admission to School Psychology program. Offered: Sp.

EDPSY 553 School Psychology Services with Special Populations (3) *Murphy* Examines current issues in working with youth in special populations, as well as intervention strategies to help these students within the mainstream school environment. Prerequisite: admission to School Psychology program. Credit/no-credit only. Offered: W.

EDPSY 554 Response to Intervention for Behavioral Assessment, Consultation, and Intervention (3) *Cook* Teaches the RTI framework and provides instruction on how to conduct assessment, consultation, and evaluation intervention program effectiveness using both a direct service delivery model as well as an indirect model (consultation). Prerequisite: admission to School Psychology program. Offered: A.

EDPSY 556 Applied Social Psychology: Implications for Education (3) *Cunningham, Mazza* Provides students with the knowledge and understanding of how social psychology is applied within school settings and how it can be used to help develop effective strategies for psychological services. Prerequisite: admission to School Psychology program. Credit/no-credit only. Offered: W.

EDPSY 557 Tier III Interventions for School Psychologists (3) *Cook, Mazza* Provides school psychology students with a multi-tier framework in working with challenging students in schools. Provides explicit instruction on functional behavioral assessment, including content and training in how to work with youth who are at-risk or have engaged in self-harming and/or suicidal behavior. Prerequisite: admission to School Psychology program. Offered: Sp.

EDPSY 560 Advanced Practicum in Personality Assessment (3) *Jones* Designed for doctoral-level school psychologists to learn advanced personality assessment for diagnosis of emotional and behavior disorders. Prerequisite: admission to School Psychology program; EDPSY 540; EDPSY 564. Open to doctoral students only.

EDPSY 562 Group Counseling in Schools (3) Provides students with the opportunity to co-facilitate groups in elementary, middle, and secondary schools, supplemented by weekly didactic presentations of counseling and guidance models. Prerequisite: EDPSY 561 or permission of instructor. Offered: W.

EDPSY 564 Practicum in School Psychology (1-6, max. 20) *Jones, Lau* Practicum in assessment and consultation, emphasizing diagnosis of behavior and learning disabilities, and focusing on techniques acquired in EDPSY 507 and EDPSY 540. Prerequisite: admission to School Psychology program; EDPSY 507; EDPSY 540. Offered: W.

EDPSY 565 Advanced Practicum in Assessment and Cognitive Therapy with High Risk Students with E/BD (2, max. 20) Designed for doctoral level school psychologists to learn advanced assessment and cognitive therapy techniques in working with students with E/BD under the supervision of a licensed psychologist. Prerequisite: EDPSY 544, EDPSY 546 or equivalent and advanced graduate standing in the school psychology program.

EDPSY 566 Case Study Seminar (1-6, max. 20) *Grady* Integrating theoretical concepts with practice/service issues. Cases selected for discussion represent a wide range of problems found in schools. Activities include group supervision and peer review. Prerequisite: graduate standing in school psychology. Offered: AWSp.

EDPSY 568 Seminar in Professional Issues and Ethics (3) *Provenzano* Professional ethics codes and cases, history of counseling or school psychology, legal problems, credentialing issues, conditions of practice, continuing education, publishing, and presenting research papers. Prerequisite: graduate standing in College of Education or permission of instructor. Credit/no-credit only. Offered: W.

EDPSY 570 Introduction to School Psychology (2, max. 20) *J. MAZZA* Current issues in professional psychology practice and research. Prerequisite: admission to School Psychology program. Offered: A.

EDPSY 571 Educating Individuals with Biologically Based Disabilities (5) *Berninger* Reviews the history of neural science and its interdisciplinary roots, brain imaging methods and web resources, basic terminology and concepts for microscopic and larger neurological structures, functions, organizing principles and chemical bases, with focus on application to diagnosing and teaching students with developmental, learning, psychiatric, neurological, and medical disorders. Prerequisite: graduate standing in school psychology or instructor permission. Offered: Sp.

EDPSY 572 Social-Emotional Assessment (3) *Cunningham* Techniques in social-emotional assessment of school-aged children. Diagnostic systems presented in conjunction with assessment techniques. Emphasis on an integrative method for understanding social emotional assessment batteries and reliability and validity of their test score interpretation. Prerequisite: admission to School Psychology program. Offered: A.

EDPSY 573 Psychological Assessment of Preschool Children (5) *Olson* Students learn to give and interpret tests of intellectual development to assess language, play, and social/emotional functioning, and to write psychological assessment reports for infants, toddlers, and preschoolers. Prerequisite: graduate standing in school psychology and permission of instructor. Offered: Sp.

EDPSY 575 Structural Equation Modeling (3) *Abbott* Theory and data analysis using linear structural equation models. Application to data in educational research. Prerequisite: EDPSY 594 or equivalent. Offered: WS.

EDPSY 576 Hierarchical Linear Models (3) *Abbott* Theory and data analysis for research models where random factors are nested, such as multi-level data, growth curve analysis, and meta-analysis. Prerequisite: EDPSY 593 or equivalent. Offered: WS.

EDPSY 577 Neuropsychology of Learning and Behavior Problems (5) Brings together our understanding of neuropsychology and specific behavioral and learning problems to provide a foundation for practitioners to consider neuropsychological contributors to problems observed in clinical and educational settings. Credit/no-credit only. Offered: Sp.

EDPSY 578 Educational Applications of Neuropsychology: Assessment and Intervention (5) *Berninger* Students observe and administer neuropsychological tests and plan and carry out educational interventions for children with neuropsychological disorders. Content focuses on various neuropsychological disorders for which school psychologists can provide assessment and consultation. Prerequisite: EDPSY 540 or equivalent course in individual testing, and EDPSY 577 or permission of the instructor.

EDPSY 580 Seminar: The Emergence of Educational Psychology (3) Examination of documents by selected contributors to the field of educational psychology. Special focus on period from mid-nineteenth century to the later twentieth century.

EDPSY 581 Seminar in Educational Psychology (1-5, max. 20) Advanced seminar on selected topics in educational psychology. A critical appraisal of current research. Offered: AWSpS.

EDPSY 582 Seminar in Development and Socialization (3, max. 15) *Herrenkohl, Jegatheesan, Nolen, Kazemi* Advanced seminar on selected topics concerned with human development and socialization processes. Emphasis placed upon empirical research and its theoretical underpinnings in such areas as cognitive development, moral development and education, self-concept development, and related concerns. Prerequisite: graduate standing in College of Education or instructor permission.

EDPSY 583 Seminar in Learning and Thinking (3, max. 15) Seminar in the psychology of learning language and language learning. Each seminar is offered with pre-designated emphasis in one of the following topics: linguistics, phonology, pragmatics, psycholinguistics, semantics. Pre-

requisite: graduate standing in College of Education or instructor permission.

EDPSY 584 Seminar in Quantitative Methods (3, max. 15) *Li, Taylor* Seminar on such topics as measurement techniques, research design, psychometrics, and statistics. Prerequisite: EDPSY 490 and instructor permission.

EDPSY 585 History, Systems, and Contemporary Issues in School Psychology (3) *Jones, Mazza* Covers the history, systems, and research relating to the contemporary issues relevant to research and practice of school psychology. Meets APA and Washington state requirements for course in history and systems of psychology. Prerequisite: admission to School Psychology program. Credit/no-credit only. Offered: Sp.

EDPSY 586 Qualitative Methods of Educational Research I (3-5) Survey of various qualitative research methods from a variety of disciplinary perspectives (anthropology, sociology, applied linguistics, cognitive psychology, policy analysis, and evaluation) with intensive experience in collection, analysis, and reporting of data. Prerequisite: second-year doctoral standing and one course in statistics, and permission of instructor. Offered: A.

EDPSY 587 Qualitative Methods of Educational Research III (3-5)

EDPSY 588 Survey Research Methodology and Theory (3) Survey research, research, theory, and methodology. Probability theory, sampling, human subjects considerations, instrumentation, and analysis techniques. Review and critique by students of theoretical issues in survey research and development of a survey instrument. Prerequisite: EDPSY 490 or equivalent. Offered: W.

EDPSY 589 Scholarly Writing in Education and Psychology (3) Introduction to the demands and expectations for technical writing in education and psychology, including aspects of the culture of scholarship. Designed for competent writers. Does not address basic grammar and composition. Prerequisite: doctoral standing, and permission of instructor. Credit/no-credit only.

EDPSY 590 Computer Utilization in Educational Research (3) Computer utilization in solution of research problems, data reduction to forms amenable to computer solution, appropriate framing of problems for solutions by computer. Using an interactive system, editors, and program packages. Prerequisite: EDPSY 490.

EDPSY 591 Methods of Educational Research (3) Introduction to educational research. Primary focus on hypothesis development, experimental design, use of controls, data analysis, and interpretation. Prerequisite: EDPSY 490. Offered: WSp.

EDPSY 592 Advanced Educational Measurements (3) *Li* Theory of measurement; an examination of assumptions involved in test theory, errors of measurement, factors affecting reliability and validity, and item analysis and standards for educational and psychological tests. Prerequisite: EDPSY 490. Offered: Sp.

EDPSY 593 Experimental Design and Analysis (5) Experimental design with emphasis on the analysis of variance. Prerequisite: EDPSY 490 or equivalent. Offered: W.

EDPSY 594 Advanced Correlational Techniques (5) *Abbott* Multivariate analysis, including regression and multiple correlation; matrix algebra; factor analysis. Prerequisite: EDPSY 490 or equivalent. Offered: Sp.

EDPSY 595 Item Response Theory Models of Testing (3) In depth exploration of IRT models and their roles in the development of large scale educational and psychological tests. Prerequisite: EDPSY 490 or equivalent, EDPSY 592, EDPSY 594.

EDPSY 596 Program Evaluation (3) *Mazza* Advanced course in evaluation research emphasizing nontraditional designs, especially those that impose severe ecological constraints on the evaluators. Prerequisite: EDPSY 593, EDPSY 594, EDC&I 597, or permission of instructor.

EDPSY 597 Technical Requirements of Large Scale Tests (3) Theoretical and practical understanding of the quantitative aspects of large-scale tests, including: scaling, norms development, and the development of derived and interpretive scores, evidence for validity and reliability. Prerequisite: EDPSY 490 or equivalent, EDPSY 592, EDPSY 595.

EDPSY 599 Independent Studies in Education (*) Independent studies or readings of specialized aspects of education. Offered: AWSpS.

EDPSY 600 Independent Study or Research (*) Prerequisite: permission of instructor. Offered: AWSpS.

EDPSY 601 Internship (3-10, max. 30) Offered: AWSpS.

Special Education

EDSPE 404 Exceptional Children I&S (3) I&S Covers the knowledge of the field of special education including laws, practices, procedures, and controversies. Focuses on information about children with disabilities studied from the point of view of education. Offered: WSp.

EDSPE 414 Introduction to Early Childhood Special Education I&S (3) I&S Provides students with a comprehensive overview of major aspects of the field of early childhood special education. Theoretical foundations and program development and implementation are presented in an approach that integrates theory, research, and practice. Offered: WSp.

EDSPE 419 Family and Community Influences on the Young Child (5) I&S, DIV Develops an understanding of families of young children from different socio-cultural backgrounds, child socialization and development in family and community contexts (immigrant, refugee, indigenous, special-needs and vulnerable children), parenting across cultures, family processes, family systems theories, socio-cultural theories, and family-child collaborative partnerships using family and community strengths and resources. Offered: ASp.

EDSPE 422 DISABILITY, EDUCATION, AND THE ARTS (3) VLPA Cultural perspectives on disability and education, as interpreted through arts-based inquiry.

EDSPE 435 Introduction to Autism Spectrum Disorders (5) I&S, DIV Provides an overview of the characteristics, causes, treatments, and controversies about autism spectrum disorder (ASD). Addresses information about the history of the disorder, assessment strategies, and types of interventions. Offered: Sp.

EDSPE 460 Early Literary Instruction (3) Covers the theory and educational practices in early literacy including emergent literacy development, risk factors for poor literacy outcomes, methods to promote language needed for literacy, phonemic awareness, word identification. Emphasizes instructional strategies useful in childcare settings, preschools, early intervention, and programs for students with developmental disabilities.

EDSPE 499 Undergraduate Research (*) Students developing studies under this rubric should be advised that a report or a paper setting forth the results of their investigations should be regarded as a basic part of the program. Offered: AWSpS.

EDSPE 500 Practicum ([1-6]-, max. 20) Practicum in the field under the direction of a faculty member. Prerequisite: enrollment in a special education program, approved plan of study, and permission of the instructor. Offered: AWSpS.

EDSPE 502 Collaboration: Working with Parents and Professionals (3) Provides students with knowledge and skills for working collaboratively with other professionals, family members, and paraeducators. Focus is on the role of the special educator in forming and sustaining school, family, and community partnerships.

EDSPE 503 Classroom Management for Elementary School Educators ([1-3]-, max. 4) Examines how to set up effective classrooms to facilitate learning and the devel-

opment of social behaviors. Focuses on strategies for effectively managing whole group (classroom) and individual behavior of students in the context of public schools.

EDSPE 504 Special Education and the Law (3) Brown Overview of major state and federal laws affecting the operation and management of special education programs in public schools. Emphasis upon procedural and substantive rights of children with disabling conditions. Offered: jointly with EDLPS 516.

EDSPE 505 Curriculum Development of Students with Moderate to Severe Disabilities (4) Addresses issues and practices in the development of appropriate curriculum, accessing the general education curriculum, and meaningful assessment for students with moderate to severe disabilities in educational settings. Topics include: assessing general education curriculum, inclusion, and development of Individualized Educational Plans (IEPs), assessment using environmental strategies, and identifying students' needs for assistive technology.

EDSPE 507 Instructional Methods for Students with Moderate to Severe Disabilities (4) Davis Details a systematic instructional process for the education of students with moderate to severe or profound disabilities. Includes instructional methods and materials designed to promote the development of skills that are required in school, home, and community settings, and to reduce challenging behaviors.

EDSPE 510 Behavioral Measurement and Management in the Classroom (3) Response measurement in the classroom; use of data analysis for instructional decisions and behavior management for children with disabilities.

EDSPE 511 Methods of Applied Behavior Analysis Research (3) Schwartz Characteristics of applied behavior analysis are presented: direct, daily measurement, and the systematic investigation of important variables. Representative studies from various applied situations are discussed in terms of dependent and independent variables, research design, reliability, validity, and data analysis. Prerequisite: EDSPE 510 or equivalent preparation.

EDSPE 513 Principles of Clinical Appraisal for Teachers of Exceptional Children (3) Diagnostic instruments used in the clinical appraisal of exceptional children. Theoretical and measurement considerations are used to buttress practical experiences in appraisal related to eligibility and intervention. Offered: A.

EDSPE 514 Fundamentals of Reading for Children with Disabilities (3) Hudson Emphasis on basic prereading and reading skills, such as phonics and structural analysis, specifically for the disabled child. Acquisition of comprehension skills by the disabled. Diagnosis of reading problems, published materials appropriate for children with disabilities, material modification. Offered: W.

EDSPE 515 Problems and Issues in Special Education (3, max. 9) Intensive examination of the issues pertinent to special education, such as legislation, interdisciplinary functions, and the role of special education in general education and placement practices.

EDSPE 517 Practicum in Research Design and Analysis in Special Education (1-4, max. 10) Critical analysis of current research in special education and related fields serves as background for designing applied research projects. Projects are examined, evaluated, and revised in seminar discussion. Prerequisite: EDPSY 490 and EDSPE 591 or equivalent and permission of instructor. Offered: AWSpS.

EDSPE 518 Seminar in Special Education Research (1-4, max. 20) Designed for doctoral students in special education during their first year of residency. Each candidate selects a dissertation problem and submits a proposal. Topics such as the procurement of subjects, the reporting and communication of research findings, and the evaluation of research are stressed. The seminar leads to the evolution of a viable dissertation proposal. Credit/no-credit only. Offered: AWSp.

EDSPE 520 Seminar in Applied Special Education (1-12, max. 20) Designed for graduate students in special education. Focus on contemporary topics relating to the application of the theoretical constructs to special education. Offered: AWSp.

EDSPE 521 Communication and Language in Young Exceptional Children (3) Review and critical examination of theories of language acquisition and their psychological implications for developing cognition. Emphases include a survey of language growth from the fields of linguistics, psychology, and sociology and combining these disciplines into the service of studying individual language development from the points of view of educational attainment and social relationships. Offered: Sp.

EDSPE 522 Seminar on the Education of Students with Severe Disabilities (3) Advanced graduate seminar arranged to study and discuss the essential components of providing a comprehensive approach to the identification and education of infants, children, adolescents, and young adults with severe disabilities.

EDSPE 523 Specific Numeracy Techniques for Elementary Students with Mild Disabilities (3) Lewis Provides the teacher with specific techniques for teaching numeracy to elementary students with mild disabilities in inclusive settings. Prerequisite: EDEP 522 or equivalent. Offered: Sp.

EDSPE 524 Functional Behavioral Assessment (3) Provides a solid foundation in the theory and practice of functional behavioral assessment (FBA). FBA is a required practice under special education law and considered a best practice for students with challenging behavior.

EDSPE 525 Educating Students with Autism or Severe Behavior Disorders (3) Consideration of the identification, etiology, education, and outcomes of individuals with Autism Spectrum Disorder. Offered: SpS.

EDSPE 526 Techniques for Instructing Social Behaviors for Elementary Students with Mild Disabilities (3) Provides prospective and practicing teachers with foundational theory and knowledge to select specific techniques to promote social competency in elementary children with mild disabilities. Discusses research related to use of these techniques and interventions. Develops schoolwide, classroom, and individual plans for teaching social skills. Offered: Sp.

EDSPE 527 Applied Behavior Analysis for Teachers (3) Presents principles of applied behavior analysis. Focuses on the use of principles in classroom, home, and community settings to influence learning. Emphasis on the use of data collection and progress monitoring the use of principles and outcomes for learning. Offered: A.

EDSPE 528 Inquiry and Methods in Writing Instruction (3) Covers methods of assessment and teaching written composition, spelling, and handwriting to children and youth with, and without, disabilities. Particular attention is given to how to establish a strong writing program in elementary classrooms and how to teach writing strategies. Offered: jointly with EDC&I 536; Sp.

EDSPE 529 Ethics in Applied Behavior Analysis (5) Examines ethical issues and responsibilities in regard to service provision to people with disabilities in education. Informed consent, protection of confidentiality, legal requirements to demonstrate changes in student learning, and selection of least intrusive, least restrictive behavior procedures presented and discussed within the context of readings and discussion of cases.

EDSPE 530 Advanced Readings in Applied Behavior Analysis (1, max. 20) Schwartz Provides opportunities to read and discuss core texts from applied behavior analysis (ABA). Covers the conceptual underpinnings of ABA and discusses examples of application of the principles. Offered: AWSp.

EDSPE 531 Planning Comprehensive Behavioral Interventions (3) Gives special educators the knowledge and skills they need to develop comprehensive behavior plans to ad-

dress challenging behavior in children with disabilities in their classrooms. Offered: W.

EDSPE 532 A Tiered Approach to Inclusive Education (3) Prepares educators to work in inclusive educational environments. Explores evidence based instructional strategies, discusses ways to use behavior analytic strategies to promote inclusion, and explores strategies to collaborate with general education teachers. Students also learn how to write high-quality Individualized Education Plans.

EDSPE 541 Education of Children with Behavior Disorders (3) Introductory course covering characteristics of and educational practices for children with emotional/behavioral disabilities. Reviews theory, definitional issues, models, assessment, and instructional methods for educating children with emotional and behavioral disorders. Students develop a working knowledge of educational approaches for teaching students with emotional/behavioral disabilities. Offered: A.

EDSPE 545 Instructional Modifications for the Education of Children with Mild Disabilities (3) In-depth analysis and application of several modifications of instructional techniques necessary for the education of students with mild disabilities.

EDSPE 546 Seminar in Educating Children with Behavior Disorders (3, max. 9) Advanced-level seminars focus on contemporary research topics relating to the effective education of children with serious behavior disorders. Students analyze and review research pertinent to the chosen topics and prepare a scholarly manuscript for dissemination.

EDSPE 548 Special Topics in the Education of the Learning Disabled (3, max. 12) In-depth analysis of empirical findings in the specialty of learning disabilities with focus on the synthesis of research findings and their application to the educational environment. A paper suitable for publication required. Prerequisite: course in learning theory, introductory course in learning disabilities, or equivalent preparation.

EDSPE 561 Educational Assessment of Young Children with Special Needs (3) Special standardized and educational measurement and evaluation procedures for use with young children with a variety of disabling conditions. Observation, ecological assessment, and programming strategies are discussed in combination with practical application of the skills within an educational framework.

EDSPE 562 Curricula for Preschool Children with Disabilities (3) Basic theoretical models and approaches to curricula for preschoolers with disabilities. Critical review of preschool curricula, standards, and benchmarks. Strategies for critiquing, evaluating, and adapting curricula. Offered: W.

EDSPE 563 Family-Professional Partnerships and Collaborative Teaming (4) *Meeker* Explores issues, theories, models, research, and recommended practices related to family-professional partnerships and collaborative teaming in education. Explores the dynamics of interactions with families and other team members including roles and responsibilities, decision-making, communication, and collaboration. Focuses on families and teaming in special education. Offered: AW.

EDSPE 564 Infants and Toddlers with Disabilities and Other Special needs (3) *Sandall* Examines early intervention policies, programs, and practices for infants and toddlers with disabilities and other special needs. Topics include theoretical, philosophical, and learning and research base for early intervention. Offered: A.

EDSPE 565 Seminar: Early Childhood Education for Children with Disabilities (3, max. 9) Advanced seminar on early childhood education for infants and young children with disabilities. Historical and current research from special education and related fields reviewed with regard to their application to the education of young children with disabilities.

EDSPE 566 Current Research in Early Childhood Special Education (2, max. 6) Explores theory, research, and practice in early intervention with infants, toddlers, and their families. Topics include typical and atypical development, assessment, curriculum, and intervention strategies.

EDSPE 599 Independent Studies in Education (*) Independent studies or readings of specialized aspects of education. Registration must be accompanied by a study prospectus endorsed by the appropriate faculty adviser for the work proposed. Offered: AWSpS.

EDSPE 600 Independent Study or Research (*-) Registration must be accompanied by a study prospectus endorsed by the appropriate faculty adviser for the work proposed. Offered: AWSpS.

EDSPE 601 Internship (1-10, max. 20) Prerequisite: graduate standing and permission based on prearrangement of internship placement and approval by adviser. Offered: AWSpS.

Teacher Education Program

EDTEP 501 Community-Based Field Experience (1-10, max. 15) Field experience and group discussions accompanying the first quarter of study in an Elementary Teacher Education Program. Field experience in community based organizations or school settings. Prerequisite: elementary TEP student. Credit/no-credit only.

EDTEP 502 Second Quarter Field Experience - Elementary (2-10, max. 15) Field experience accompanying the second quarter of study in an Elementary Teacher Education Program. Observe school-year opening full-time in late August through September; field experiences during the quarter in supervised school placements. Prerequisite: elementary TEP student. Credit/no-credit only.

EDTEP 503 Third Quarter Field Experience - Elementary (4) Field experience and use of reflective process in small group discussions accompanying third quarter of study in an Elementary Teacher Education Program. Field experiences during the quarter in supervised school placements. Prerequisite: elementary TEP student. Credit/no-credit only.

EDTEP 505 Capstone Project: Tools for Reflection - Elementary ([1-3]-, max. 3) Group discussions fostering integration of coursework, field experience, and teaching experiences through documentation and reflection on first year teaching experiences. Using certification standards for teachers, students illustrate their learning through multiple forms of evidence. Final capstone project is presented to an audience. Prerequisite: elementary TEP student. Credit/no-credit only.

EDTEP 511 School and Society (3) Exploration of issues regarding schooling and society, such as matters of value and value tension in American schools. Consideration of social values such as equality, opportunity, pluralism, and community; historical and contemporary evidence of values in schooling; and how values can conflict in policy and practice. Prerequisite: elementary TEP student.

EDTEP 521 Teaching and Learning in Numeracy I (4) Focus on mathematics from the perspective of the learner and on the meaning of understanding a mathematics concept. Examination of cultural aspects of the development of these concepts. Prerequisite: elementary TEP student.

EDTEP 522 Teaching and Learning in Numeracy II (3) Focus on pedagogy of mathematics. In conjunction with field experience, students extend understanding of mathematics and successfully integrate mathematics as a tool for learning science and art. Prerequisite: elementary TEP student.

EDTEP 523 Teaching and Learning in Science (3) Science teaching in a manner consistent with how young children learn science concepts and skills. Opportunities are provided for work on science activities similar to those used with elementary school children and to experience many of the problems and successes of preadolescents. Prerequisite: elementary TEP student.

EDTEP 531 Teaching and Learning in Literacy I (3) Investigation of the multiple natures of literacy development. Students study the impact of culture and family on literacy development by reading and discussing a variety of texts while also experiencing the development of their own learning through literature study, the writing process, and oral presentations. Prerequisite: elementary TEP student.

EDTEP 532 Teaching and Learning in Literacy II (4) Introduces participants to the content and process of literacy learning in elementary school. Study of abilities needed for effective literacy use, instructional strategies to help children acquire these abilities, and assessment strategies to evaluate student progress. Prerequisite: elementary TEP student.

EDTEP 533 Teaching and Learning in Literacy III (3) Introduces participants to the content and process of literacy learning in elementary school. Study of abilities needed for effective literacy use, instructional strategies to help children acquire these abilities, and assessment strategies to evaluate student progress. Prerequisite: elementary TEP student.

EDTEP 541 Dilemmas of Teaching and Learning in Elementary School ([2-4]-, max. 4) Covers human learning in the elementary school setting with emphasis on discipline-specific cognition and cognitive development. Prerequisite: elementary TEP student.

EDTEP 543 Teaching and Learning in Social Studies. (4) Strategies for teaching social studies and the arts through integrated thematic units of curriculum and instruction. Prerequisite: elementary TEP student.

EDTEP 544 Differentiated Instruction (1-4, max. 20) Introduction to the concepts and practice of differentiated instruction for children with diverse developmental, linguistic, and cultural characteristics. Prerequisite: elementary TEP student.

EDTEP 551 Multicultural Teaching (3) Concepts, theories, and strategies that constitute major dimensions of multicultural education. Focus on racial and ethnic groups, social class, and gender. Dimensions of multicultural education examined include content integration, knowledge construction process, prejudice reduction, equity pedagogy, and empowering school culture and social structure. Prerequisite: TEP student.

EDTEP 552 Assessment in Elementary Education ([1-2]-, max. 3) Emphasis on methods of assessment that reinforce understanding of the various disciplines. Includes performance assessments, assessments of student projects and papers, traditional exams, and observational exams. Prerequisite: elementary TEP student.

EDTEP 560 Teaching for Learning in Secondary School (3) Studies human learning in an educational setting, with an emphasis on learning of school subjects. Topics include nature of learning, knowledge and teaching, motivation, culture, and cognition. First in a two-course sequence. Prerequisite: secondary TEP student.

EDTEP 561 Teaching and Learning for Secondary Schools II (2) Study of human learning in an educational setting, with an emphasis on learning of school subjects. Topics include nature of learning, knowledge and teaching, motivation, culture, and cognition. Second of a two-course sequence. Prerequisite: secondary TEP student.

EDTEP 562 Adolescent Development and Education I (2-) Overview of trends and issues of adolescent development and behavior in relation to contemporary secondary schooling. Examines psychological perspectives on adolescent identity, interpersonal relationships, academic engagement, and social deviancy in schools. First in a two-course sequence. Prerequisite: secondary TEP student.

EDTEP 563 Adolescent Development and Education II (-2) Overview of trends and issues of adolescent development and behavior in relation to contemporary secondary schooling. Examines psychological perspectives on adolescent identity, interpersonal relationships, academic en-

gagement, and social deviancy in schools. Second in a two-course sequence. Prerequisite: secondary TEP student.

EDTEP 564 Working in Schools (1-2, max. 20) Explores the organizational, personal, and interpersonal aspects of working as a teacher in schools. Preparation for membership and leadership in a professional learning community and for continuing professional growth. Prerequisite: TEP student Credit/no-credit only.

EDTEP 566 Creating Classrooms for All Students (2-4, max. 4) Provides middle and high school teachers with an understanding of how to organize their classrooms so as to encourage and teach civility and be familiar with the needs of special education students.

EDTEP 571 Topics and Tensions in School and Society (4) Exploration of issues of value and value tension in American schools. Consideration of social values of equality, opportunity, pluralism, and community, historical and contemporary evidence of values in schooling, and how values can conflict in policy and practice. Prerequisite: secondary TEP student.

EDTEP 573 Assessment in Secondary Education (4) Strong emphasis on methods of assessment that reinforce understanding of the various disciplines, including performance assessments, assessments of student projects and papers, traditional exams, and observational exams. Prerequisite: secondary TEP student.

EDTEP 575 Working with English Language Learners and Literacy Across the Curriculum (4) Prepares pre-service secondary teachers to meet the needs of culturally and linguistically diverse students in the mainstream secondary classroom. Emphasis on second language acquisition, critical literacy issues, and integration of language and literacy into academic content areas for adolescent learners.

EDTEP 580 Teaching English and Language Arts in Secondary School I (5-) Teaching of English and language arts in middle, junior, or senior high school. Prerequisite: secondary TEP student.

EDTEP 581 Teaching English and Language Arts in Secondary School II (-3) Teaching of English and language arts in middle, junior, or senior high school. Prerequisite: secondary TEP student.

EDTEP 582 Teaching Mathematics in the Secondary School I (5-) Teaching of mathematics in middle, junior, or senior high school. Prerequisite: secondary TEP student.

EDTEP 583 Teaching Mathematics in the Secondary School II (-3) Teaching of mathematics in middle, junior, or senior high school. Prerequisite: secondary TEP student.

EDTEP 584 Teaching Social Studies in the Secondary School I (5-) Developing, teaching, and evaluating social studies courses on the middle, junior, and senior high school levels. Prerequisite: secondary TEP student.

EDTEP 585 Teaching Social Studies in the Secondary School II (-3) Developing, teaching, and evaluating social studies courses on the middle, junior, and senior high school levels. Prerequisite: secondary TEP student.

EDTEP 586 Teaching Science in the Secondary School I (5-) Teaching of science in middle, junior, or senior high school. Prerequisite: secondary TEP student.

EDTEP 587 Teaching Science in the Secondary School II (-3) Teaching of science in middle, junior, or senior high school. Prerequisite: secondary TEP student.

EDTEP 588 Teaching World Languages I (5-) Introduction to currently used foreign language teaching methods and approaches, including learning and teaching strategies and techniques for the four skills - reading, writing, speaking, listening - and culture. Current and future trends in pedagogy and technology. Prerequisite: secondary TEP student.

EDTEP 589 Teaching World Languages II (-3) Introduction to currently used foreign language teaching methods and approaches, including learning and teaching strategies and techniques for the four skills - reading, writing, speak-

ing, listening - and culture. Current and future trends in pedagogy and technology. Prerequisite: secondary TEP student.

EDTEP 591 First Quarter Field Experience - Secondary (2-5, max. 10) Field experience accompanying the first quarter of study in the Secondary Teacher Education Program. Observe and assist weekly during the quarter in supervised school placements. Prerequisite: secondary TEP student. Credit/no-credit only.

EDTEP 592 Second Quarter Field Experience - Secondary (2-5, max. 10) Field experience accompanying the second quarter of study in the Secondary Teacher Education Program. Supervised placements in summer school program. Prerequisite: secondary TEP student. Credit/no-credit only.

EDTEP 593 Third Quarter Field Experience - Secondary (2-5, max. 10) Field experience accompanying third quarter of study in Secondary Teacher Education Program. Four weeks full-time plus daily part-time in supervised school placements. Prerequisite: secondary TEP student. Credit/no-credit only.

EDTEP 595 Capstone Project: Tool for Reflection - Secondary ([1-3]-, max. 3) Group discussions fostering integration of coursework, field experience, and teaching experiences through documentation and reflection on student teaching experiences. Using certification standards for teachers, students illustrate their learning through multiple forms of evidence. Final capstone project is presented to an audience. Prerequisite: secondary TEP student. Credit/no-credit only.

EDTEP 600 Independent Study or Research (*-) Registration must be accompanied by a study prospectus endorsed by a Director of Teacher Education and the faculty adviser for the work proposed. Credit/no-credit only.

EDTEP 601 Fourth Quarter Field Experience (2-10, max. 15) Field experience during the fourth quarter of study in a Teacher Education Program. Full-time student teaching in supervised school placements. Prerequisite: TEP student. Credit/no-credit only.

College of Engineering

Dean

Michael B. Bragg
371 Loew

Associate Deans

Eve Riskin, Academic Affairs
Dawn Lehman, Infrastructure
Santosh Devasia, Research and Graduate Studies

Engineering is the science and art of applying scientific and mathematical principles, experience, judgment, and common sense to design devices and systems that benefit society. Engineers are fascinated by questions of how and why things work. They use their training in mathematics, physics, and chemistry to understand the physical world and develop creative solutions to society's complex needs. Engineers may be designers, planners, managers, analysts, researchers, consultants, sales specialists, and more. Engineering graduates have many career possibilities open to them.

The primary goal of College of Engineering educational programs is to prepare students for a professional career in engineering by providing the technical foundation required for success in industry, government, or academia. Other goals of the College are to instill within its students the highest ethical standards, the capability for lifelong learning, and a curiosity about the world. Excellence in undergraduate and graduate academic programs remains the College's highest priority.

For undergraduates, the College of Engineering offers a flexible curriculum that not only accommodates varied student needs, both in established departmental programs and interdisciplinary studies, but also culminates in a major and meaningful design experience. (See Interdisciplinary Engineering Studies Program for interdisciplinary undergraduate programs.)

For graduate students, the College of Engineering offers master's and doctoral programs in aeronautics and astronautics, bioengineering, chemical, civil and environmental, computer, electrical, human centered design and engineering, industrial and systems engineering, materials science, and mechanical engineering.

The College offers active educational and research programs, both departmental and interdisciplinary, at the graduate levels. (See Interengineering Graduate Program for interdisciplinary graduate programs.)

The College of Engineering has been a major unit of the University since 1899. The first engineering degrees were authorized in mining engineering and metallurgical engineering in 1898. Degrees were added for civil engineering (1901), electrical engineering (1902), mechanical engineering (1906), chemical engineering (1907), ceramic engineering (1919), aeronautical engineering (1929), bioengineering (1983), industrial engineering (1986), and computer engineering (1987). A degree program in technical communication was implemented in 1989. The new human centered design and engineering degree title replaced technical communication in 2009. In 2011, 2,229 upper-division undergraduate majors and 1,787 graduate students were enrolled in engineering programs taught by a faculty of 228 tenure track and 184 other engineering faculty members.

College Facilities

Teaching and research activities of the College are conducted in fourteen major campus buildings (and portions of others), which contain the College's offices, classrooms, and research and teaching laboratories. The Engineering Library, a branch of the University Libraries, provides outstanding collections of books, periodicals, technical re-

ports, and patents of interest to engineers. Computers and terminals are available in all departments and through the Student Access and Computing Group (SACG).

Student Organizations and Activities

All major professional engineering societies have student chapters on campus, and all engineering students are encouraged to join the chapter that represents their field of interest. The UW Chapter of Engineers Without Borders (EWB) students.washington.edu/ewbuw is a registered student-run organization of the University of Washington with members from many engineering as well as non-engineering backgrounds.

The College also has student chapters of the Society of Women Engineers, American Indian Science and Engineering Society, National Society of Black Engineers, the Society of Hispanic Professional Engineers, and the Phi Sigma Rho engineering sorority. Students are encouraged to join the University-wide Science and Engineering Business Association (SEBA).

The honor society open to engineering students is Tau Beta Pi.

Students serve with faculty members on engineering policy committees which make recommendations concerning instructor evaluation, curriculum revisions, advising, grading systems, and other matters of interest to students and faculty.

UNDERGRADUATE PROGRAM

Engineering Adviser
301 Loew, Box 352180
(206) 543-1770
engradv@uw.edu

The College of Engineering provides curricula that offer a variety of educational experiences to its students. The curricula also facilitate transfer from community colleges and from other four-year colleges and universities.

Student Academic Services

301 Loew

Students are encouraged to contact Student Academic Services for program, course, or career information and discussion. The Student Academic Services advising office assists any student interested in planning the initial portion of an engineering degree program, and distributes information about prerequisites for application to all departments in the College.

For more information, visit the Student Academic Services Website.

Financial Aid

The College offers financial assistance to undergraduates through industrial scholarships and loan funds. Scholarship information is available at the College of Engineering Student Academic Services office (301 Loew), and at the Office of Student Financial Aid (105 Schmitz). Most scholarships are given after a year or more in residence by the student.

Honors Program

The University Honors Program provides a special learning context for high-achieving students looking for a rigorous and enhanced educational experience. All departments in the College of Engineering participate in the UW Honors program.

There are two types of Honors degrees available within the College of Engineering: College Honors and Departmental Honors. Students in either program are part of the University Honors Program.

College Honors

To be eligible for College Honors, students must be accepted to the University Honors Program in their freshman year. Additionally, students must be accepted into the departmental honors program (See information below on Departmental Honors) for their major, which usually occurs during the junior year. Students who complete both the Honors Core Curriculum (See the University Honors Program for more information) and the departmental honors requirements graduate "With College Honors in Name of Major".

Departmental Honors

Students who do not participate in or complete the Honors Core Curriculum but are admitted into and complete departmental honors requirements receive a degree "With Honors in Name of Major".

Admission Requirements: All engineering departments require students to have at least a 3.30 cumulative UW GPA to be eligible for departmental honors. Also, most departments require students to complete a specified number of departmental courses with a minimum departmental GPA.

Departmental honors requirements vary by major and are established by the individual departments. Most departments in the College of Engineering require 9 to 10 credits of Honors courses in the major and an Honors senior project or thesis.

International Study

Given the increased likelihood that engineering students will have overseas work experiences or do business with international clients and competitors, the College encourages students to study foreign languages in addition to their engineering coursework and to take advantage of opportunities for study at foreign universities either at the undergraduate or graduate level. The College has exchange agreements with approximately thirty universities in seventeen countries. Foreign-language courses at the third-quarter level or above (e.g., GERMAN 103) may be applied toward the VLPA general education requirement. For more information about international study, visit the College of Engineering International Studies website at www.engr.washington.edu/curr_students/international.html. Engineering students can also participate in the Global Engineering Education Exchange program (through the Center for Workforce Development, located in 101 Wilson Annex) for opportunities to study abroad. Through the UW Chapter of Engineers Without Borders (EWB) students.washington.edu/ewbuw, students work with disadvantaged communities worldwide in order to improve their quality of life through the implementation of environmentally sustainable, equitable, and economical engineering projects.

Admission

Students follow a variety of pathways in gaining admission to programs in the College of Engineering. Details on the processes and information on prerequisite coursework are available on the individual department websites or from the Student Academic Services advising office in 301 Loew Hall. The information below provides an overview of the admission processes.

Direct Freshman Admission: All engineering departments enroll a small number of high-achieving students directly from high school, prior to completion of University-level prerequisites. Freshman applicants who have been accepted to the UW and who have specified a department with a direct admission program as their preferred major are automatically considered. Consult individual department listings for more information on Direct Freshman Admission. Direct Freshman Admission is for autumn quarter only. All students not admitted directly to an engineering department are admitted to the College of Engineering with pre-engineering status. Students without pre-engineering status who wish to pursue an engineering degree may have their coding changed to pre-engineering upon

request at the Student Academic Services advising office (301 Loew Hall). To retain pre-engineering status, students must maintain a cumulative GPA of 2.50 in prerequisite courses in mathematics, chemistry, physics, engineering fundamentals, English composition, and technical writing; maintain a minimum quarterly GPA of 2.00; and complete a minimum of 25 credits of the prerequisite and other specified courses per academic year. A detailed description of pre-engineering continuation requirements is available from the Student Academic Services advising office, 301 Loew Hall.

Early Admission: Most engineering programs offer an Early Admission option at the end of the freshman year. In general, Early Admission application requirements include one year of calculus, English composition, and 10 to 20 credits of required chemistry or physics. Early Admission is for autumn quarter only.

Upper-Division Admission: All engineering programs offer an Upper-Division Admission process. In general, Upper-Division Admission occurs at the end of the sophomore year; Chemical Engineering and Bioengineering, however, admit their upper-division students for spring quarter of the sophomore year. Typical application requirements include one year of calculus, differential equations or linear algebra, one or two quarters of general chemistry, two to three quarters of physics, English composition, and several engineering fundamentals courses. Student Academic Services or the individual department or program has a list of specific entrance requirements. All departments, with the exception of Bioengineering and Chemical Engineering, offer Upper-Division Admission for autumn quarter. Bioengineering and chemical engineering offer Upper-Division Admission for a spring quarter start. Several other departments also offer a spring quarter option.

To apply for admission to an engineering program, enrolled students must submit the online College of Engineering application. The application deadline for autumn admission is July 1. For programs that accept students for spring quarter, the application deadline is February 1.

Transfer Students

After completing the University transfer-student application, transfer students who have completed all upper-division application requirements for their desired program also need to submit the online College of Engineering application by the specified deadline. Transfer students who have not completed upper-division application requirements may apply for admission to the University as pre-engineering students.

Types of Programs

The College offers three basic programs leading to Bachelor of Science degrees.

Departmental Major

This program leads to a Bachelor of Science degree in a designated field of engineering (e.g., Bachelor of Science in Civil Engineering). It is designed for students who intend to practice as professional engineers in a standard branch of engineering or who plan to undertake graduate study in that field. The curricula for these degrees are accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700. Accreditation requirements stipulate certain course-distribution requirements for the undergraduate degree. A description of how each of the accredited baccalaureate programs meets the ABET requirements is available from the department office and from the College office. Accredited four-year curricula leading to baccalaureate degrees are offered in aeronautics and astronautics, bioengineering, chemical, civil and environmental, computer, electrical, industrial and systems, mechanical, materials science and engineering, and bioresource science and engineering (formerly paper science and engineering). (The bioresource science and en-

gineering major is offered in the School of Environmental and Forest Sciences and is a joint program with the School of Environmental and Forest Sciences and the College of Engineering.)

The following programs in the College of Engineering are accredited by the Engineering Accreditation Commission of ABET:

- Aeronautical and Astronautical Engineering
- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computer Engineering
- Electrical Engineering
- Industrial and Systems Engineering
- Materials Science and Engineering
- Mechanical Engineering

A curriculum leading to a baccalaureate degree is also offered by Human Centered Design and Engineering.

Application to a department or program at the upper-division level is made at the time lower-division requirements are satisfied. Currently enrollment limits imposed by faculty size and available laboratory/classroom space are such that entry into a specific department or program is usually competitive. In general, a student applicant must demonstrate scholastic aptitude, as evidenced by the attainment of grades averaging a minimum 2.50 or above (depending upon the program) in mathematics, the natural sciences, English composition, and other courses. A 2.50 GPA is a minimum only. In reality, the GPA of those offered admission is higher. The student is urged to plan ahead by learning the intended department or program requirements and particularly noting which requirements must be fulfilled by the time application is made.

Non-departmental Professional Program

This program leads to a Bachelor of Science in Engineering degree and is designed for students who have well defined, special educational objectives that departmental programs do not satisfy. Graduates can practice as professional engineers in newly developing fields, or they may embark on graduate study in these or allied fields (see Interdisciplinary Engineering Studies Program).

Nonprofessional Program

Leading to a Bachelor of Science degree, this program is intended for students who wish to have significant exposure to science and engineering courses, but do not plan to engage in professional engineering practice (see Interdisciplinary Engineering Studies Program).

Graduation Requirements

To graduate, students must meet or exceed the requirements of the University and their particular program or department. All program or departmental requirements are given in the specific section that describes that program or department.

All departments of the College have continuation policies that specify a minimum rate of progress as well as minimum academic-performance levels. These policies may be more restrictive than those generally applied by the University and may change with time. Information on current policy is available at the departmental offices.

Selecting courses that fulfill graduation requirements is the responsibility of each student. Students are urged to check carefully the course and credit requirements of the program in which they are enrolled.

GRADUATE PROGRAMS

Master of Science in Engineering and Master of Science

The College offers graduate programs leading to the Master of Science in Engineering and Master of Science degrees, without designation of a specific major. For graduate degrees within specific majors, see the individual departmental listings.

The civil, mechanical, and chemical departments, and inter-engineering offer approved programs that lead to the Master of Science in Engineering degree. The civil, and to the M.S. degree in civil engineering department, inter-engineering, and the materials science and engineering department offer approved programs that lead to the Master of Science degree.

The Interengineering Master of Science in Engineering (MSE) and Master of Science (MS) program is intended for students whose desired course of study does not fall within one of the traditional engineering graduate programs. An interengineering program combines coursework from at least one graduate engineering department as well as other graduate department(s) on campus (engineering or other) to allow students to create a program of study not available through the existing graduate degree programs. Applications and files of students entering the MS or MSE option are handled by the designated engineering department. Admission to the inter-engineering option requires a statement describing the applicant's objectives. This statement should state why the student wants to enter the MS/MSE program rather than one of the traditional engineering graduate programs. Applicants to the MS/MSE program must have well-defined educational objectives which cannot be satisfied by established engineering programs.

Admission Requirements

MSE/MS applicants are required to have a bachelor's degree in engineering, mathematics, or science with a minimum 3.00 GPA in courses taken in the junior and senior years. Students entering without an accredited engineering undergraduate degree and seeking an MSE degree must satisfy the minimum general requirements of the College of Engineering baccalaureate degree. Students are expected to complete the degree within two years. Situations requiring longer than this must be approved by the student's faculty adviser.

Development of the Plan of Study: When applying to the MSE/MS program, the applicant must submit a plan of study that sets out the intended 400- and 500-level coursework and proposed thesis topic. Before applying to the MSE program, the student must consult with a faculty member from each department in which the student intends to work, and identify at least one to serve as the student's faculty adviser. The other faculty members can serve on the student's supervisory committee if the student is admitted. Working with the faculty adviser(s), each student must develop a plan of study and research that meets the general degree requirements (below) and satisfies the student's own program objectives. The program of studies must include in-depth coursework from two or more departments and be approved by the faculty adviser(s). The proposed program is then set out on the student's application to the Interengineering MSE/MS program.

Development of the Statement of Objectives: Students must submit a one-page statement of study, degree, and career objectives for seeking the Interengineering MSE or MS degree. This statement should explain why the student wants to enter the MSE/MS program rather than one of the traditional engineering graduate programs. Also, students should include in this statement any additional information to be considered as part of the application. This may include work experience, outside interests, and unusual circumstances that may contribute to a better understanding

of the student's record. Applicants to the MSE/MS program must have well-defined educational objectives that cannot be satisfied by established engineering programs.

Degree Requirements

Students develop their own plan of study for the MS or MSE degree in consultation with faculty adviser(s) as a requirement for admission to the program. The plan of study must contain at least 39 credits of coursework, with no more than 9 credits of engineering courses at the 400 level and at least 21 credits of engineering courses at the 500 level. The plan of study must also include at least 9 credits of thesis study/preparation.

SPECIAL PROGRAMS AND RESOURCES

Engineering Co-op and Internship Program

014 Loew, Box 352180

engrcoop@uw.edu

The Engineering Co-op and internship program provides an opportunity for pre-engineering and engineering students to combine practical, full-time, on-the-job engineering experience with academic study before graduation. Students typically work full-time for three months or more and then return to full-time academic status upon completion of the co-op assignment. Some students work part-time while continuing coursework. In addition, students receive academic credit for the co-op experience. In several engineering departments, the credit earned can be applied toward degree requirements in the major. Advantages of participation include: assistance in deciding which field of engineering to follow, early experience in the industrial sector and industrial exposure that can help guide a student's remaining studies; additional income to help defray college expenses, relevance and motivation for study based on real engineering work, and work experience and employment contacts that may result in regular employment after graduation.

Information may be obtained from the Engineering Co-op and Internship Program office, College of Engineering, Box 352180 (014 Loew), or by visiting the Engineering Co-op and Internship Program website.

Engineering Undergraduate Research Program

014 Loew, Box 352180

Educational Outreach

Fulfilling a commitment to lifelong learning, the College of Engineering is partnered with UW Professional and Continuing Education (UWPCE) to offer master's degree programs, certificate programs, courses, workshops, and conferences to respond to the professional development needs of practicing engineers and related technical professionals worldwide. Thousands of practicing engineers update their technical knowledge or pursue advanced degrees each year through UWPCE. The College of Engineering works with UW Educational Outreach's Education at a Distance for Growth and Excellence (EDGE) to provide multimedia and class capture services either in an EDGE classroom or at a remote location. Go to UWPCE website for more information. Go to EDGE website for more information.

Office of Research and Graduate Studies

376 Loew, Box 352180

The Office of Research and Graduate Studies promotes, stimulates, and coordinates faculty and graduate research in all fields of engineering. Its primary role is to encour-

age and develop interdisciplinary research programs and national research initiatives. The Office of Research and Graduate Studies also reviews grant and contract proposals, tracks awards, and provides information on funding opportunities. This office allocates limited matching funds to College units to increase the quality of research in the College of Engineering. The College currently has the following research programs or centers:

- **Bio-Sciences**
 - *Center for Sensorimotor Neural Engineering (CSNE)*: An NSF-funded Engineering Research Center launched in July 2011 to advance the integration of technologies with human neural systems. The center brings together leaders in robotics, neuroscience, computer science, and other disciplines.
 - *Genetically Engineered Materials Science and Engineering Center (GEMSEC)*: Adapts techniques in molecular biology and genomics for developing new materials and systems.
 - *Molecular Engineering & Sciences Institute (MoES)*: Catalyzes translational research in the clean tech and biotech areas. The Institute serves both as an intellectual accelerator to bring fresh approaches and ideas to societal grand challenges in sustainable energy and materials, and in medical therapeutics and diagnostics, and as a physical incubator where new interdisciplinary teams can come together in a shared space. Creates and coordinates new interdisciplinary education programs for undergraduate and graduate students in the College of Arts and Sciences and the College of Engineering. The Institute is located in the new Molecular Engineering and Sciences Building, a facility specially designed to promote collaborative molecular-scale research.
 - *National ESCA Surface Analysis Center for Biomedical Problems (NESAC/BIO)*: Develops and applies new surface analysis technologies for biomedical research.
- **Education and Learning**
 - *Center for Engineering Learning and Teaching (CELT)*: Combines two missions: to conduct internationally recognized research in engineering learning and to promote teaching effectiveness in UW engineering classrooms.
- **Electronics and Computing**
 - *Center for Collaborative Technologies (CCT)*: An effort funded by Microsoft Research to develop the ConferenceXP platform and apply the technologies to a wide range of educational and collaborative scenarios.
 - *Center for Design of Analog-Digital Integrated Circuits (CDADIC)*: One of the few research consortiums in the country that addresses problems associated with analog and mixed-signal research.
 - *Intel Research Seattle*: A collaboration among Intel and university researchers to explore new technologies (such as personal robotics and "Trustworthy Wireless") to support the ubiquitous computing environments of the future.
 - *Turing Center*: Investigates problems at the crossroads of natural language processing, data mining, web search, and the Semantic Web.
- **Energy**
 - *Bioenergy Program*: Researches how to balance the technological, environmental, and social dimensions of a sustainable energy economy. (The full program name is Bioresource-Based Energy for Sustainable Societies.)
 - *Northwest National Marine Renewable Energy Center (NNMREC)*: A DOE-funded partnership between OSU and UW. UW is responsible for tidal energy

issues. The role of the center is to close key gaps in understanding of marine energy and to inform the public, regulators, research institutions, and device and site developers.

- *Plasma Science and Innovation Center (PSI)*: Develops predictive capability for emerging concept experiments, allowing new experiments in fusion science and in other areas of plasma science without actual construction.

Materials and Structures

- *Center for Intelligent Materials and Systems (CIMS)*: A collaboration of botanists and engineers to advance the bio-inspired design of intelligent materials and systems.
- *Center of Excellence for Advanced Materials in Transport Aircraft Structures (AMTAS)*: Seeks solutions to problems associated with existing, near- and long-term applications of composites and advanced materials for large transport commercial aircraft.
- *Institute of Advanced Materials and Technology (i-AMT)*: Facilitates interdisciplinary research in photonics, electronics, and magnetic materials; materials for energy generation and storage; biomaterials for the bio-nano interface; and multifunctional composites.
- **Transportation**
 - *Pacific Northwest Transportation Consortium (PacTrans)*: A multi-university, regional transportation center led by the University of Washington and funded by the US Department of Transportation. PacTrans focuses on safe and sustainable transportation in environments ranging from busy urban centers to remote mountainous terrain.
 - *Washington State Transportation Center (TRAC)*: A collaboration among Washington State University, the University of Washington, and the Washington State Department of Transportation to coordinate both state and commercial transportation research efforts and to develop research opportunities nationally and locally.
- **Other Centers Involving Engineering Faculty**
 - *Center for Materials and Devices for Information Technology Research (CMDITR)*: Established by the National Science Foundation in 1987 to fund interdisciplinary research and education activities and encourage technology transfer.
 - *Center for Process Analytical Chemistry (CPAC)*: A consortium established at the UW in 1984 to develop and foster collaboration on new measurement approaches, including the miniaturization of traditional instrumentation and the development of new sensors and non-traditional instruments.
 - *Microfabrication Laboratory (MFF)*: Provides a wide range of fabrication and characterization capabilities in a user facility that is open to academic as well as industrial researchers and engineers, including advanced electron beam lithography, thin film processing, and wet and dry etching in a 15,000 square foot cleanroom.

For more information, see the Office of Research and Graduate Studies web page, www.engr.washington.edu/facresearch/researchcenters.html.

Interdisciplinary Engineering Studies Programs

The College of Engineering directly administers non-departmental undergraduate and graduate degree programs.

The Interdisciplinary Engineering Studies (IES) Program is intended for students whose desired course of study does not fall within one of the traditional engineering departments. An interdisciplinary program combines coursework

from at least one engineering department as well as other department(s) on campus (engineering or other) to allow students to create a program of study not available through the existing undergraduate degree programs. Although coursework may involve departments outside the College of Engineering, the major thrust must be in engineering.

Undergraduate Programs

Bachelor of Science in Engineering and Bachelor of Science

The IES Program offers a nonprofessional degree program leading to the Bachelor of Science (BS) and a professional degree program for the Bachelor of Science in Engineering (BSE).

Due to the uniqueness of each interdisciplinary student's program of studies, the BS and BSE degrees are not accredited by the Engineering Accreditation Commission of ABET. The experience requirement to obtain a professional engineering license is two years longer for a BSE graduate, except in surveying, than for a graduate of an accredited program. A BS graduate is not eligible for a professional engineering license.

Interdisciplinary students develop personal programs of study approved by a faculty adviser with similar interests. Contact Student Academic Services, email: engradv@uw.edu or phone: (206) 543-1770, for information on established procedures and applications for entry into the BSE and BS programs. Entrance requirements and the continuation policy for participation in these programs are consistent with those of other departments in the College.

Bachelor of Science in Engineering

Admission to this program (usually after completion of 90 credits) is competitive with a minimum GPA of 2.80 in technical courses required for entry. A minimum of 75 credits must be completed after entering the program before a BSE degree is awarded. Detailed information regarding the BSE degree can be obtained from an adviser in Student Academic Services (301 Loew).

Bachelor of Science

The nonprofessional Bachelor of Science degree provides greater flexibility than does the Bachelor of Science in Engineering degree. It can be an excellent base for subsequent professional studies in law, medicine, or business. It may also be the primary educational objective in such fields as technical writing, engineering sales, or environmental studies. Detailed requirements are available from the adviser in Student Academic Services (301 Loew).

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

ENGR 100 Introduction to Engineering Design (5) I&S Introduction to design and communication principles through engineering project approach, stressing teamwork, design process, specialties and tools of engineering, creative and analytical thinking, professionalism and ethics, social, economic and political context, open-ended problems. Grading based on quality of engineering projects and presentation of design through written, oral, and graphical communication. Offered: AWSp.

ENGR 101 Engineering Exploration (1-2, max. 3) Presentations and discussions on topics of current interest in engineering. Explores various areas of engineering research, engineering disciplines, and the relevance to today's students. Topics vary by quarter.

ENGR 102 Studying Engineering (1-3, max. 6) Intensive seminar focusing on topics relating to the successful study of engineering. Topics include an introduction to the university culture, learning skills development, engagement with critical resources, and an introduction to engineering

disciplines and professions. Topics vary by quarter. Credit/no-credit only.

ENGR 197 Engineering Problem Solving (1, max. 12) Lectures and problem sessions in mathematics, chemistry, and physics with engineering applications. Enrollment restricted to Minority Science, Engineering Program (MSEP), and Women in Science and Engineering (WiSE) students. Credit/no-credit only. Offered: AWSp.

ENGR 199 Special Projects (1-3, max. 3) Students propose problems to solve to an engineering faculty member. The problems may be selected from the student's own experiences and interests, from the interest of the faculty member, or from other sources such as faculty or graduate students doing research projects, or from personnel in the physical medicine area, occupational therapy, hospital, industry, or government. Corroboration by an engineering faculty member is required. Project suggestions are available. Offered: AWSpS.

ENGR 202 Special Topics (1-5, max. 10) Topics of current interest to engineering students. Offered: AWSp.

ENGR 320 Engineering Cooperative Education (1-10, max. 12) Engineering practicum; includes integration of classroom theory with on-the-job training. Open only to students who have been admitted to the Engineering Cooperative Education Program. Credit/no-credit only. Offered: AWSpS.

ENGR 321 Engineering Cooperative Education ([1-2]-, max. 16) Engineering practicum; integration of classroom theory with on-the-job training. Periods of full-time work alternate with periods of full-time study. Open only to students who have been admitted to the Engineering Cooperative Education Program. Requires subsequent completion of ENGR 322 to obtain credit. Credit/no-credit only. Offered: AWSpS.

ENGR 322 Engineering Cooperative Education Postwork Seminar (-0) Reporting and evaluation of co-op work experience, and discussion of current topics in engineering. To be taken during the first quarter in school following each work session. Offered: AWSpS.

ENGR 360 Introductory Acoustics (3) NW Introduction to propagation of acoustical waves; emphasis on propagation of sound waves in air, but material is applicable to propagation of sound waves in liquids, including underwater acoustics, and to propagation of stress waves in solids. Includes a historical development of acoustics, terminology, and units employed. Prerequisite: either MATH 136 or MATH 307; PHYS 123. Offered: Sp.

ENGR 380 Design for Sustainability in the Developing World (2, max. 8) I&S Bolton Introduction to issues in international sustainable development from an engineering perspective. Combines lectures on current approaches and potential pitfalls with work on group projects related to sustainable development efforts of Engineers Without Borders. Develops research and design skills using real life projects. Intended for students from all backgrounds. Credit/no-credit only. Offered: AW.

ENGR 401 Leadership Development to Promote Equity in Engineering Relationships (3) DIV Engages engineering students' energy, creativity, social conscience, and on-the-ground perspectives in advancing diversity and inclusion in engineering. Students explore topics such as diversity in science and engineering, impact of unconscious bias, the role of allies, community engagement, and leadership in supporting all current and potential engineers. Credit/no-credit only. Offered: A.

ENGR 498 Special Topics in Engineering (1-5, max. 6) Offered: AWSpS.

ENGR 499 Special Projects in Engineering (1-3, max. 6) Offered: AWSpS.

ENGR 598 Seminar Series in Engineering (1, max. 12) Graduate seminar series on topics of interest to all engineering students.

ENGR 601 Internship ([1-2]-, max. 24) Engineering practicum; includes integration of classroom theory with on-the-job training for graduate students. Open only to students who have been admitted to the Engineering Cooperative Education Program. Offered: AWSpS.

Aeronautics and Astronautics

211 Guggenheim Hall

Aeronautics and astronautics deals with the design, analysis, and performance of air and space vehicles and a broad spectrum of related engineering science, such as aerodynamics, structural mechanics, automatic controls, flight mechanics, space dynamics, propulsion, plasma dynamics, and related topics.

UNDERGRADUATE PROGRAM

Adviser

211C Guggenheim Hall, Box 352400
(206) 616-1115

ugadvising@aa.washington.edu

The department offers the following program of study:

- The Bachelor of Science in Aeronautical and Astronautical Engineering degree
- Bachelor of Science in Aeronautical and Astronautical Engineering

Suggested First- and Second-Year College Courses: During the first year, students should take the required calculus, chemistry, English composition, and computer programming. If possible, begin taking the physics sequence. It is recommended that some VLPA and I&S courses be taken to balance the course load.

Department Admission Requirements

Applicants are considered in three groups -- Direct Freshman Admission, Early Admission, and Upper-Division Admission. Admission is competitive. All applicants have the right to petition and appeal the department's admission decision. Applications are accepted for autumn quarter only; application deadline is July 1.

Direct Freshman Admission

The department enrolls a select number of students directly from high school, prior to completion of University-level prerequisites. Students accepted to the UW who indicate aeronautics and astronautics as their preferred major on the freshman application are automatically considered. Competitive applicants have taken or are taking calculus and at least two years of laboratory science (physics and chemistry preferred) in high school.

Admission is for autumn quarter only.

Early Admission (Limited number of students admitted through this process)

Applicants must be currently enrolled at the UW and must have a minimum 15 credits of the prerequisites listed below, taken in residence at the UW.

1. *Course Requirements:* MATH 124, MATH 125, MATH 126; 10 credits of physical science courses plus accompanying laboratory at the level of PHYS 121, PHYS 122, PHYS 123, or CHEM 142 or above; and 5 credits of English composition. All courses must be completed prior to the July 1 application deadline. Admission is for autumn quarter only.
2. *Grade Requirements:* At least 15 credits completed, with a minimum grade of 2.0 in each prerequisite course required for admission, and a minimum 2.50 GPA in all courses required for admission.

3. Completion of minimum requirements does not guarantee early admission. Admission is highly competitive. Typically early admission students have cumulative GPAs significantly above 3.0.

Upper-Division Admission

1. *Course Requirements:* MATH 124, MATH 125, MATH 126, MATH 307, MATH 308, MATH 324, PHYS 121, PHYS 122, PHYS 123, CHEM 142, A A 210, A A 260, AMATH 301, CEE 220, M E 230, and 5 credits of English composition. (AMATH 301 and/or MATH 324 may be taken as late as the autumn quarter of admission but would create an extremely heavy course load if both are taken the same quarter.)
2. *Grade Requirements:* At least 75 credits completed, with a minimum grade of 2.0 in each prerequisite course required for admission and a minimum 2.50 GPA in all courses required for admission.
3. Completion of minimum requirements does not guarantee admission.

Graduation Requirements

180 credits, as follows:

1. *General Education Requirements (78 credits)*
 - a. *Areas of Knowledge (49 credits):*
 - i. *Visual, Literary, and Performing Arts (VLPA) and Individuals & Societies (I&S):* 24 credits, to include a minimum 10 credits in VLPA and a minimum 10 credits of I&S, plus 4 additional credits in either area.
 - ii. *Natural World:* 25 credits to include CHEM 142, PHYS 121, PHYS 122, PHYS 123, and an additional 5 credits of Natural World courses (consult department for list of approved courses.)
 - b. *Mathematics (24 credits):* MATH 124, MATH 125, MATH 126, MATH 307, MATH 308, and MATH 324.
 - c. *Written and Oral Communication:* One 5-credit English composition course from the University list. Additional writing credits are built into the major core courses.
2. *Major Requirements (89 credits)*
 - a. *Engineering Fundamentals (16 credits):* A A 210, A A 260, CEE 220, and M E 230.
 - b. *Departmental Core (73 credits):* A A 301, A A 302, A A 310, A A 311, A A 312, A A 320, A A 321, A A 322, A A 331, A A 332, A A 360; either A A 410 and A A 411 or A A 420 and A A 421; A A 447, A A 496, AMATH 301; 15 credits of senior technical electives. With approval, 3 credits of the latter may be chosen from another area of engineering.
 - c. Minimum 1.7 grade in each 300- and 400-level A A course applied to major requirements
 - d. Minimum 2.00 cumulative GPA for courses applied to major requirements
 - e. *Free Electives:* 13 credits

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, please contact the departmental adviser or see departmental webpage for more details.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The goals and objectives of the undergraduate program are to provide a challenging and comprehensive education, to develop necessary functional skills and an understanding of the societal context in which engineering is practiced, to provide a solid foundation in the engineering sciences related to aerospace engineering, to provide a

em systems perspective, to develop engineering creativity through design experience, and to prepare graduates to succeed in engineering careers and lifelong learning.

Graduates of aeronautics and astronautics are skilled in engineering fundamentals, engineering design, laboratory skills, synthesis of various engineering disciplines, and working in a team environment. Graduates are highly regarded by employers in aeronautics, astronautics, energy systems, and related fields. They develop interpersonal skills and a desire for life-long learning that helps them succeed in their chosen careers. Graduates have been successful and valued at local, national, and international industries, as well as at government organizations and institutions of higher learning.

- *Instructional and Research Facilities:* Visit the department web page to view current research activities. Undergraduates are encouraged to participate in research activities.
- *Honors Options Available:* With College Honors (completion of Honors core curriculum and Departmental Honors requirements). With Honors (completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Internships are arranged individually. See adviser for details.
- *Department Scholarships:* Scholarships are limited and are usually reserved for students who have junior and senior standing in the department. Deadline for scholarship applications is April 1.
- *Student Organizations/Associations:* American Institute of Aeronautics and Astronautics (AIAA) student chapter. Sigma Gamma Tau

GRADUATE PROGRAM

Graduate Program Coordinator

211B Guggenheim Hall Box 352400

(206) 616-1113

gradadvising@aa.washington.edu

The Department of Aeronautics and Astronautics offers programs that provide a foundation in the aerospace engineering sciences and expertise in various specialized application areas. Three graduate degree options are offered: Master of Science in Aeronautics and Astronautics, Master of Aerospace Engineering, and Doctor of Philosophy.

Master of Science in Aeronautics and Astronautics (MSAA)

Admission Requirements

1. *Grade Point Average:* The Graduate School requires that applicants hold a minimum 3.00 GPA for the last 90 quarter hours or 60 semester hours of graded undergraduate coursework. Applicants admitted by the department normally have a minimum 3.30 GPA. Applicants with less than a 3.30 GPA may still be considered if they have other strong credentials, such as graduation from an outstanding undergraduate program and excellent GRE scores.
2. *Quality and Difficulty of Courses Taken and Universities and Colleges Attended:* Each transcript is individually reviewed. The department recognizes that some academic institutions are more competitive and high grades are more difficult to obtain.
3. *GRE General Test:* Applicants take the general portion of the Graduate Record Examination. Although no minimum GRE score is required, the typical successful applicant has scores in excess of 450 Verbal, 700 Quantitative, 650 Analytical, or 4.0 Analytical Writing. If the applicant wishes to be considered for a graduate assistantship or fellowship, scores should be received before February 15.

4. *Two Letters of Recommendation:* Confidential letters may be submitted electronically by recommenders indicated on the online application, or placed in sealed envelopes and included with application materials, or sent directly to the department by the recommenders. Writers should be able to rank the applicant's performance as a student and/or researcher. A referrer should send the recommendation in letter format; no special form is used.

5. *Statement of Objectives:* Provides the department information not found in transcripts and other official documents. For example, statements can include personal histories, professional and academic goals, and specific research interests if applicable.
6. *English Requirements for Foreign Students:* Minimum TOEFL scores of 580 on the paper-based exam or 237 on the computerized exam for foreign students whose native language is not English.
7. *Prior Degrees:* Prospective students should hold an undergraduate degree in aerospace or mechanical engineering. Applicants with em grades (3.50 and above) in related disciplines (physics, other engineering disciplines) are considered.

Degree Requirements

39-45 credits, as follows:

1. All MSA degree candidates must have a program of study plan approved by the department's graduate committee.
2. Before completing 12 credits of graduate coursework, candidates file a program of study plan prepared with the assistance of the adviser or the Graduate Program Adviser and submitted to the graduate committee for approval.
3. The minimum MSA program consists of either ten courses plus 9 thesis credits, or 13 courses. No more than three of the courses may be at the 400 level (none in a student's depth area). All courses counted toward the degree must be graded. In addition, each student must enroll in the graduate seminar (A A 520) during every quarter of full-time studies.
4. The student's program of study is tailored to the needs and interests of the student. However, each program must include depth in a field of specialization, breadth to include at least one course in each of two different subject areas outside the field of specialization, and analytical strength to include three mathematical courses. Senior sequences in engineering, science, or other appropriate professional fields may make up part of the individualized graduate program. However, only three undergraduate courses may be counted toward the minimum requirements (and none in the student's depth area).
5. The thesis, if that degree option is chosen, is approved by the student's adviser and second reviewer and submitted to the Graduate School. After submitting one copy of the thesis to the department on CD, two signed, unbound copies and receipt for binding fee are submitted to the Graduate School by the last day of the quarter.

Normally one-and-a-half to two years of full-time study are needed to complete the requirements for an MSA degree. The Graduate School imposes a time limit of six years for any master's degree.

Master of Aerospace Engineering (MAE)

The MAE program is intended for recent graduates or engineers who wish to expand their knowledge in multidisciplinary areas while also learning other aspects of aerospace engineering, such as business, management, manufacturing, or technical communication.

Admission Requirements

1. *Grade Point Average:* The Graduate School requires that applicants hold a minimum 3.00 GPA for the last 90 quarter hours or 60 semester hours of graded undergraduate coursework. Applicants admitted by the department normally have a minimum 3.30 GPA. Applicants with less than a 3.30 GPA may still be considered for admission if they have other strong credentials, such as graduation from an outstanding undergraduate program and excellent GRE scores.
2. *Quality and Difficulty of Courses Taken and Universities and Colleges Attended:* Each transcript is individually reviewed. The department recognizes that some academic institutions are more competitive and high grades are more difficult to obtain.
3. *GRE General Test:* Applicants take the general portion of the Graduate Record Examination. Although the department does not specify minimum GRE scores, the typical successful applicant has scores in excess of 450 Verbal, 700 Quantitative, 650 Analytical, or 4.0 Analytical Writing. If the applicant wishes to be considered for a graduate assistantship or fellowship, the scores should be received before February 15.
4. *Two Letters of Recommendation:* Confidential letters may be submitted electronically by recommenders indicated on the on-line application, or placed in sealed envelopes and included with application materials, or sent directly to the department by the recommenders. Writers should be able to rank an applicant's performance as a student and/or researcher. A referrer should send the recommendation in letter format; no special forms are used.
5. *Statement of Objectives:* Provides the department information about the applicant not found in the transcripts and other official documents. For example, statements can include personal histories, professional and academic goals, and specific research interests if applicable.
6. *English Requirements for Foreign Students:* Minimum TOEFL scores of 580 on the paper-based exam or 237 on the computerized exam for foreign students whose native language is not English.
7. *Prior Degrees:* Prospective students should hold an undergraduate degree in aerospace or mechanical engineering. Applicants with em grades (3.50 and above) in related disciplines (physics, other engineering disciplines) are considered.

Degree Requirements

45-54 credits

Students create their own programs of study based on departmental distribution requirements and subject to departmental approval, to include courses in a specialty area, technical and non-technical electives, analytical courses, and a group or independent project. The MAE program includes twelve courses plus 8 credits for the project, or ten courses and one of three business certificate programs.

Doctor of Philosophy (PhD)

The doctoral program consists of lectures, seminars, discussions, and independent study, enabling the student to master and to make original contributions to a particular field.

Admission Requirements

1. *Grade Point Average:* The Graduate School requires that applicants hold a minimum 3.00 GPA for the last 90 quarter hours or 60 semester hours of graded undergraduate coursework. Applicants admitted by the department normally have a minimum 3.40 GPA. Applicants with less than a 3.40 GPA may still be considered for admission if they have other strong credentials, such

as graduation from an outstanding undergraduate program and excellent GRE scores.

2. *Quality and Difficulty of Courses Taken and Universities and Colleges Attended:* Each transcript is individually reviewed. The department recognizes that some academic institutions are more competitive and high grades are more difficult to obtain.
3. *GRE General Test:* Applicants must take the general portion of the Graduate Record Examination. Although the department does not specify minimum GRE scores, the typical successful applicant has scores in excess of 450 Verbal, 700 Quantitative, 650 Analytical, or 4.0 Analytical Writing. If the applicant wishes to be considered for a graduate assistantship or fellowship, the scores should be received before February 15th.
4. *Two Letters of Recommendation:* Confidential letters may be submitted electronically by recommenders indicated on the on-line application, or placed in sealed envelopes and included with application materials, or sent directly to the department by the recommenders. Writers should be able to rank the applicant's performance as a student and/or researcher. A referrer should send the recommendation in letter format; no special forms are used.
5. *Statement of Objectives:* Provides the department information about the applicant not found in the transcripts and other official documents. For example, statements can include personal histories, professional and academic goals, and specific research interests.
6. *English Requirements for Foreign Students:* Minimum TOEFL scores of 580 on the paper-based exam or 237 on the computerized exam for foreign students whose native language is not English.
7. *Prior Degrees:* Prospective students should hold undergraduate and graduate degrees in aerospace or mechanical engineering with a 3.40 minimum GPA. Applicants with strong grades in related disciplines (physics, other engineering disciplines) are considered.

Degree Requirements

Minimum 90 credits

In addition to the formal steps for obtaining the degree listed below, students must complete an approved program of study consisting of 18 credits of coursework beyond that required for the Master of Science in Aeronautics and Astronautics, for a total of 90 credits for the PhD

1. *The Departmental Qualifying Examination:* To take the department qualifying examination, students must have a 3.40 GPA in technical coursework at the graduate level. In addition, they must have a MSAA degree or its equivalent, must have a faculty member accept them into their research program and agree to serve as their thesis adviser, supervise their PhD research, and chair their qualifying examination committee.
2. *The General Examination:* Upon successful completion of the qualifying examination, a PhD Supervisory Committee chaired by the student's major adviser is appointed. The general examination is expected to be taken within one year after the qualifying exam, but no sooner than two years after the beginning of graduate study. At least three weeks prior to the exam, students provide the members of their committee a document outlining their proposed research.
3. *Completion of Coursework:* At least 18 credits of coursework in addition to that for the MSAA degree. A form listing the courses to be taken must be approved by the student's adviser and placed in the student's file.
4. *Preparation of the Dissertation:* The dissertation normally requires the equivalent of at least one year of full-time study, and must demonstrate original and independent research and achievement.

5. *The Final Examination:* When the dissertation is completed to the satisfaction of the chair of the Supervisory Committee, a reading committee of three is appointed from the student's committee. If the reading committee agrees that the dissertation is satisfactory, then the final examination is scheduled. That examination is generally devoted to a presentation and defense of the dissertation.

Research Activities

Current areas of research in the Department of Aeronautics and Astronautics include guidance and control systems, aerodynamics and fluid mechanics, propulsion and energy systems, advanced composite materials and structures, and plasma dynamics and fusion reactors. Research in controls includes autonomous systems involving spacecraft, aircraft, and underwater vehicles, flight systems integration, and development of unmanned aerial vehicles. Among fluid dynamics research topics are turbulent mixing, vortex dynamics and flow control, compressible flow, fluids in microgravity, and advanced fluid flow diagnostics development. Research programs in the areas of propulsion and energy include hypervelocity mass launchers, advanced technologies for generating space and terrestrial energy, combustion, and studies of planetary resources utilization. Structural mechanics research involves damage-tolerant composite structures, structural dynamics, fatigue, and fracture, and multidisciplinary design optimization. Experimental and computational research in plasma science has an emphasis on advanced, alternative concepts for achieving controlled fusion, as well as plasma propulsion for space applications.

Facilities

Facilities that support research activities in controls include unmanned aerial vehicle (UAV) and autonomous flight systems laboratories, and laboratories for underwater vehicle and distributed space systems research. Fluids, propulsion, and energy facilities include the Kirsten 8 x 12 foot low-speed wind tunnel, two water tunnels, a Mach 5, enthalpy blow-down wind tunnel, the Ram Accelerator hypervelocity launcher, a combustion laboratory, and a Mars environment simulation facility. Research in structures is conducted in a composite-material laboratory with material and structural test machines. Various plasma and fusion-research and engineering physics laboratories, including the Redmond Plasma Physics Laboratory (RPPL), exist to support research in plasmas. Lastly a variety of computer facilities is available, including a single 20-processor and two 8-processor servers, and a 16-computer heterogeneous cluster, as well as several stereographic visualization systems.

Financial Support

Most students are financially supported by the department as teaching or research assistants, or by their employers. For further information on this or other aspects of department programs, contact the Graduate Program Coordinator, 211B Guggenheim Hall, Box 352400, or visit the department's website.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at [www.uw.edu/students/crscat/](http://uw.edu/students/crscat/)

Aeronautics and Astronautics

AA 198 Special Topics in Aeronautics and Astronautics (1-5, max. 10) NW Knowlen Introduces the field of Aeronautics and Astronautics. Topics include aircraft flight, rocket propulsion, space travel, and contemporary space missions. May include hands-on activities. For non-majors.

AA 210 Engineering Statics (4) NW Applies vector analysis to equilibrium of rigid body systems and subsystems. Includes force and moment resultants, free body diagrams, internal forces, and friction. Analyzes basic structural and machine systems and components. Prerequisite: minimum grade of 2.0 in either MATH 126 or MATH 136; minimum grade of 2.0 in PHYS 121. Offered: AWS.

AA 260 Thermodynamics (4) NW Introduction to the basic principles of thermodynamics from a macroscopic point of view. Emphasis on the First and Second Laws and the State Principle, problem solving methodology. Prerequisite: minimum grade of 2.0 in either CHEM 140, CHEM 142, CHEM 144, or CHEM 145; minimum grade of 2.0 in either MATH 126, MATH 129, or MATH 136; minimum grade of 2.0 in PHYS 121. Offered: SpS.

AA 299 Undergraduate Research (1-5, max. 10) Research on special topics under the supervision of a faculty member. Application of fundamentals learned in the classroom to real problems in research. Credit/no-credit only. Offered: AWSpS.

A A 301 Compressible Aerodynamics (4) Covers aerodynamics as applied to the problems of performance of flight vehicles in the atmosphere; kinematics and dynamics of flow fields; thin airfoil theory; compressible fluids; one-dimensional compressible flow; and two-dimensional supersonic flow. Prerequisite: either A A 260 or M E 323. Offered: W.

A A 302 Incompressible Aerodynamics (4) Aerodynamics as applied to the problems of performance of flight vehicles in the atmosphere. Kinematics and dynamics of flow fields; incompressible flow about bodies. Thin airfoil theory; finite wing theory. Prerequisite: minimum grade of 1.7 in A A 301; PHYS 123; either AMATH 351, MATH 136, or MATH 307. Offered: Sp.

A A 310 Orbital and Space Flight Mechanics (4) Newton's law of gravitation. Two-body problem, central force motion, Kepler's laws. Trajectories and conic sections. Position and velocity as functions of time. Orbit determination and coordinate transformations. Rocket dynamics, orbital maneuvers, Hohmann transfer. Interplanetary trajectories, patched conics. Planetary escape and capture. Gravity assist maneuvers. Prerequisite: M E 230. Offered: A.

AA 311 Atmospheric Flight Mechanics (4) Applied aerodynamics, aircraft flight "envelope," minimum and maximum speeds, climb and glide performance. Range and endurance, take-off and landing performance, using both jet and propeller power plants. Longitudinal and dynamic stability and control, wing downwash, stabilizer and elevator effectiveness, power effects. Lateral and directional stability and control. Offered: A.

A A 312 Structural Vibrations (4) Vibration theory. Characteristics of single and multi degree-of-freedom linear systems with forced inputs. Approximate methods for determining principal frequencies and mode shapes. Application to simple aeroelastic problems. Prerequisite: M E 230. Offered: W.

A A 320 Aerospace Instrumentation (3) Hands-on laboratory experience for understanding the design and function of electronic circuits and instrumentation utilized in aerospace engineering. Topics include Ohm's law, Kirchhoff's laws, DC and AC circuits, passive and active components, op-amps and comparators, sensors, signal conditioning, electromechanical systems and actuators, digital systems, and data acquisition. Offered: A.

A A 321 Aerospace Laboratory I (3) The design and conduct of experimental inquiry in the field of aeronautics and astronautics. Laboratory experiments on supersonic flow, structures, vibrations, material properties, and other topics. Theory, calibration, and use of instruments, measurement techniques, analysis of data, report writing. Offered: W.

A A 322 Aerospace Laboratory II (3) Design and conduct of experimental inquiry in the field of aeronautics and

astronautics. Laboratory experiments on subsonic aerodynamics, supersonic flow, structures, propulsion, and other topics. Theory, calibration, and use of instruments, measurement techniques, analysis of data, report writing. Prerequisite: minimum grade of 1.7 in A A 321. Offered: Sp.

A A 331 Aerospace Structures I (4) Analysis and design of aerospace structures. Reviews concepts of stress, strain, and equations of elasticity. Plane stress and plane strain. Application to aerospace structural elements including general bending and torsion of rods and beams, and open and closed thin-walled structures and box beams. Prerequisite: CEE 220. Offered: W.

A A 332 Aerospace Structures II (4) Shear flow in multi-cell thin walled sections. Bending of rectangular and circular plates. Buckling analysis of beams and plates. Energy principles in elasticity. Introduction to the finite element method. Elements of fracture mechanics and fatigue. Prerequisite: minimum grade of 1.7 in A A 331. Offered: Sp.

A A 360 Propulsion (4) Study of the aero- and thermodynamics of jet and rocket engines. Air-breathing engines as propulsion systems. Turbojets, turbofans, turboprops, ramjets. Aerodynamics of gas-turbine engine components. Rocket vehicle performance. Introduction to space propulsion. Prerequisite: minimum grade of 1.7 in A A 301. Offered: Sp.

A A 400 Gas Dynamics (3) Introduction to kinetic theory and free molecule flow. Review of thermodynamics. One-dimensional gas dynamics: one-dimensional wave motion, combustion waves. Ideal and real gas application. Prerequisite: PHYS 123; either A A 260 or CHEM E 260. Offered: W.

AA 402 Fluid Mechanics (3) Introduction to fluid mechanics, dimensional analysis, effects of gravity on pressure, kinematics, conservation of mass and momentum, control-volume method, conservation of energy, vorticity and viscosity, viscous effects, Navier-Stokes solutions, and boundary layers. Prerequisite: MATH 324; A A 301. Offered: A.

A A 405 Introduction to Aerospace Plasmas (3) Development of introductory electromagnetic theory including Lorentz force and Maxwell's equations. Plasma description. Single particle motions and drifts in magnetic and electric fields. Derivation of plasma fluid model. Introduction to plasma waves. Applications to electric propulsion, magnetic confinement, and plasmas in space and Earth's outer atmosphere. Prerequisite: PHYS 123; MATH 324. Offered: A.

AA 410 Aircraft Design I (4-) Conceptual design of a modern airplane to satisfy a given set of requirements. Estimation of size, selection of configuration, weight and balance, and performance. Satisfaction of stability, control, and handling qualities requirements. Offered: W.

AA 411 Aircraft Design II (-4) Preliminary design of a modern airplane to satisfy a given set of requirements. Estimation of size, selection of configuration, weight and balance, and performance. Satisfaction of stability, control, and handling qualities requirements. Prerequisite: A A 410. Offered: Sp.

A A 419 Aerospace Heat Transfer (3) Fundamentals of conductive, convective, and radiative heat transfer with emphasis on applications to atmospheric and space flight. Prerequisite: PHYS 123; MATH 307. Offered: W.

A A 420 Spacecraft and Space Systems Design I (4-) Design of space systems and spacecraft for advanced near-Earth and interplanetary missions. Astrodynamics, space environment, space systems engineering. Mission design and analysis, space vehicle propulsion, flight mechanics, atmospheric entry, aerobraking, configuration, structural design, power systems. thermal management, systems integration. Oral presentations and report writing. Design topics vary. Offered: W.

AA 421 Spacecraft and Space System Design II (-4) A continuation of A A 420. Course content varies from year to

year and is dependent on the design topic chosen for A A 420. Prerequisite: A A 420. Offered: Sp.

A A 430 Finite Element Analysis in Aerospace (3) Introduction to the finite element method and application. One-, two-, and three-dimensional problems including trusses, beams, box beams, plane stress and plane strain analysis, and heat transfer. Use of finite element software. Prerequisite: CEE 220. Offered: A.

A A 432 Composite Materials for Aerospace Structures (3) Introduction to analysis and design of aerospace structures utilizing filamentary composite materials. Basic elastic properties and constitutive relations of composite laminates. Failure criteria, buckling analysis, durability, and damage tolerance of composite structures. Aerospace structure design philosophy and practices. Prerequisite: A A 332. Offered: W.

AA 440 Flight Mechanics I (3) Calculation of aerodynamic characteristics of aircraft and components including stability derivatives. Relation to wind tunnel and flight data. Vehicle equations of motion within the atmosphere, characteristics of propulsion systems and components including propellers. Prediction of performance, stability, and control characteristics for a specific aircraft. Offered: W.

A A 441 Flight Test Engineering (3) Determination in flight of performance, stability, and control characteristics of aircraft; and comparison with predicted and wind tunnel results. Prerequisite: A A 311; A A 440. Offered: Sp.

AA 447 Control in Aerospace Systems (4) Overview of feedback control. Dynamic models for control systems design including ODE, transfer function, and state-space. Linearization of nonlinear models. Analysis of stability, controllability, observability, time/frequency domain techniques. Frequency of response design techniques. Design of control systems via case studies. Prerequisite: minimum grade of 1.7 in A A 312; M E 230; MATH 308. Offered: A.

A A 448 Control Systems Sensors and Actuators (3) Overview of feedback control. Study of control systems components and formulation of their mathematical models. Discussion and analysis of amplifiers, DC servomotors, magnetic-actuators, accelerometers, potentiometers, shaft encoders and resolvers, proximity sensors, and force transducers. Experimental determination of component models and model parameters. Two three-hour laboratories per week. Prerequisite: A A 447.

A A 449 Special Topics in Controls (3-5) Topics of current interest in controls. Offered: Sp.

A A 461 Advanced Air Breathing Propulsion (3) Examines gas turbine engine design methodology. Covers aerodynamics or gas dynamics of air breathing engine components: inlets, compressors, turbines, and nozzles. Studies the on-design and off-design performance of gas turbine engines. Includes combustion, emissions, noise, and advanced air breathing propulsion systems. Prerequisite: A A 360. Offered: A.

A A 462 Rocket Propulsion (3) Covers the physical and performance characteristics of chemical rocket propulsion systems. Includes combustion chamber thermochemistry, propellant properties and handling, and rocket system component interactions. Offered: Sp.

A A 470 Systems Engineering (4) Concepts of system approach, system hierarchies, functional analysis, requirements, trade studies, and other concepts used to define and integrate complex engineering systems. Introduction to risk analysis and reliability, failure modes and effects analysis, writing specifications, and lean manufacturing. Offered: jointly with IND E 470.

AA 480 Systems Dynamics (3) Equations of motion and solutions for selected dynamic problems; natural frequencies and mode shapes; response of simple systems to applied loads. Prerequisite: A A 312. Offered: Sp.

A A 496 Undergraduate Seminar (1, max. 4) Lectures and discussions on topics of current interest in aviation and

space technology by guest speakers. Topics vary. Credit/no-credit only. Offered: W.

AA 498 Special Topics (1-5, max. 15) Topics of current interest in the Department of Aeronautics and Astronautics.

AA 499 Undergraduate Research (1-5, max. 10) Research on special topics under the supervision of a faculty member. Application of fundamentals learned in the classroom to real problems in research. A maximum of 6 credits may be applied toward senior technical electives. Offered: AWSpS.

AA 501 Physical Gasdynamics I (3) Equilibrium kinetic theory; chemical thermodynamics; thermodynamic properties derived from quantum statistical mechanics; reacting gas mixtures; applications to real gas flows and gas dynamics. Offered: W, odd years.

A A 503 Continuum Mechanics (3) Reviews concepts of motion, stress, energy for a general continuum; conservation of mass, momentum, and energy; and the second law; constitutive equations for linear/nonlinear elastic, viscous/inviscid fluids, and general materials; and examples/solutions for solid/fluid materials. Offered: jointly with M E 503; A.

A A 504 Compressible Fluid Mechanics (3) Reviews the fundamentals with application to external and internal flows; supersonic flow, 1D and Quasi-1D, steady and unsteady flow, oblique shocks and expansion waves, linearized flow, 2D flow, method of characteristics; and transonic and hypersonic flow. Offered: A.

A A 506 Vortex-Dominated Flows (3) Examines the vorticity equation, baroclinic torque, solenoidality, Biot-Savart's formula, diffusion of vorticity, Burger vortex, system of vortices, Kelvin-Helmholtz instability, effects of density, shear, and surface tension on instability, swirling flows, and other special topics. Offered: Sp, even years.

A A 507 Fluid Mechanics (3) Covers inviscid and viscous incompressible flows, exact solutions of laminar flows, creeping flows, boundary layers, free-shear flows, vorticity equation, and introduction to vortex dynamics. Offered: jointly with M E 507; W.

A A 508 Turbulence (3) The phenomena of turbulence; transition prediction; Reynolds stresses; turbulent boundary-layer equations. Approximate methods for turbulent boundary layers. Prerequisite: A A/M E 507 or permission of instructor. Offered: Sp, odd years.

AA 510 Mathematical Foundations of Systems Theory (4) Mathematical foundations for system theory presented from an engineering viewpoint. Includes set theory; functions, inverse functions; metric spaces; finite dimensional linear spaces; linear operators on finite dimensional spaces; projections on Hilbert spaces. Applications to engineering systems stressed. Offered: jointly with CHEM E 510/E E 510/M E 510.

AA 513 Gas Laser Theory and Practice (3) Physics and fluid mechanics of gas lasers, with emphasis on performance of gas dynamic lasers, flowing chemical lasers, and gaseous electric lasers. Development of laser optics, interaction of radiation and matter, laser oscillation conditions, and methods of obtaining population inversions. Applications of high-power lasers emphasized. Offered: Sp, even years.

A A 516 Stability and Control of Flight Vehicles (3) Static and dynamic stability and control of flight vehicles in the atmosphere. Determination of stability derivatives. Effects of stability derivatives on flight characteristics. Flight dynamic model. Responses to control inputs and external disturbances. Handling qualities. Control system components, sensor characteristics. Stability augmentation systems. Offered: A.

AA 518 Automatic Control of Flight Vehicles (3) Specifications of flight vehicle performance. Synthesis of stability augmentation systems and autopilot control laws in the frequency-domain and using multivariable control methods. Reduced-order controller synthesis, digital design,

and implementation. Use of computer-aided control design packages. Prerequisite: A A 516 and A A 548. Offered: Sp, odd years.

AA 523 Special Topics in Fluid Physics (3) Offered: AWSp.

A A 524 Aeroacoustics (3) Reviews the fundamental concepts of acoustics which include sound measurements, reflection, resonance, transmission, radiation, scattering, diffraction, ray acoustics, wave guide, turbo-machinery noise, sound suppression, jet noise, and airframe noise and acoustic problems in rockets and other propulsion systems. Offered: A, odd years.

A A 525 Special Topics in Advanced Airbreathing Engines (3) Reviews the fundamental concepts of advanced airbreathing engines including advanced gas turbines, ram-jets, scramjets and variants, detonation engines, flow with chemical energy release, shock dynamics, Chapman-Jouguet, ZND model, and multi-cellular and spinning detonation. Offered: W, even years.

A A 527 Space Power Systems (3) Explores the theoretical background and technology of power systems for satellites, space science missions, and planetary and lunar outposts. Focuses on photovoltaic, solar-thermal, and nuclear systems, as well as chemical systems for storage. Addresses thermal management. Offered: A, even years.

A A 528 Spacecraft Dynamics and Control (3) Examines spacecraft dynamics and control. Includes basic orbital mechanics - the restricted three body problem, Hill's theory, perturbation theory, orbit determination, rigid body kinematics and dynamics, attitude control, and spacecraft formation flying. Prerequisite: MATH 307; MATH 308. Offered: W, odd years.

A A 529 Space Propulsion (3) Nucleonics, and heat transfer of nuclear-heated rockets. Electrothermal, electromagnetic, and electrostatic thrusters. Power/propulsion systems. Prerequisite: permission. Offered: Sp, odd years.

A A 530 Mechanics of Solids (3) General concepts and theory of solid mechanics. Large deformations. Behavior of elastic, viscoelastic, and plastic solids. Linear theory of elasticity and thermoelasticity. Wave propagation in solids. Offered: A.

AA 531 Integrity of Metallic Aircraft Structures (3) Examines the theory of failure for metallic structures; fatigue properties, fatigue load spectrum, fatigue crack propagation, fracture mechanics, damage tolerance, fretting and corrosion fatigue, design applications, and case studies. Prerequisite: A A 530 or equivalent or permission of instructor. Offered: W, odd years.

A A 532 Mechanics of Composite Materials (3) Analysis and design of composite materials for aerospace structures. Micromechanics. Anisotropic elasticity. Laminated plate theory. Thermo-viscoelastic behavior and fracture of composites. Prerequisite: coursework in mechanics of materials or permission of instructor. Offered: W, odd years.

A A 533 Materials and Processing Technology of Aerospace Composites (3) Covers the fundamentals of composite materials manufacturing and processing, emphasizing modern aviation industry practices. Focuses on autoclave and out-of-the-autoclave processing of carbon fiber composites, mechanical and physical property testing, generation of material allowables, and material qualification for composites. Emphasizes aircraft structures, but is applicable to all high performance, lightweight structures. Recommended: A A 532, which may be taken concurrently. Offered: W.

A A 534 Integrity of Composite Aircraft Structures (3) Concepts of certification by analysis supported by test evidence in aircraft structures, emphasizing regulatory agency requirements and industry approaches. Subjects include allowables approach, bolted and bonded joints, damage resistance and tolerance, specialized test methods, and inspection techniques. Prerequisite: either A A 432 or A A 532; recommended: A A 533. Offered: Sp.

A A 535 Advanced Composite Structural Analysis (3) Covers advanced stress analysis methods for composite structures made of beams, laminates, sandwich plates, and thin shells; stress and buckling analyses of solid and thin-walled composite beams; shear deformable theory for bending of thick laminated plates; and stress and fracture mechanics analysis of bonded joints. Prerequisite: A A 532. Offered: jointly with M E 500; Sp, odd years.

A A 538 Introduction to Structural Optimization (3) Includes the formulation of engineering design problems as optimization problems, gradient based numerical optimization methods, design oriented structural analysis, structural sensitivity analysis, approximation concepts, and introduction to multidisciplinary design optimization. Prerequisite: coursework in structural analysis; finite elements; and computer programming; or permission of instructor. Offered: A, odd years.

AA 540 Finite Element Analysis I (3) Formulation of the finite element method using variational and weighted residual methods. Element types and interpolation functions. Application to elasticity problems, thermal conduction, and other problems of engineering and physics. Offered: W.

A A 541 Finite Element Analysis II (3) Advanced concepts of the finite element method. Hybrid and boundary element methods. Nonlinear, eigenvalue, and time-dependent problems. Prerequisite: A A 540 or permission of instructor. Offered: Sp.

A A 543 Computational Fluid Dynamics (3) Examines numerical discretization of the inviscid compressible equations of fluid dynamics; finite-difference and finite-volume methods; time integration, iterative methods, and explicit and implicit algorithms; consistency, stability, error analysis, and properties of numerical schemes, grid generation; and applications to the numerical solution of model equations and the 2D Euler equations. Offered: W.

AA 544 Turbulence Modeling and Simulation (3) Examines numerical discretization of the incompressible Navier-Stokes equation; projection method, introduction to turbulence; Reynolds Averaged Navier-Stokes equations; algebraic, one-equation, and two-equation turbulence models; large-eddy simulation; direct numerical simulation; and applications to the numerical solution of laminar and turbulent flows in simple geometries. Offered: Sp.

AA 545 Computational Methods for Plasmas (3) Develops the governing equations for plasma models - particle, kinetics, and MHD. Applies the governing equation to plasma dynamics through the PIC method and integration of fluid evaluation equations. Examines numerical solution to equilibrium configurations, and linear stability by energy principle and variational method. Prerequisite: A A 405 or A A 557. Offered: Sp, odd years.

A A 546 Advanced Topics in Control System Theory (3) Topics of current interest for advanced graduate students with adequate preparation in linear and nonlinear system theory. Prerequisite: permission of instructor.

A A 547 Linear Systems Theory (4) Linearity, linearization, finite dimensionality, time-varying vs. time-invariant linear systems, interconnection of linear systems, functional/structural descriptions of linear systems, system zeros and invertibility, linear system stability, system norms, state transition, matrix exponentials, controllability and observability, realization theory. Recommended: either A A 447, E E 447, or M E 471. Offered: jointly with E E 547/M E 547.

A A 548 Linear Multivariable Control (3) Introduction to MIMO systems, successive single loop design comparison, Lyapunov stability theorem, full state feedback controller design, observer design, LQR problem statement, design, stability analysis, and tracking design. LQG design, separation principle, stability robustness. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with E E 548/M E 548.

A A 549 Estimation and System Identification (3) Fundamentals of state estimation for linear and nonlinear systems. Discrete and continuous systems. Probability and

stochastic systems theory. Models with noise. Kalman-Bucy filters, extended Kalman filters, recursive estimation. Numerical issues in filter design and implementation. Prerequisite: either A A 547, E E 547, or M E 547. Offered: jointly with E E 549/M E 549.

A A 550 Nonlinear Optimal Control (3) Calculus of variations for dynamical systems, definition of the dynamic optimization problem, constraints and Lagrange multipliers, the Pontryagin Maximum Principle, necessary conditions for optimality, the Hamilton-Jacobi-Bellman equation, singular arc problems, computational techniques for solution of the necessary conditions. Recommended: A A 548/E E 548. Offered: jointly with E E 550/M E 550.

A A 553 Vibrations of Aerospace Systems (3) Continuous and discrete systems, natural frequencies, and modal analysis; forced vibrations and motion-dependent forces. Structural damping; control augmented structures. Measurements for structural dynamic testing. Prerequisite: A A 571 or equivalent. Offered: Sp, odd years.

A A 554 Aeroelasticity (3) Static and dynamic aeroelasticity, unsteady aerodynamics, aeroservoelastic modeling, and active control. Offered: Sp, even years.

A A 556 Space and Laboratory Plasma Physics (3) Discussion of waves, equilibrium and stability, diffusion and resistivity, basic plasma kinetic theory, and wave-particle interactions. Prerequisite: ESS 415, or equivalent, or permission of instructor. Offered: jointly with ESS 576; W, odd years.

A A 557 Physics of Fusion Plasmas (3) Review and comparison of single particle and fluid descriptions of plasmas. MDH equilibrium, flux surfaces, and basic toroidal description. Collisional processes including physical and velocity space diffusion. Introduction to island formation, stochasticity, and various plasma instabilities. Prerequisite: A A 405 or GPHYS 505. Offered: W, even years.

A A 558 Plasma Theory (3) Equilibrium, stability, and confinement. Classical transport, collisionless and resistive skin depths. Ideal MHD equations formally derived and properties of plasmas in the ideal limit are studied. Straight and toroidal equilibrium. Linear stability analysis with examples. Taylor minimum energy principle. Prerequisite: either A A 405, A A 556, A A 557, ESS 576, or GPHYS 537. Offered: Sp, even years.

AA 559 Plasma Science Seminar (1, max. 30) Current topics in plasma science and controlled fusion with presentations by invited speakers, on-campus speakers, and students. Students expected to give a seminar once or twice a year with instructor reviewing the method of presentation and material used for the presentation. Credit/no-credit only. Offered: AWSp.

A A 560 Plasma Diagnostics (3) Discusses plasma measurement methods including material probes and optical methods. Covers techniques for making measurement in a high electrical noise environment. Presents methods for measuring electron and ion temperatures, density, impurities, magnetic fields, fluctuations, and neutrals. Prerequisite: A A 405 or equivalent. Offered: A, even years.

A A 564 Kinetic Theory/Radiative Transfer (3) Boltzmann and Collisionless Boltzmann (Vlasov) equations. Instabilities in homogeneous and inhomogeneous plasma, quasi-linear diffusion, wave-particle interaction, collisional (Fokker-Planck) equation. Introduction to radiative non-equilibrium, scattering and absorption processes. Integral equation of radiative transfer. Prerequisite: A A 501 or permission of instructor. Offered: Sp, even years.

A A 565 Fusion Reactor Fundamentals (3) Introduction to basic engineering features of fusion power plants. Brief description of basic fusion physics and discussion of power plants for leading thermonuclear concepts. Engineering problems; blanket, shield neutronics; materials, thermal hydraulics; tritium, superconducting systems. Prerequisite: completion of or concurrent enrollment in A A 405 or permission of instructor. Offered: W, odd years.

A A 570 Manifolds and Geometry for Systems and Control (3) Introduction to fundamentals of calculus on manifolds and group theory with applications in robotics and control theory. Topics include: manifolds, tangent spaces and bundles, Lie groups and algebras, coordinate vs. coordinate-free representations. Applications from physics, robotics, and control theory. Offered: jointly with E E 570/M E 570; W, even years.

A A 571 Principles of Dynamics I (3) Systems of particles, rotating axes, rigid-body dynamics; calculus of variations. Lagrangian mechanics. Hamilton's principle. Kane's equations. Periodic and quasiperiodic motion. Stability of dynamical systems. Offered: A.

A A 578 Optimization in System Sciences (3) Covers convex sets, separation theorems, theorem of alternatives and their applications, convex analysis, convex functions, conjugation, subgradients, convex optimization, duality and applications, linear and semi-definite programming. Linear matrix inequalities, optimization algorithms, applications in system theory and control, bilinear, rank minimization, optimization software. Recommended: A A 547/M E 547/E E 547. Offered: jointly with E E 578/M E 578; W.

A A 580 Geometric Methods for Non-Linear Control Systems (3) Analysis and design of nonlinear control systems focusing on differential geometric methods. Topics include controllability, observability, feedback linearization, invariant distributions, and local coordinate transformations. Emphasis on systems evolving on Lie groups and linearly uncontrollable systems. Prerequisite: A A 570/E E 570/M E 570. Offered: jointly with E E 580/M E 580; Sp, even years.

AA 581 Digital Control (3) Chizeck Sampled-data systems, and z-transform. Frequency domain properties. Sampling D/A and A/D conversion. Controller design via discrete-time equivalents, direct methods, state feedback and observers. Quantization effects. LQR control and introduction to LQG optimal control. Prerequisite: E E 548/A A 548/ M E 548. Offered: jointly with E E 581/M E 581; W.

A A 582 Introduction to Discrete Event Systems (3) Berg Modeling DES with automata and Petri nets. Languages. State estimation and diagnostics. Control specifications. Feedback control. Dealing with uncontrollability and unobservability. Dealing with blocking. Timed automata and Petri nets. Prerequisite: A A 447/E E 447/ M E 471. Offered: jointly with E E 582/M E 582; Sp, even years.

A A 583 Nonlinear Control Systems (3) Analysis of nonlinear systems and nonlinear control system design. Phase plane analysis. Lyapunov stability analysis. Describing functions. Feedback linearization. Introduction to variable structure control. Prerequisite: A A 447/E E 447/M E 471. Offered: jointly with E E 583/M E 583.

A A 585 System Identification and Adaptive Control (3) Theory and methods of system identification and adaptive control. Identification of linear-in-parameter systems, using recursive LS and extended LS methods; model order selection. Indirect and direct adaptive control. Controller synthesis, transient and stability properties. Recommended: A A 547/E E 547/M E 547. Offered: jointly with E E 585/M E 585.

A A 589 Special Topics in Solid Mechanics (4) Offered: AWSp.

AA 591 Robotics and Control Systems Colloquium (1, max. 30) Colloquium on current topics in robotics and control systems analysis and design. Topics presented by invited speakers as well as on-campus speakers. Emphasis on the cross-disciplinary nature of robotics and control systems. Credit/no-credit only. Offered: jointly with CHEM E 591/E E 591/M E 591.

A A 593 Feedforward Control (3) Devasia Design feedforward controllers for precision output tracking; inversion-based control of non-minimum-phase systems; effect of plant uncertainty on feedforward control; design of feedforward controllers for applications such as vertical take off and landing aircraft, flexible structures and piezo-actua-

tors. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with E E 593/M E 593; Sp, even years.

A A 594 Robust Control (3) Basic foundations of linear analysis and control theory, model realization and reduction, balanced realization and truncation, stabilization problem, coprime factorizations, Youla parameterization, matrix inequalities, H-infinity and H2 control, KYP lemma, uncertain systems, robust H2, integral quadratic constraints, linear parameter varying synthesis, applications of robust control. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with E E 594/M E 594; Sp, odd years.

A A 595 Global Integrated Systems Engineering ([4/6]-, max. 10) Covers systems engineering, project management, finance, economics, and a seminar on global technical topics. Offered: jointly with IND E 595; AW.

AA 596 Global Integrated Systems Engineering Project (3) *Mastrangelo* Project-based systems design course. Prerequisite: A A/INDE 595. Offered: jointly with IND E 596; Sp.

A A 597 Networked Dynamics Systems (3) Provides an overview of graph-theoretic techniques that are instrumental for studying dynamic systems that coordinate their states over a signal-exchange network. Topics include network models, network properties, dynamics over networks, formation control, biological networks, observability, controllability, and performance measures over networks. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with E E 597/M E 597.

A A 598 Special Topics in Aeronautics and Astronautics (1-5, max. 30) Introduction of special topics in the field of aeronautics and astronautics. Topics introduced by regular and guest speakers and includes a variety of information that is of current interest in aeronautics and astronautics. Offered: AWSp.

A A 599 Special Projects (1-5, max. 30) Investigation on a special project by the student under the supervision of a faculty member. Offered: AWSpS.

A A 600 Independent Study or Research (*-) Offered: AWSpS.

AA 700 Master's Thesis (*-) Offered: AWSpS.

AA 800 Doctoral Dissertation (*-) Offered: AWSpS.

Aerospace Engineering

A E 501 Analytical Methods for Aerospace Engineering (4) Applications of analytical and mathematical methods for aerospace engineering, including: ordinary differential equations, partial differential equations, linear algebra, vector calculus, integral theorems, complex analysis, optimization, and probability. Prerequisite: permission of instructor. Offered: A.

A E 598 Aerospace Engineering Colloquium (1, max. 30) Covers the latest research in aerospace engineering. Includes current trends in professional aerospace engineering (e.g., manufacturing, systems, etc.) and professional development for aerospace engineers (e.g., project management, job searches, etc.). Lectures and discussions led by guest speakers. Credit/no-credit only. Offered: AWSp.

Chemical Engineering

105 Benson

The chemical engineering profession is a close-knit group with a common background in chemical processes, systems analysis, and systems economics. Chemical engineering training occurs through course and laboratory work addressing mathematical, scientific, and engineering fundamentals. With a strong background in mathematics, chemistry, and physics, chemical engineering students study transport phenomena (the description of momentum, heat, and mass transfer in chemical processes); chemical kinetics and reaction engineering; process con-

trol and design; and optimization of chemical processes. These subjects are common throughout the traditional chemical industry, applying as well to other industries such as electronics manufacture and biological and biochemical engineering. Chemical engineers find industrial employment in areas of electronics, petroleum, consulting, chemical, automotive, forest products, biotechnology, and energy. Chemical engineers also find careers in academia and government and military service.

UNDERGRADUATE PROGRAM

Adviser

105 Benson, Box 351750

(206) 543-2252

advising@cheme.washington.edu

The Department of Chemical Engineering offers the following programs of study:

- The Bachelor of Science in Chemical Engineering (BSChE) degree
- The Bachelor of Science in Chemical Engineering (BSChE) degree, with an option in nanoscience and molecular engineering

Bachelor of Science in Chemical Engineering

Suggested College Courses for First Five Quarters: MATH 124, MATH 125, MATH 126, MATH 307, MATH 308, CHEM 142, CHEM 152, CHEM 162, CHEM 237, CHEM 238, PHYS 121, PHYS 122, PHYS 123, ENGL 131 (or equivalent), AMATH 301 (or CSE 142)

Department Admission Requirements

Core courses within the department form a seven-quarter curriculum designed to start in spring quarter of the sophomore year. Applicants are considered in three groups: Direct Freshman Admission, Early Admission, and Upper-Division Admission. Admission is competitive. Completion of minimum requirements described below does not guarantee admission. Applicants not admitted under one admission group may subsequently apply to another admission group after completing more coursework. All applicants have the right to petition and appeal the department's admission decision.

Nanoscience and Molecular Engineering Option (NME): Admission to the NME option is competitive, and normally occurs upon completion of NME 220. Admission is based on grades, including NME 220 and any CHEM E courses already taken. A small number of students may be admitted into the NME option upon application to the department. Admission is based on the student's academic record and prior experience/work in the field of nanoscience and/or molecular engineering. Students applying for the NME option should so indicate on their chemical engineering application and discuss their interests and background in the essay.

Direct Freshman Admission

The department enrolls up to 30 percent of its incoming class directly from high school, prior to completion of University-level prerequisites. Students accepted to the UW who indicate chemical engineering as their preferred major on the freshman application are automatically considered. Competitive applicants have taken or are taking calculus and at least two years of laboratory science (physics, chemistry preferred) in high school. Admission is for autumn quarter only.

Early Admission

The department enrolls up to 30 percent of its class from students who have taken one year of college-level coursework at the UW. The application is available at www.engr.washington.edu/uapp. Admission is for autumn quarter only. Application deadline is July 1.

1. *Course Requirements:* MATH 124, MATH 125, MATH 126; CHEM 142, CHEM 152, CHEM 162; PHYS 121; and 5 credits of English composition, chosen from C LIT 240, ENGL 109-ENGL 110, ENGL 111, ENGL 121, ENGL 131, ENGL 197, ENGL 198, ENGL 199, or ENGL 281.
2. All courses must be completed prior to the July 1 application deadline.
3. *Credit Requirements:* Applicants must be completing their freshman year at the UW and must have completed a minimum 15 credits taken in residence at the UW.
4. *Grade Requirements:* Minimum 2.0 grade in each prerequisite course and minimum 2.50 GPA

Upper-Division Admission

The department enrolls the majority of its student through Upper-Division Admission. Upper-division applicants have completed at least four quarters of equivalent college-level coursework and are on track to begin the department curriculum in spring quarter of their sophomore year. Application for the department is available at www.engr.washington.edu/uapp. Students not at UW must also apply for admission to the UW for spring quarter, following the admission rules found at admit.washington.edu.

Admission is for spring quarter only. The department application deadline is February 1. The UW application deadline is December 15.

1. *Course Requirements:* Minimum 55 academic credits at time of application, including the following: MATH 124, MATH 125, MATH 126, MATH 307 (18 credits); CHEM 142, CHEM 152, CHEM 162 (15 credits); PHYS 121, PHYS 122 (10 credits); and one 5-credit English composition course, chosen from C LIT 240, ENGL 109-ENGL 110, ENGL 111, ENGL 121, ENGL 131, ENGL 197, ENGL 198, ENGL 199, or ENGL 281.

Applicants are considered for admission if they have completed all but two of the required courses and are currently enrolled in those courses at the time of application to the major (e.g., MATH 307 and PHYS 122). See department adviser with questions.

2. *General Expectations of Academic Progress:* To be fully prepared for major coursework and to be on track to complete the degree in a timely manner, students must have completed all admission requirements as well as the following courses by the start of the autumn quarter following admission: organic chemistry I and II (CHEM 237 and CHEM 238, CHEM 223 and CHEM 224, or CHEM 335 and CHEM 336), PHYS 123, AMATH 301 (or CSE 142), MATH 308, CHEM E 310. Students unable to meet the continuation requirement are automatically dropped from the program (appeals for readmission are considered in the case of special circumstances). Applicants should take general education or elective credits as space allows. See department academic adviser with questions related to academic progress.
3. *Credit and Grade Requirements:* 55 credits completed by application deadline, with a minimum overall 2.50 GPA and minimum 2.0 grade in all courses required for admission. Historically a substantially higher GPA in these categories is required for admission to the major. See department adviser with questions.

Factors included in the admission decision include the course record as indicated above and qualitative considerations such as difficulty of completed courses, frequency of incomplete or withdrawal grades, number of repeated courses, applicable work experience and maturity of attitude, record of honors, a demonstrated ability to take at least 12 credits per quarter, and special circumstances disclosed by the applicant.

Graduation Requirements

197 credits, as follows:

1. *General Education Requirements (97 credits)*

- a. *Written and Oral Communications (8 credits):* one 5-credit English composition course from the University list; HCDE 231. University required 4 additional writing credits are met by major core courses.
- b. *Visual, Literary, & Performing Arts (VLPA) and Individuals & Societies (I&S) (24 credits):* Minimum of 10 credits required in each area
- c. *Natural World (65 credits)*
 - ii. *Physics (15 credits):* PHYS 121, PHYS 122, PHYS 123
 - iii. *Mathematics (24 credits):* MATH 124, MATH 125, MATH 126, MATH 307, MATH 308, and MATH 309 (or MATH 390 or IND E 315)
 - iv. *Chemistry (26 credits):* CHEM 142, CHEM 152, CHEM 162, CHEM 237, CHEM 238, CHEM 455

2. Major Requirements (74 credits)

- a. *Engineering Fundamentals (4 credits):* AMATH 301 or CSE 142
- b. *Chemical Engineering Core Courses (51 credits):* CHEM E 310, CHEM E 325, CHEM E 326, CHEM E 330, CHEM E 340, CHEM E 435, CHEM E 436, CHEM E 437, CHEM E 457, CHEM E 465, CHEM E 480, CHEM E 485, CHEM E 486
- c. *Molecular and Nanoscience Engineering (3 credits):* CHEM E 455
- d. *Engineering Elective Courses (16 credits):* Only one, 1-credit seminar is allowed to count toward engineering electives. A maximum of 9 credits of undergraduate research (CHEM E 299, CHEM E 499, of which no more than 3 credits may be CHEM 299) may count toward engineering electives.

3. Unspecified Electives (6 credits)

4. Nanoscience and Molecular Engineering Option Major Requirements (77 credits)

- a. *Engineering Fundamentals (4 credits):* AMATH 301 or CSE 142
- b. *Chemical Engineering Core Courses (51 credits):* CHEM E 310, CHEM E 325, CHEM E 326, CHEM E 330, CHEM E 340, CHEM E 435, CHEM E 436, CHEM E 437, CHEM E 457, CHEM E 465, CHEM E 480, CHEM E 485, CHEM E 486
- c. *Nanoscience and Molecular Engineering Courses (22 credits):* CHEM E 299, CHEM E 455, CHEM E 499 (3-6 credits, maximum 3 credits from CHEM E 299), NME 220, NME 221, NME 321, NME 421; minimum two additional approved nanoscience and molecular engineering electives. See adviser for list of approved electives.
- d. *Unspecified Electives (2 credits)*

5. A minimum 2.00 GPA in core chemical engineering courses, based on the first time each course is taken, is required for graduation.

Many engineers design new equipment and processes or design modifications to them. The design experience is integrated throughout the curriculum, with open-ended problems (sometimes involving economic constraints) in several courses: design of heat exchangers (CHEM E 340) and distillation towers (CHEM E 435), design of piping and pumping systems (CHEM E 330), design of chemical reactors (CHEM E 465). The design experience culminates in two capstone design courses (CHEM E 485 and CHEM E 486 or CHEM E 497) which involve the design of an integrated chemical system. An optional 9-credit specialty area allows each student to develop special competence in a selected subject by taking a minimum of three courses in that area. Engineering and free electives may be used for this purpose. The areas are biotechnology; fuel cells and energy; polymers, composites, colloids, and interfaces; computers applied to chemical engineering; environmental engineering; and nuclear engineering.

Continuation Policy

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

Student Outcomes and Opportunities

- **Learning Objectives and Expected Outcomes:** Chemical engineering graduates possess knowledge (including safety and environmental aspects) of material and energy balances applied to chemical processes; thermodynamics of physical and chemical equilibria; heat, mass, and momentum transfer; chemical reaction engineering; continuous and stage-wise separation operations; process dynamics and control; and process design. They also gain ability to apply knowledge of mathematics, science, and engineering; ability to design and conduct experiments, as well as to analyze and interpret data; ability to design a system, component, or process to meet desired needs; ability to function on multidisciplinary teams; and ability to identify, formulate, and solve engineering problems. They also possess an understanding of professional and ethical responsibility; an ability to communicate effectively; the broad education necessary to understand the impact of engineering solutions in a global and societal context; a recognition of the need for, and an ability to engage in, life-long learning; a knowledge of contemporary issues; and an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- **Instructional and Research Facilities:** The chemical engineering building, Benson Hall, contains classrooms, offices, stockrooms, computer rooms, machine and electronics shops, and laboratories. The Unit Operations Lab holds a variety of experiments designed to give undergraduate students the experience of using real chemical process equipment and to deepen their understanding of chemical engineering fundamentals of fluid flow, heat transfer, separation processes, and reactor behavior. Departmental computer facilities include a network of PCs located in a keyed room for the exclusive use of chemical engineering students. Ten of these machines have hardware for computer data acquisition (to collect experimental data and support experiments on process automation). All have fast connections to the Internet and to larger UW computers.
- **Honors Options Available:** With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- **Research, Internships, and Service Learning:** Students are encouraged to participate in internships, which are generally facilitated through the Engineering Co-op Office.
- **Department Scholarships:** The department awards 20-25 full-tuition scholarships per year. See departmental website for application procedures.
- **Student Organizations/Associations:** The undergraduates in the department run a dynamic chapter of the American Institute of Chemical Engineers.

Of Special Note:

Entrance into most chemical engineering courses is ordinarily limited to majors in chemical engineering and bioresource science and engineering. Other students who wish to take departmental courses must meet the prerequisites and obtain instructor approval (except for CHEM E 485 and CHEM E 486, which are open to majors only).

GRADUATE PROGRAM

Graduate Program Coordinator

105 Benson, Box 351750

(206) 543-2250

grad.admissions@cheme.washington.edu

The department offers studies leading to the degrees of Doctor of Philosophy, Master of Science in Chemical Engineering, and Master of Science in Engineering. The doctoral degree is centered on the dissertation with a foundation in coursework; it is generally completed in four to five years beyond the baccalaureate degree. In the master's program primary emphasis is placed on coursework, and the degree generally requires 21 months of study. Thesis and non-thesis options are available.

The program of study includes basic subjects of importance to all chemical engineers, such as thermodynamics, transport phenomena, kinetics, and applied mathematics. In addition, students are invited to take more-specialized courses in chemical engineering or in other departments. Students usually take three courses during their first quarter. In subsequent quarters, less time is spent on coursework, and more on research and independent study.

The department has about seventy full-time graduate students, most of whom are working toward a doctorate. They study and collaborate with faculty members in an atmosphere that is informal, friendly, and intellectually vigorous. Faculty interests are broad, so students become familiar with a variety of areas while receiving individual guidance in a specialty.

Master of Science in Chemical Engineering

Admission Requirements

Most students applying for graduate admission have a Bachelor of Science degree in chemical engineering. If a student has an undergraduate degree in chemistry, physics, mathematics, or another branch of engineering, he or she may obtain a graduate degree in chemical engineering by meeting certain additional requirements. To be competitive, applicants must:

1. Be highly ranked (top 10 percent) in a respected chemical engineering program
2. Score at least 750 on the quantitative portion of the GRE
3. Score at least 600 (paper-based), 250 (computer-based), or 70 (Internet-based, not including speaking score) on the TOEFL, if an international applicant

Degree Requirements

Thesis Option

39 credits to include:

1. At least 18 credits in courses numbered 500-599, of which at most 3 may be seminar credits, such as CHEM E 523. Numerical grades must be received for at least 18 credits of coursework. These must be 500-599 or approved 400-level courses. They must include five courses from at least four of the following five categories. (The courses listed in each category are typical. Others may qualify subject to approval by the Graduate Program Coordinator.)
 - a. *Math/Computer/Statistics:* CHEM E 481, CHEM E 482, CHEM E 510, CHEM E 512, CHEM E 575, CHEM 526, STAT 421
 - b. *Thermodynamics:* CHEM E 455, CHEM E 525, CHEM E 526, CHEM 552
 - c. *Transport Phenomena:* CHEM E 530, CHEM E 531, M E 533, M E 534

d. *Reaction Phenomena:* CHEM E 461, CHEM E 560, CHEM E 564, CHEM E 565

e. *Materials and Biotech:* CHEM E 467, CHEM E 554, CHEM E 558, CHEM E 570, CHEM E 590

2. Approved 400-level courses presented for the 18 graded credits include 400-level CHEM E courses not required for the BS degree and 400-level non-CHEM E courses approved by the Graduate Program Coordinator.
3. A minimum 3.00 cumulative GPA in the graduate program
4. At least 30 credits taken at the UW
5. A thesis describing original research. At least 9 credits of thesis are required (CHEM E 700).
6. Final examination consisting of an oral presentation of the thesis.
7. Serve as TA for at least one quarter.

Non-Thesis Option

The non-thesis allows a student to receive graduate-level training with the primary focus on coursework. The degree requirements can be completed in four quarters (completion in three is possible).

39 credits, and other requirements, to include:

1. At least 18 credits in courses numbered 500-599, of which at most 3 may be seminar credits, such as CHEM E 523. Numerical grades must be received for at least 18 credits of coursework. These must be 500-599 or approved 400-level courses. They must include five courses from at least four of the following five categories. (The courses listed in each category are typical. Others may qualify subject to approval by the Graduate Program Coordinator.)
 - a. *Math/Computer/Statistics:* CHEM E 481, CHEM E 482, CHEM E 510, CHEM E 512, CHEM E 575, CHEM 526, STAT 421
 - b. *Thermodynamics:* CHEM E 455, CHEM E 525, CHEM E 526, CHEM 552
 - c. *Transport Phenomena:* CHEM E 530, CHEM E 531, M E 533, M E 534
 - d. *Reaction Phenomena:* CHEM E 461, CHEM E 560, CHEM E 564, CHEM E 565
 - e. *Materials and Biotech:* CHEM E 467, CHEM E 554, CHEM E 558, CHEM E 570, CHEM E 590
2. Approved 400-level courses presented for the 18 graded credits include 400-level CHEM E courses not required for the BS degree and 400-level non-CHEM E courses approved by the Graduate Program Coordinator.
3. A project consisting of at least 6 CHEM E 600 credits (with a numerical grade of 2.7 or above, or an S grade). A member of the chemical engineering graduate faculty must supervise and grade the work. A written report is required.
4. Thesis research (i.e., CHEM E 700 or CHEM E 800) cannot count toward the 39 credits.
5. Minimum 3.00 cumulative GPA in the graduate program
6. At least 30 credits taken at the UW
7. Final examination consisting of an oral presentation of the CHEM E 600 project

Master of Science in Engineering

Admission Requirements

A student is accepted for admission to the Graduate School as a chemical engineering major by joint action of the Graduate School and the department after consideration of a formal application. Most students applying for graduate admission have a Bachelor of Science degree in chemical engineering. If a student has an undergraduate degree

in chemistry, physics, mathematics, or another branch of engineering, he or she may obtain a graduate degree in chemical engineering by meeting certain additional requirements.

To be competitive, applicants must:

1. Be highly ranked (top 10 percent) in a respected chemical engineering program
2. Score at least 750 on the quantitative portion of the GRE
3. Score at least 600 (paper-based), 250 (computer-based), or 70 (internet-based, not including speaking score) on the TOEFL, if an international applicant

Degree Requirements

39 credits

The requirements are the same as for the MSChE thesis option, except that the research adviser considers the student's background and research objectives and tailors the course requirements accordingly (subject to Graduate Program Coordinator approval). Relative to the MSChE options, usually less emphasis is on chemical engineering, more on engineering science and related subjects.

Doctor of Philosophy

Admission Requirements

Most students applying for graduate admission have a Bachelor of Science degree in chemical engineering. If a student has an undergraduate degree in chemistry, physics, mathematics, or another branch of engineering, he or she may obtain a graduate degree in chemical engineering by meeting certain additional requirements.

To be competitive, applicants must:

1. Be highly ranked (top 10 percent) in a respected chemical engineering program
2. Score at least 750 on the quantitative portion of the GRE
3. Score at least 600 (paper-based), 250 (computer-based), or 70 (internet-based, not including speaking score) on the TOEFL, if an international applicant

Degree Requirements

90-108 credits, as follows:

1. **Minimum Graduate School Requirements:** Satisfy Graduate School minimum requirements, summarized below. NOTE: Graduate School policy imposes the requirements in force at the time of graduation (not at the time of program entry).
 - a. Complete at least 18 credits of courses numbered 500-600 at the University of Washington.
 - b. Complete at least 18 numerically graded credits of 400- and 500-level UW courses prior to the general examination. Any 400-level courses must have departmental approval.
 - c. Complete a minimum of 90 credits, at least 60 of which are UW credits.
 - d. Compile a minimum of 27 dissertation credits (CHEM E 800) over a period of at least three quarters. With the exception of summer, students may take a maximum of 10 dissertation credits per quarter.
 - e. Maintain a minimum cumulative GPA of 3.00.
 - f. Pass the general examination.
 - g. Pass the final examination (includes approval of the dissertation by student's Supervisory Committee).
 - h. Maintain full- or part-time graduate student registration at the UW for the quarter in which the above examinations are completed and the degree is conferred.

- i. Complete all work for the doctoral degree within ten years.
2. **Students with a Chemical Engineering Undergraduate Degree:** In addition to the requirements listed above, doctoral students must:
 - a. Complete the non-thesis MSChE degree prior to the general examination. (Students with an MS in chemical engineering from another university may petition the Graduate Program Coordinator for an exemption.)
 - b. Serve as a TA for at least three quarters. Students should plan on one quarter per year in years 2-4.
 - c. Complete at least six graded courses numbered 500-599 or approved 400-level courses to satisfy the following:
 - i. *Math/Computer/Statistics:* CHEM E 481, CHEM E 482, CHEM E 510, CHEM E 512, CHEM E 575, CHEM 526, STAT 421
 - ii. *Thermodynamics:* CHEM E 455, CHEM E 525, CHEM E 526, CHEM 552
 - iii. *Transport Phenomena:* CHEM E 530, CHEM E 531, M E 533, M E 534
 - iv. *Reaction Phenomena:* CHEM E 461, CHEM E 560, CHEM E 564, CHEM E 565
 - v. *Materials and Biotech:* CHEM E 467, CHEM E 554, CHEM E 558, CHEM E 570, CHEM E 590
 - e. One CHEM E course in a topic outside the student's main research area.
 3. **Non-Chemical Engineering Undergraduates:** Students whose undergraduate degree is in engineering or science (e.g., BS in chemistry or materials science) but not chemical engineering must pass or serve as a TA in the following courses in addition to the requirements listed in the previous section: CHEM E 330 (5), CHEM E 340, CHEM E 435, CHEM E 465, CHEM E 485
 4. Students lacking a strong background in thermodynamics are advised (but not required) to take CHEM E 326 prior to attempting CHEM E 525. It is possible to take some graduate courses while completing the required undergraduate courses.

Research Facilities

Benson Hall contains classrooms, offices, stockrooms, a machine shop, laboratories, and a variety of specialized research equipment. Each graduate student is provided desk space in a small laboratory or office as well as access to larger laboratories in the building. Students also may use the services of the Academic Computer Center, instrument-making shops, research centers (e.g., biomaterials, nanotechnology, chemical analysis), and the Chemistry and Engineering Libraries.

Financial Aid

The department has various sources of support for qualified graduate students. Those interested in applying for admission and support should visit the department's website: www.cheme.washington.edu, which provides details on application procedures. Offers of admission with financial support are usually made in January through March.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsat/

Chemical Engineering

CHEM E 299 Undergraduate Research (1-3, max. 9) Research or special topics under the supervision of a faculty member. Offered: AWSpS.

CHEM E 301 Leadership Seminar (1) Schwartz Forum for industrial, academic, and government leaders to share their experiences and insights with students. Includes topics related to leadership in the chemical engineering profession including career planning, management skills, interpersonal skills, effective planning, entrepreneurship, ethics, and strategic decisions. Credit/no-credit only. Offered: A.

CHEM E 309 Creativity and Innovation (2) VLPA G. ALLAN Understanding creativity and creative thinking; its challenges and dynamics through knowledge, judgment, planning, and observation. Techniques of creative thinking. Design and development of creative games. Computer-aided creative thinking. Creation, protection, and exploitation of a useful idea, including bargaining and negotiations. Offered: jointly with BSE 309; Sp.

CHEM E 310 Material and Energy Balances (4) Chemical and physical process calculations: steady- and unsteady-state material and energy balances with specific examples in vapor-liquid contact operations and multiphase extraction, and introductory thermochemistry. Prerequisite: PHYS 122 and MATH 307. Offered: Sp.

CHEM E 325 Energy and Entropy (4) Introduction to the basic principles of thermodynamics from both microscopic and macroscopic points of view. Emphasis on equilibrium phenomena, and the trade-off of energy and disorder in determining structure and properties. Applications of thermodynamics in process design and analysis. Prerequisite: CHEM E 310. Offered: A.

CHEM E 326 Chemical Engineering Thermodynamics (4) Phase equilibria and chemical equilibria in multicomponent systems; theories of solution; chemical reaction analysis. Prerequisite: CHEM E 325. Offered: W.

CHEM E 330 Transport Processes I (5) Diffusive transport of momentum, heat, and mass; general aspects of fluid flow; the Navier-Stokes equations; one-dimensional flow with engineering applications. Prerequisite: CHEM E 310; either MATH 136 or MATH 307. Offered: A.

CHEM E 340 Transport Processes II (4) Heat transfer, basic principles, and applications. Conduction, convection, and radiation. Prerequisite: CHEM E 330. Offered: W.

CHEM E 341 Energy and Environment (3) NW Energy use. Fossil energy conversion. Oil, gas, coal resources. Air impacts. Nuclear energy principles, reactors, fuel cycle. Prerequisite: either MATH 112, MATH 124, or Q SCI 291; either CHEM 120, CHEM 142, CHEM 144, PHYS 114, or PHYS 121. Offered: jointly with ENVIR 341/M E 341; A.

CHEM E 355 Biological Frameworks for Engineers (3) Shen For engineers with no prior experience in the biological sciences. Hands-on, project-based course covers fundamental concepts and language of biology, from an engineering perspective. Topics include functions of life, information processing, proteins, DNA, genetic variability, control loops, energetics, tissues, organisms, ecosystems. Prerequisite: either CHEM 142 or CHEM 144; PHYS 123; either MATH 307 or AMATH 351; recommended: CHEM 220. Offered: W.

CHEM E 375 Chemical Engineering Computer Skills (2) Pfaendtner Use Excell, Matlab, and AspenPlus to solve typical chemical engineering problems. Solve realistic problems and explore alternatives that would be inaccessible for hand calculations. Includes equations of state, chemical equilibrium of simultaneous reactions, phase equilibria, plug flow reactors, heat transfer in 1-D, and time-dependent heat transfer. Offered: W.

CHEM E 435 Transport Processes III (4) Mass transfer, basic principles, and applications to equipment design.

Physical separation processes. Prerequisite: CHEM E 326; CHEM E 340. Offered: A.

CHEM E 436 Chemical Engineering Laboratory I (3) Lectures on statistics, experimental design, instrumentation, laboratory safety, and report writing; laboratory experiments on fluid mechanics and heat transfer. Emphasis on teaming, experimental planning, procedures, report writing, and oral presentations. Prerequisite: CHEM E 326; CHEM E 340 which may be taken concurrently; HCDE 231. Offered: ASp.

CHEM E 437 Chemical Engineering Laboratory II (3) Continuation of CHEM E 436. Laboratory investigation of chemical engineering principles applied to equipment design with emphasis on mass transfer operations and chemical reactors. Prerequisite: CHEM E 435; CHEM E 436; CHEM E 465. Offered: W.

CHEM E 442 Renewable Energy (4) NW P. MALTE Introduction to renewable energy. Principles and practices: solar, wind, water, and biomass energy conversion. Prerequisite: either M E 323, CHEM E 325, A A 260, or E E 351. Offered: jointly with M E 442; W.

CHEM E 445 Fuel Cell Engineering (3) Stuve Introduction to electrochemical fuel cells for use in transportation and stationary power applications. Topics covered include types of fuel cells, single cell operation, stack engineering, overall system design, and safety, with emphasis on proton exchange membrane and solid oxide fuel cells. Prerequisite: CHEM E 330.

CHEM E 455 Surface and Colloid Science Laboratory (3) Berg, Pozzo Laboratory techniques, equipment, and underlying fundamentals in surface and colloid science. Experiments in the measurement of surface tension, adsorption, wetting and spreading, colloid properties, emulsion preparation and stability, electrophoresis, and interfacial hydrodynamics. Recommended: CHEM E 326; CHEM E 330. Offered: ASp.

CHEM E 457 Principles of Molecular Engineering (3) Hillhouse Covers the basic aspects of statistical mechanics, focusing primarily on the canonical ensemble. Develops and applies a set of tools to regular liquid solutions, phase formation, spinodal decomposition, adsorption, polymer thermodynamics, chemical kinetics, and physical kinetics. Prerequisite: CHEM E 310; CHEM E 325; CHEM 455. Offered: Sp.

CHEM E 458 Surface Analysis (3) B. RATNER Understanding of solid surfaces for research and development in microelectronics, catalysis, adhesion, biomaterials, science wear, and corrosion science. Newer methods available to study surfaces of materials. Electron emission spectroscopies (ESCA, Auger): ion scattering, ion spectroscopic, photon spectroscopic, and thermodynamic methods. Offered: jointly with BIOEN 492; Sp.

CHEM E 461 Electrochemical Engineering (3) Schwartz Explores role of thermodynamics, charge transfer kinetics, and mass transfer on behavior of electrochemical systems. Includes cell thermodynamics, faradaic and non-faradaic rate processes, ionic transport, nucleation and growth theories. Applications to chemical sensors, batteries, corrosion, thin film deposition. In-class demonstrations to illustrate concepts.

CHEM E 465 Reactor Design (4) Application of chemical kinetics and transport phenomena to the design of chemical reactors; characterization of batch and continuous-flow reactors in homogeneous and heterogeneous systems. Prerequisite: CHEM E 326; CHEM E 340. Offered: A.

CHEM E 467 Biochemical Engineering (3) F. BANEYX Application of basic chemical engineering principles to biochemical and biological process industries such as fermentation, enzyme technology, and biological waste treatment. Rapid overview of relevant microbiology, biochemistry, and molecular genetics. Design and analysis of biological reactors and product recovery operations. Prerequisite: CHEM

E 340; either CHEM 223, CHEM 237, or CHEM 335; recommended: CHEM E 465. Offered: jointly with BIOEN 467; W.

CHEM E 468 Air-Pollution Control Equipment Design (3) Designs to control air pollutants from stationary sources. Procedures for calculating design and operating parameters. Fundamental mechanisms and processes of gaseous and particulate control equipment for absorption and adsorption of gaseous pollutants; electrostatic precipitation and filtration of particulate pollutants. Actual case studies. Offered: jointly with CEE 494/M E 468.

CHEM E 480 Process Dynamics and Control (4) Dynamics of process units and systems; instrumentation and control system design and analysis. Includes weekly laboratory. Prerequisite: CHEM E 435; CHEM E 465. Offered: W.

CHEM E 481 Process Optimization (3) Holt Concepts and techniques of optimizing chemical engineering processes and systems, including classical and direct methods of search, linear and nonlinear programming, dynamic programming, statistical experimental design, and evolutionary operation. Offered: A.

CHEM E 482 Advanced Topics in Process Control (3) Holt, Ricker Current topics in process control design and analysis. Possible topics include robustness analysis and design, time delay compensation, modern frequency response techniques, discrete control, adaptive control, model-based control, and nonlinear control. Prerequisite: CHEM E 480.

CHEM E 484 Electronic and Optoelectronic Polymers (3) Jenekhe Covers the chemistry, physics, materials science, and engineering applications of semiconducting and metallic conjugated polymers. Examines the structural origins of the diverse electronic and optoelectronic properties of conjugated polymers. Exemplifies applications by light-emitting diodes, lasers, solar cells, thin film transistors, electrochromic devices, biosensors, and batteries. Prerequisite: either CHEM 237, CHEM 455, CHEM E 340, or MSE 310. Offered: A.

CHEM E 485 Process Design I (4) Applied economics in chemical engineering design and operations; measures of profitability; capital and operating cost estimates; introduction to design and design strategies. Prerequisite: CHEM E 480 which may be taken concurrently. Offered: W.

CHEM E 486 Process Design II (5) Comprehensive design of a specific process or product, including economic feasibility studies, utilization of market survey and plant location studies, process equipment design and optimization, and overall plant integration and layout. Prerequisite: CHEM E 485. Offered: Sp.

CHEM E 490 Engineering Materials for Biomedical Applications (3) Combined application of principles of physical chemistry and biochemistry, materials engineering, to biomedical problems and products. Applications include implants and medical devices, drug delivery systems, cell culture processes, diagnostics, and bioseparations. Offered: jointly with BIOEN 490; A.

CHEM E 491 Controlled-Release Systems (3) S. PUN Mechanisms for controlled release of active agents and the development of useful drug delivery systems for this purpose. Release mechanisms considered include diffusive, convective, and erosive driving forces. Delivery routes include topical, oral, and in vivo. Some special case studies covered in detail. Offered: jointly with BIOEN 491; W.

CHEM E 493 Advanced Surface Analysis (3) D. CASTNER Covers the latest advanced in surface analysis instrumentation and methodology, including advanced methods of biorecognition AFM, surface Plasmon resonance, x-ray photoelectron spectroscopy, sum frequency generation spectroscopy, time-of-flight secondary ion mass spectrometry, and multivariate analysis. Prerequisite: either CHEM E 458 or BIOEN 492. Offered: jointly with BIOEN 493; W.

CHEM E 497 Special Projects in Chemical Engineering Design ([1-6]-, max. 12) Chemical engineering design instruction and experience in special projects, such as industrially

motivated, timely, or interdisciplinary projects. Project subject and content varies. Majors only. Prerequisite: CHEM E 340.

CHEM E 498 Special Topics in Chemical Engineering (1-4, max. 12) Topics of current interest in the field. Subject matter changes from quarter to quarter.

CHEM E 499 Undergraduate Research ([1-6]-, max. 12) Independent research projects in chemical engineering. Offered: AWSpS.

CHEM E 510 Mathematical Foundations of Systems Theory (4) Mathematical foundations for system theory presented from an engineering viewpoint. Includes set theory; functions, inverse functions; metric spaces; finite dimensional linear spaces; linear operators on finite dimensional spaces; projections on Hilbert spaces. Applications to engineering systems stressed. Offered: jointly with A A 510/E E 510/M E 510.

CHEM E 511 Biomaterials Seminar (1, max. 18) D. CASTNER, L. GAMBLE Presentation of student research results. Prerequisite: permission of instructor. Credit/no-credit only. Offered: jointly with BIOEN 511.

CHEM E 512 Methods of Engineering Analysis (3) Applications of mathematics to problems in chemical engineering; vector calculus; properties and methods of solution of first and second order partial differential equations; similarity transforms, separation of variables, Laplace and Fourier transforms. Prerequisite: MATH 308, MATH 307 or AMATH 351, MATH 324, or permission of instructor. Offered: jointly with AMATH 512; A.

CHEM E 515 Experimental Methods in Chemical Engineering Research (3) Baneyx, Berg, Jiang Lecture and laboratory studies in current research methods of chemical engineering. Includes surface science, biochemical engineering, colloidal chemistry, light scattering, and nanoscience techniques. Offered: A.

CHEM E 523 Seminar in Chemical Engineering (0-1, max. 30) Topics of current interest in chemical engineering. Credit/no-credit only. Offered: AWSp.

CHEM E 525 Chemical Engineering Thermodynamics (4) Review of principles of thermodynamics. Applications to problems in multiphase and multicomponent systems; theories of solutions. Prerequisite: undergraduate thermodynamics. Offered: A.

CHEM E 530 Momentum, Heat, and Mass Transfer I (4) Derivation of the differential equations for mass, energy, and momentum transport. Principles of fluid mechanics; creeping flow, turbulence, boundary-layer theory. Offered: A.

CHEM E 531 Momentum, Heat, and Mass Transfer II (3) Continuation of CHEM E 530. Flows of fluid-particle systems; convective heat transfer, natural convection. Prerequisite: CHEM E 530.

CHEM E 554 Nanoscale Science I: Contact Mechanics and Rheology on the Nanoscale (3) Overney Introductory nanoscale science with emphasis on contact mechanics, principle and concept of forces, scanning force microscopy, tribology (friction, wear, lubrication), rheology, ultrathin organic films, physical properties of polymers, and computer simulation. Offered: W.

CHEM E 556 Colloidal Systems (3) Berg, Pozzo Examines the unique properties and application of colloidal materials, i.e., dispersions of micro- or nano-sized particles in various media are described. Explores their inherent instability, and their kinetic, phoretic, electric, optical, and rheological properties. Offered: W.

CHEM E 558 Surface Analysis (3) B. RATNER Understanding of solid surfaces for research and development in microelectronics, catalysis, adhesion, biomaterials science, wear and corrosion science. Newer methods available to study surfaces of materials. Electron emission spectroscopies (ESCA, Auger); ion scattering, ion spectroscopic, pho-

ton spectroscopic, and thermodynamic methods. Offered: jointly with BIOEN 592.

CHEM E 560 Reactions at Solid Surfaces (3) *Stuve* Fundamental studies of adsorption and reactions on metallic and non-metallic surfaces with emphasis on heterogeneous catalysis and electrochemistry, including fuel cells. Topics include gas phase and liquid phase surface reactions, analyzed both experimentally and computationally. Prerequisite: undergraduate level course in kinetics or catalysis.

CHEM E 565 Kinetics and Catalysis (3) *Stuve* Homogeneous and heterogeneous systems with emphasis on chemical engineering principles applied to industrial reactor design. Prerequisite: CHEM E 525.

CHEM E 580 Topics in Chemical Engineering Design (3, max. 9) Lectures and seminars on current design methods in chemical engineering, including technical and economic feasibility of processes, design and optimization of process equipment, and environmental and social constraints. Prerequisite: undergraduate chemical engineering design, admission to chemical engineering master's program, or permission of instructor.

CHEM E 584 Electronic and Optoelectronic Polymers (3) *Jenekhe* Covers the chemistry, physics, materials science, and engineering applications of semiconducting and metallic conjugated polymers. Examines the structural origins of the diverse electronic and optoelectronic properties of conjugated polymers. Exemplifies applications by light-emitting diodes, lasers, solar cells, thin film transistors, electrochromic devices, biosensors, and batteries. Prerequisite: either CHEM 237, CHEM 455, CHEM E 340, or MSE 310. Offered: A.

CHEM E 588 Research in Applied Microbiology (1, max. 30) *Lidstrom* Weekly research seminar and discussion of scientific literature pertaining to applied microbiology. Prerequisite: permission of instructor. Credit/no-credit only. Offered: jointly with MICROM 588; AWSpS.

CHEM E 590 Advanced Topics in Biomaterials (3) Major, controversial issues in application of synthetic materials to medical problems. Blood compatibility, bioadhesion, intraocular lenses, contact lenses, polyurethanes, biodegradation, protein adsorption, corrosion, bone fixation, new materials, artificial heart, medical device regulation. Prerequisite: BIOEN 490 or CHEM E 490. Offered: jointly with BIOEN 590.

CHEM E 591 Robotics and Control Systems Colloquium (1, max. 30) Colloquium on current topics in robotics and control systems analysis and design. Topics presented by invited speakers as well as on-campus speakers. Emphasis on the cross-disciplinary nature of robotics and control systems. Credit/no-credit only. Offered: jointly with A A 591/E E 591/M E 591.

CHEM E 593 Advanced Surface Analysis (3) *D. CASTNER* Covers the latest advanced in surface analysis instrumentation and methodology, including advanced methods of biorecognition AFM, surface Plasmon resonance, x-ray photoelectron spectroscopy, sum frequency generation spectroscopy, time-of-flight secondary ion mass spectrometry, and multivariate analysis. Prerequisite: either CHEM E 558 or BIOEN 592. Offered: jointly with BIOEN 593; W.

CHEM E 599 Current Topics in Chemical Engineering (1-5, max. 12) Readings or lectures and discussions of topics of current interest in the field of chemical engineering. Subject matter changes from year to year. Prerequisite: permission of instructor.

CHEM E 600 Independent Study or Research (*-) Offered: AWSpS.

CHEM E 700 Master's Thesis (*-) Offered: AWSpS.

CHEM E 800 Doctoral Dissertation (*-) Offered: AWSpS.

Nanoscience and Molecular Engineering

NME 220 Introduction to Molecular and Nanoscale Principles (4) *NW* Introduction to theories and concepts of molecular and nanoscale systems to raise awareness of technological and societal transformations anticipated through progress in nanotechnology. Prerequisite: either CHEM 142, CHEM 144, or CHEM 145; either MATH 126 or MATH 136; PHYS 121.

NME 221 Nanoscience and Molecular Engineering Seminar I (1) *Overney* Introduces nanoscience and molecular engineering, and offers the opportunity of a first intellectual and interdisciplinary forum with interactions with members of research groups in the field. First in a series of three. Prerequisite: NME 220, which may be taken concurrently. Credit/no-credit only.

NME 321 Nanoscience and Molecular Engineering Seminar II (1) *Overney* Demonstrates how to tackle research challenges, put results into the framework of the open literature, and present and interpret data. Discusses contemporary societal and ethical aspects in nanoscience and molecular engineering. Second in a series of three. Recommended: NME 221. Credit/no-credit only.

NME 421 Nanoscience and Molecular Engineering Seminar III (1) *Overney* Provides students with the opportunity to present their research results obtained during undergraduate research studies. Assessing the work of their peers and receiving feedback on their work, students further refine their ability in conducting and presenting research. Third in a series of three. Prerequisite: NME 321. Credit/no-credit only.

NME 498 Special Topics in Nanoscience and Molecular Engineering (1-4, max. 12) *Overney* Topics of current interest in the field.

Civil and Environmental Engineering

201 More

Civil and environmental engineering is a profession which interfaces closely with society in the planning, design, construction, and management of facilities serving the needs of people. These activities focus on: transportation infrastructure and construction; heavy construction; hydrology and hydrodynamics; structures, mechanics, and geotechnical engineering; wastewater treatment, and water-quality management; solid- and hazardous-waste disposal; and air quality management.

A civil engineer may specialize in one or several of these activities and may further specialize in a particular function, such as design or management. The work frequently provides close associations with the legal profession, urban and regional planners, economists, public officials, biologists, chemists, financial consultants, architects, and system analysts. Education and practice require a consideration not only of the technological-science aspects of a particular problem but also of its relationship to social, economic, political, and environmental constraints. Civil and environmental engineers create and maintain infrastructure in a heavily human-influenced ecosystem.

To accommodate these wide interests, the department is organized into six academic areas: construction engineering; transportation engineering; geotechnical engineering; structural engineering and mechanics; environmental engineering; and hydrology and hydrodynamics.

UNDERGRADUATE PROGRAM

Adviser

201 More, Box 352700

(206) 543-5092

ceadvice@uw.edu

The Department of Civil and Environmental Engineering offers the following program of study:

- The Bachelor of Science in Civil Engineering degree

The BSCE degree is appropriate for students interested in civil and environmental engineering. The BS program is accredited by the Engineering Accreditation Commission of ABET, www.abet.org.

Bachelor of Science in Civil Engineering

Suggested First- and Second-Year Courses: MATH 124, MATH 125, MATH 126, MATH 308; CHEM 142; PHYS 121, PHYS 122; AMATH 301 (preferred) or CSE 142; A A 210; CEE 220; M E 230; English composition.

Department Admission Requirements

Applicants are considered in three groups - Direct Freshman Admission, Early Admission, and Upper-Division Admission. Admission is competitive. Completion of minimum requirements does not guarantee admission. All applicants have the right to petition and appeal the department's admission decision. Applications are accepted for autumn quarter only. Applications for Early and Upper-Division Admission are accepted through the College of Engineering online application form. For more information, see information for prospective students on the department website.

Direct Freshman Admission

The department enrolls up to 20% of its incoming class directly from high school, prior to completion of University-level prerequisites. Students accepted to the UW who indicate Civil and Environmental Engineering as their preferred major on the freshman application are automatically considered. Competitive applicants have taken or are taking calculus and at least two years of laboratory science (physics, chemistry preferred) in high school. Admission is for autumn quarter only.

Early Admission

1. Admission is for autumn quarter only. Departmental application deadline is July 1.
2. *Course Requirements:* MATH 124, MATH 125, MATH 126; 10 credits of physical science courses plus accompanying laboratory at the level of PHYS 121, PHYS 122, PHYS 123, or CHEM 142, CHEM 152; and 5 credits of English composition. All courses must be completed prior to the July 1 application deadline.
3. Applicants must be currently enrolled at the UW and must have a minimum 15 credits taken in residence at the UW.
4. *Grade Requirements:* Minimum 2.0 grade in each course required for admission and minimum 2.50 cumulative GPA for all courses required for admission
5. Completion of minimum requirements does not guarantee admission.

Upper-Division Admission

1. Admission is for autumn quarter only. Departmental application deadline is July 1.
2. *Course requirements:* MATH 124, MATH 125, MATH 126, MATH 308; CHEM 142; PHYS 121, PHYS 122; AMATH 301 (preferred) or CSE 142; AA 210; CEE 220; M E 230; and 5 credits of English composition.
3. *Grade requirements:* Minimum grade of 2.0 in each course and a minimum cumulative GPA of 2.50:
4. Completion of minimum requirements does not guarantee admission.

Graduation Requirements

Minimum 180 credits as follows:

1. *General Education Requirements (85-87 credits)*
 - a. *Written and Oral Communication (8 credits):* English composition; HCDE 231
 - b. *Visual, Literary, & Performing Arts (VLPA) and Individuals & Societies (I&S) (24 credits):* Minimum 10 credits in VLPA and minimum 10 credits in I&S plus 4 additional credits in either area.
 - c. *Economics (4-5 credits):* ECON 200 or IND E 250. ECON 200 may also be applied toward the I&S requirement. IND E 250 may also be applied toward the requirement for an additional Engineering Fundamentals course.
 - d. *Natural World (49-50 credits)*
 - ii. *Mathematics (21 credits):* MATH 124, MATH 125, MATH 126, MATH 307 (or AMATH 351), MATH 308 (or AMATH 352)
 - iii. *Statistics (3-4 credits):* IND 315 (preferred) or STAT 390
 - iv. *Science (25 credits):* CHEM 142, CHEM 152; PHYS 121, PHYS 122, PHYS 123
2. *Major Requirements (94-97 credits)*
 - a. *Engineering Fundamentals (20 credits):* AMATH 301 or CSE 142, A A 210, CEE 220, and ME 230. Students who complete STAT 390 must complete an additional engineering fundamentals course from A A 260, IND E 250, IND E 280, M E 123, E E 215, or MSE 170. Students who complete IND E 315 must complete either an additional Engineering Fundamentals course from the above list, or an additional 300-level math course other than statistics.
 - b. *Civil Engineering Core (40 credits):* CEE 307, CEE 317, CEE 327, CEE 337, CEE 347, CEE 357, CEE 367, and CEE 377.
 - c. *Professional Practice and Capstone Design (7 credits):* CEE 440 and one course from CEE 441, CEE 442, CEE 444, or CEE 445. Minimum 2.0 grade required for both courses in this two-course sequence.
 - d. *Civil Engineering Technical Electives (15 credits):* CEE 400-level coursework selected from an approved list (see adviser or department website for list), with at least one core course from three separate areas of concentration within the department. Minimum 2.0 grade required for each of the three courses used to fulfill the core-courses requirement.
 - e. *Upper-Division Engineering and Science (12 credits):* Choice of additional CEE 400-level courses or courses from an approved list from outside the department. Maximum 6 credits of CEE 498 and 3 credits of CEE 499 allowed toward upper-division engineering and science.
 - f. *Grade Requirements:* Minimum 2.00 GPA in all engineering courses with no grade below 1.0 in these courses.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Upon completion of the undergraduate program, students can demonstrate proficiency in applying fundamental mathematical, statistical, scientific, and engineering principles in formulating and solving civil and environmental engineering problems; demonstrate sufficient mastery of core civil and environmental engineering topics suitable for entry into the profession and for graduate study; gain significant experience in designing systems and components in civil and environmental applications in both individual and team contexts; possess up-to-date skills for analysis, data collection, modeling, project management, professional development, communication, and presentation; and develop an understanding of professional and social issues suitable for participation and leadership in their communities.

standing of professional and social issues suitable for participation and leadership in their communities.

- *Instructional and Research Facilities:* The department has a large and modern computer laboratory as well as substantial research laboratory facilities. The environmental science and hazardous waste research laboratory facilities include more than 7,000 square feet of lab space, well equipped with sophisticated research instruments, including state-of-the-art analytical capability for trace organic compounds. The lake-stream laboratory is equipped with limnological equipment, as well as an auto-analyzer, bench-top incubators, and research microscopes. The structural research laboratory contains an earthquake simulator, a modern MTS testing system, and a 2.4 million pound capacity Baldwin universal hydraulic testing machine. The geotechnical engineering laboratory contains soil testing equipment, including triaxial testing devices, a computer-controlled GDS pressure control system, a Bishop-Wesley cell, a recently developed cuboidal shear device, a CKC cyclic triaxial device, and a SBEL (Stokoe) resonant column.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Students typically work at internships in private companies and government agencies in the summer after their junior year, with some part-time internships continuing during the academic year. Many companies advertise internship and job openings through the department and meet with students for on-campus recruiting sessions.
- *Department Scholarships:* The department offers numerous annual scholarships. The application deadline for departmental scholarships is April 1. For more information, see department website. Scholarships are also available through the College of Engineering, the UW Scholarship Office, and external sources, including professional associations and industry.
- *Student Organizations/Associations:* American Society of Civil Engineers. Chi Epsilon, national honor society for civil engineering undergraduate and graduate students. See adviser for details.

GRADUATE PROGRAM

Graduate Program Coordinator

201 More, Box 352700

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The Department of Civil and Environmental Engineering offers programs of study leading to the degrees of Master of Science in Civil Engineering (MSCE), Master of Sustainable Transportation (MST), Master of Supply Chain Transportation and Logistics (MSCTL), and Doctor of Philosophy.

Graduate work is offered in most fields of civil and environmental engineering, including transportation and construction engineering; geotechnical engineering; structural engineering and mechanics; environmental engineering; and hydrology and hydrodynamics.

Graduate Online Programs:

Construction Engineering Master's Program: The Department of Civil and Environmental Engineering, in collaboration with the Department of Construction Management in the College of Built Environments, offers an online Master of Science in Civil Engineering degree in Construction Engineering. Designed for working professionals, this program can be completed entirely online and at the student's own pace. Areas covered include heavy construction project management, infrastructure construction, and qualitative

construction management. For more information on this program, see the Construction Engineering website.

Master in Sustainable Transportation Program: The Department of Civil and Environmental Engineering, in partnership with UW Professional and Continuing Education, offers an online Master of Sustainable Transportation degree (MST). The program provides transportation engineers and planners with the latest knowledge, skills, and tools needed to become leaders in developing and maintaining sustainable transportation practices. Students develop an awareness of green transportation strategies and gain a solid background with practical applications. In a part-time online format, the MST program covers three areas of concentration: Planning and Livable Communities; Environmental Issues and Impacts; and Policy Development, Health and Economics. For more information on this program, see the Master of Sustainable Transportation website.

Supply Chain Transportation and Logistics Master's Program: The Department of Civil and Environmental Engineering, in partnership with UW Professional and Continuing Education, offers an online Master of Supply Chain Transportation and Logistics degree. The program provides students with the knowledge needed to successfully design, implement and manage supply chain transportation and logistics strategies. Students study cross-functional areas of the supply chain, including operations, transportation and inventory management, and gain skills to design resilient supply-chain strategies. For more information on this program, see the Master of Supply Chain Transportation and Logistics website.

Master of Science in Civil Engineering

Admission Requirements

Priority for admission is based on an applicant's apparent ability to progress satisfactorily in a graduate degree program. The applicant's scholastic record is of major importance; usually, at least a "B" or 3.00 GPA in the junior and senior years is required. Consideration is also given to Graduate Record Examination scores and other information.

Degree Requirements

42 credits, as follows:

Two options are available -- thesis and non-thesis.

Thesis option:

1. 30 credits of coursework with at least 18 credits at the 500 level
2. 3 credits (maximum) of CEE 500
3. 9 credits of master's thesis, CEE 700

Non-thesis option:

1. 39 credits of coursework with at least 18 credits at the 500 level
2. 3 credits (maximum) of CEE 500

Doctor of Philosophy

Admission Requirements

Priority for admission is based on an applicant's apparent ability to progress satisfactorily in a research-based graduate degree program. The applicant's scholastic record is of major importance; usually, at least a "B" or 3.00 GPA in the junior and senior years is required. Consideration is also given to Graduate Record Examination scores and other information.

Degree Requirements

90 credits, as follows:

1. 60 coursework credits
2. 27+ dissertation credits

3. 3 seminar credits (for those without a master's degree from CEE at UW)

With the approval of the department, an appropriate master's degree from an accredited institution may be applied towards 30 of the 60 coursework credits.

Because this is a research-based degree, course requirements are individualized depending on student's background and PhD topic area.

Financial Aid

Research and teaching assistantships are available on a competitive basis. The number of positions depends upon the current level of funding. Additionally there are a limited number of fellowships, scholarships, and traineeships.

Research Facilities

More Hall has structural, concrete, bituminous materials, soil mechanics, computer, water-quality, solid-wastes, and air-quality laboratories as well as an air-monitoring station and equipment for fieldwork in the construction, water, air, and solid-waste programs. Facilities for experimental studies in hydrology and hydrodynamics are located in the Harris Hydraulics Laboratory.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

CEE 100 Twenty-First Century Civil and Environmental Engineering (1) Introduction to the modern discipline of civil and environmental engineering including major sub-disciplines, professional careers, projects, and departmental faculty. Explores the different disciplines and their relevance to today's students. Credit/no-credit only. Offered: W.

CEE 220 Introduction to Mechanics of Materials (4) NW Berman, Reed Introduction to the concepts of stress, deformation, and strain in solid materials. Development of basic relationships among loads, stresses, and deflections of structural and machine elements such as rods, shafts, and beams. Load-carrying capacity of these elements under tension, compression, torsion, bending, and shear forces. Prerequisite: minimum grade of 2.0 in AA 210. Offered: WSpS.

CEE 250 Environmental Processes and flows (3) NW Brett Introduces the concepts of environmental materials and energy balance within the context of Pacific Northwest case studies, in particular nutrient loading, eutrophication, hypoxia/fish kills, water treatment, and global climate change and its regional impacts on water resources and hydrologic cycles. Prerequisite: either MATH 120, or MATH 124. Offered: Sp.

CEE 291 Introduction to AutoCAD for Civil Engineers (2) NW Introduces engineering drafting and graphical communication. Application of drafting standards and structure, creating and modifying basic drawings in 2D and 3D drafting in AutoCAD. Introduction to reading plan sets and creating portions of plan sets applied to civil and environmental engineering fields. Offered: AWSpS.

CEE 297 Foreign Study (3-5, max. 15) For participants in approved foreign-study programs. May not be used to satisfy upper-division major requirements.

CEE 298 Special Topics in Civil and Environmental Engineering (1-5, max. 10) Explores special topics in civil and environmental engineering.

CEE 299 Independent Project (1-5, max. 10) Research on special topics under supervision of a faculty member. May not be used to satisfy upper-division major requirements. Offered: AWSpS.

CEE 307 Construction Engineering (5) Introduces construction engineering including construction methods, engineering economics, contracts, project delivery methods, plan and specifications, scheduling, estimating, productivity,

environmental regulations, safety and green construction. Uses scheduling and estimating software tools and emphasizes communication engineering information. Offered: AW.

CEE 317 GeoSurveying (5) Covers measurement and digital mapping techniques; integration of surveying methods and techniques, monitoring of structures; spatial data collection and integration with surveying data; adjustment of measurements, concepts of error; surveying control; coordinate systems, transformation; highway vertical curves; and Earthwork, leveling and datum consideration, photogrammetry, GPS, GIS, remote sensing, cadastral and construction surveys, digital mapping and drafting. Prerequisite: either MATH 126, MATH 134, MATH 135, or MATH 136; recommended: a course in statistics. Offered: A.

CEE 327 Transportation Engineering (5) Studies vehicular transportation fundamentals including vehicle dynamics, geometric design, pavement design, traffic flow concepts, level of service analysis, intelligent transportation systems, travel demand prediction methods, freight logistics, and management of transportation systems. Includes a review of relevant vehicle operating characteristics. Prerequisite: PHYS 121; either MATH 126, MATH 134, MATH 135, or MATH 136. Offered: WSp.

CEE 337 Construction Materials (5) General treatment of physical and mechanical properties and engineering behavior of metallic and nonmetallic materials. Steel, aluminum, aggregates, portland cement concrete, bituminous materials, asphalt concrete, wood. Laboratory testing, instrumentation, and investigation into macro-behavior. Sustainability issues including recycling, energy requirements, and greenhouse gas production associated with the materials. Prerequisite: CEE 220. Offered: ASP.

CEE 347 Introduction to Fluid Mechanics (5) Horner-Devine, Lundquist, Thomson Introduces the mechanics of incompressible fluids and their applications. Hydrostatic pressure forces. Kinematics, potential flows, and the Bernoulli equation. Conservation of mass, momentum, and energy. Laminar and turbulent flows. Flow in pipes, pipe networks, and open channel flows. Prerequisite: CEE 220; M E 230; PHYS 122. Offered: AW.

CEE 357 Environmental Engineering (5) Describes water and air resources, parameters that characterize their quality, and how their use alters their properties. Elements of hydrology. Mass and energy balances as applied to environmental systems. Global environmental change. Basics of aquatic chemistry and microbiology applied to municipal water and wastewater treatment operation. Groundwater contamination and treatment. Prerequisite: CHEM 142; either MATH 126, MATH 134, MATH 135, or MATH 136. Offered: WSp.

CEE 367 Geotechnical Engineering (5) Arduino, Kramer, Wartman Fundamental engineering properties of soil and rock; depositional processes and physical characteristics, hydro-conductive properties and advective flow; volume change characteristics including short- and long-term deformation; shear strength properties; and applications of basic concepts to practical problems such as foundation design and slope stability. Prerequisite: CEE 347. Offered: WSp.

CEE 377 Introduction to Structural Design (5) Berman, Eberhard, Reed, Roeder Introduces the concepts, approaches, procedures, and codes for the structural design. Characterization of structural loads. Structural systems and system behavior. Analysis of statically determinate structures and introduction to analysis of statically indeterminate structures including approximate methods. Introduction to the behavior and design of fundamental structural member. Prerequisite CEE 220. Offered: AW.

CEE 404 Infrastructure Construction (4) S. MUENCH Basic concepts of large transportation infrastructure construction projects including planning, scheduling, life-cycle cost analysis (LCCA), construction cost, logistics, productivity and, where applicable, traffic impacts. Uses current and prototype industry software. Term project is designed around a large-scale I-5 pavement reconstruction project involving construction, traffic, and the interaction between the two.

Involves presentations on a number of local transportation infrastructure projects. Prerequisite: CEE 307. Offered: W.

CEE 409 Engineering Rome: Study Abroad ([1-4]-, max. 5) Muench Covers Roman civil engineering over 3,000 years from Ancient Rome to the present day. Introduces civil engineering topics reinforced by practical engineering calculations, local experts, and site visits. Provides international and historical perspective on engineering and the contributions of engineers to infrastructure and society.

CEE 410 Traffic Engineering Fundamentals (3) General review of the fundamentals of traffic engineering, including their relationship to transportation operations management and planning, with emphasis on calculations and procedures in the Highway Capacity Manual; field surveys and data analysis. Prerequisite: CEE 327. Offered: W.

CEE 412 Transportation Data Management (3) Wang Introduction to modern concepts, theories, and tools for transportation data management and analysis. Applications of software tools for transportation data storage, information retrieval, knowledge discovery, data exchange, online information sharing, statistical analysis, system optimization, and decision support. Prerequisite: CEE 327. Offered: W.

CEE 416 Urban Transportation Planning and Design (3) Brief review of major issues in urban transportation planning. Planning process discussed and transportation models introduced. Uses a systems framework, including goals and objectives, evaluation, implementation, and monitoring. A design term project, individual or small groups, utilizes material presented on a contemporary problem. Prerequisite: CEE 327. Offered: A.

CEE 418 Computer-Aided Planning of Urban Systems (3) Survey of online planning applications; use of various on-line systems to solve urban systems design problems; investigations of hardware/software tradeoffs; human factors in man-computer systems design theory as it relates to problem-solving activity. Offered: jointly with URBPD 429.

CEE 421 Pavement Design (3) J. MAHONEY Current and developing procedures for the structural thickness design of pavements. Bituminous and concrete pavements for highways and special heavy loading. Elastic layered systems, slab theory. Maintenance and overlay design. Prerequisite: CEE 337. Offered: W.

CEE 424 GIS for Civil Engineers (3) GIS in civil engineering applications. Geographic and spatial data types and acquiring considerations. Data models and structures. Projections and transformations. Attribute-based operation, spatial operations. Surfaces and near neighbors. Training on Arc GIS software. Recommended: CEE 317. Offered: AS.

CEE 425 Reinforced Concrete Construction (3) D. JANSSEN Processes in constructing reinforced concrete structures. Identification and development of solutions to potential constructability problems. Lectures augmented with industry speakers and a field trip to a building under construction. Requires senior or graduate standing in Civil Engineering or Construction Management and familiarity with reinforced concrete design/construction. Prerequisite: either CEE 291 or AutoCAD experience; a minimum grade of 2.5 in either CEE 428 or CEE 452. Offered: Sp.

CEE 428 Lightweight Cementitious Composites ([0-2]-, max. 2) Janssen Introduces the process of designing within constraints and introductory experimental design. Covers the importance of proper laboratory documentation. Examines the characteristics of cementitious binders and elementary composite behavior. Considers constructability. Interprets pre- and post-cracking elastic behavior. Includes organization and production of technical report the documents work performed. Offered: A.

CEE 431 Seismology and Earthquake Engineering (3) NW Presents an overview of earthquake processes and details of the characteristics of destructive ground motion; illustrates the effects of such motion on engineering structures; reviews current practice in estimating earthquake hazards for important structures such as nuclear power plants. Prerequisite: either ESS 310, MATH 126, MATH 134, or both MATH 307 and MATH 308. Offered: jointly with ESS 465.

CEE 436 Foundation Design (3) Design considerations for foundations and retaining structures. Subsurface investigations and determination of soil properties for design. Design of shallow and deep foundations and retaining structures. Foundations and soil considerations for waterfront structures. Prerequisite: CEE 367. Offered: AWSp.

CEE 437 Engineering Geology I (3) General overview of engineering geology and its importance to civil engineers. Topics include geologic processes, hazards, subsurface investigations, classification of geologic materials, data synthesis, and natural construction materials.

CEE 440 Professional Practice Studio (2) Fundamentals of integrated civil engineering design, professional services marketing, project management, team dynamics, total quality management, value engineering, professional liability, and applied ethics in engineering practice. Emphasis on written and oral communications and on ethical, social, and economic factors. Offered: W.

CEE 441 Transportation and Construction Capstone Design Project (4) Comprehensive design project focusing on planning, design, and construction of a transportation project such as highways, transit, and airports. Prerequisite: CEE 327; CEE 440; either CEE 404, CEE 410, CEE 412, CEE 416, CEE 421, CEE 424, or CEE 425. Offered: Sp.

CEE 442 Structural Geotechnical Capstone Design Project (5) Comprehensive team design project focusing on structural and geotechnical engineering. Requires design drawings, written reports, and oral presentations interfacing with related fields such as aesthetics and architecture, mechanical systems, traffic, environmental planning. Prerequisite: CEE 440; two courses from CEE 436, CEE 451, CEE 452, CEE 453, CEE 454, CEE 456, or CEE 457. Offered: Sp.

CEE 444 Water Resources and Hydraulic Engineering Capstone Design Project (5) Opportunity to effect design solutions for projects or major project components in such representative areas as reservoirs and associated systems for flood control, water supply, irrigation, and hydroelectric power, surface water control systems, fisheries related projects, small harbors, and coastal engineering problems. Prerequisite: either CEE 345 or CEE 347; CEE 440; either CEE 475, CEE 476, CEE 482, CEE 483, or CEE 484. Offered: Sp.

CEE 445 Environmental Engineering Capstone Design Project (5) Individual and group design studies addressing environmental engineering problems such as stormwater management, water and wastewater treatment facilities, and residual processing. Prepare proposals, engineering reports, and alternative evaluations; process equipment design, present reports on selected design problems. Prerequisite: either CEE 345 or CEE 347; CEE 440; either CEE 473, CEE 475 CEE 476, CEE 481, CEE 482, CEE 483, or CEE 484. Offered: Sp.

CEE 451 Design of Metal Structures (3) J. BERMAN, C. ROEDER Introduction to the design and behavior of metal structures using LRFD concepts. Application of design methods and codes to columns, beams, frames, connections, and tension members. Prerequisite: CEE 377; recommended: CEE 456; CEE 458. Offered: A.

CEE 452 Design of Reinforced Concrete Structures (3) D. LEHMAN, D. REED, J. STANTON Fundamentals of design of buildings in reinforced concrete in accordance with current codes and practices. Prerequisite: CEE 377; recommended: CEE 457. Offered: AS.

CEE 453 Prestressed Concrete Design (3) Eberhard, Stanton Analysis, design, and construction of prestressed concrete structures. Prerequisite: CEE 452. Offered: W.

CEE 454 Design of Timber Structures (3) Berman, Reed Includes the design and construction of timber structures, using elements made of sawn wood, glued-laminated wood, and manufactured wood products. Prerequisite: CEE 377. Offered: W.

CEE 455 Structural Unit Masonry (3) Tawresy Structural behavior and design of reinforced brick, tile, and unit concrete masonry structures. Prerequisite: CEE 377. Offered: jointly with ARCH 426.

CEE 456 Structural Analysis (5) Berman, Eberhard, Lowes Fundamental analysis and modeling of civil structural systems. Equilibrium, kinematics, and constitutive relations; formal solution procedures emphasizing element-based stiffness methods; computer-based and manual techniques; verification and interpretation of results; case studies involving real structures; introduction to finite element analysis of 2D continua. Prerequisite: CEE 377. Offered: Sp.

CEE 457 Advanced Structures I (3) L. LOWES Introduction to the finite element method for modeling civil structures. Formulation of line and continuum elements using virtual work and the principal of minimum potential energy. MATLAB programming of the finite element method. Use of commercial software to model real structures. Prerequisite: CEE 456. Offered: W.

CEE 458 Advanced Structures II (3) Miller, Stanton Introduction to stability, including a consideration of elastic and inelastic buckling with applications to beam-columns and plates. Introduction to plastic analysis. Prerequisite: CEE 456.

CEE 459 Advanced Structural Mechanics (3) Formulation and solution of the basic equations of elasticity. Applications in 2-D stress analysis, torsion, thermal stresses, and beams on elastic foundation. Plate theory optional. Prerequisite: CEE 377.

CEE 462 Applied Limnology and Pollutant Effects on Freshwater (3) NW Principles of aquatic ecology that relate to causes and effects of water quality problems in lakes and streams. Population growth kinetics, nutrient cycling, eutrophication; acidification, oxygen/temperature requirements, and effects of various wastes on aquatic animals. Offered: W.

CEE 463 Limnology Laboratory (2) NW Examination of biota of fresh waters, survey of limnological methods, analysis of data, and writing of scientific papers. Prerequisite: BIOL 473/FISH 473/CEE 462, which may be taken concurrently. Offered: jointly with BIOL 474/FISH 474; A.

CEE 472 Introduction to Hydraulics in Water Resources (3) Hydraulics related to environmental issues. Global hydrology; stratified flows; two-phase (bubble) flows; pollutant transport and mixing in reservoirs, lakes, coastal waters, and oceans; diffuser design and related case studies. Prerequisite: CEE 347.

CEE 473 Coastal Engineering I (3) Thomson Linear theory of water waves, wave transformations near shore, sediment motion, and elementary tidal theory; shoreline protection methods; and applications illustrated by selected case histories. Prerequisite: CEE 347.

CEE 474 Hydraulics of Sediment Transport (3) A. HORNER-DEVINE Introduction to sediment transport in steady flows with emphasis on physical principles governing the motion of sediment particles. Topics include sediment characteristics, initiation of particle motion, particle suspension, bedforms, streambed roughness analysis, sediment discharge formulae, and modeling of scour and deposition in rivers and channels. Prerequisite: CEE 347. Offered: Sp.

CEE 475 Analysis Techniques for Groundwater Flow (3) R. NEUMANN Presents the fundamentals of subsurface flow and transport, emphasizing the role of groundwater in hydrologic cycle, the relation of groundwater flow to geologic structure, and the management of contaminated groundwater. Concepts are applied to well-known hydrogeologic sites. Prerequisite: CEE 347. Offered: W.

CEE 476 Physical Hydrology (3) Istanbuloglu Global water picture, data sources and data homogeneity, precipitation and streamflow hydrography analysis; calculation of surface runoff, evapotranspiration, and groundwater recharge. Hydrologic data frequency analysis and probability theory. Hydrologic design: flood mitigation, drainage. Introduction to deterministic and stochastic models. Prerequisite: CEE 347. Offered: A.

CEE 477 Open-Channel Flow (3) Jessup. Water flow in natural and engineered channels, rivers, and streams. Analysis and design of channels (lined, vegetated), flow controls (weirs, spillways), and structures affecting fish passage

(culverts). Prediction of water surface profiles. Introduction to river mechanics. Design-oriented problems. Prerequisite: CEE 347. Offered: W.

CEE 480 Air-Quality Modeling (3) NW Evaluation of air-quality models relating air pollution emissions to environmental concentrations. Emphasis on models used for air pollution permits. Emphasizes current problems. Offered: jointly with ATM S 480; W.

CEE 481 Hydraulic Design for Environmental Engineering (3) E. ISTANBULLUOGLU Introduction to the theory and the practice of planning and design of urban water supply distribution, pump stations, sewage and storm-water collection systems, and green stormwater infrastructure. Engineering methods and computer programs are applied for designing basic system elements. Prerequisite: CEE 347; CEE 357. Offered: W.

CEE 482 Wastewater Treatment and Reuse (3) Introduces wastewater treatment and systems, emphasizing fundamental biological, chemical, and physical processes related to protection of public health environmental quality and water reuse. Process analysis of the configuration and sizing of major types of treatment processes for various sizes of plants and effluent requirements. Prerequisite: CEE 357. Offered: A.

CEE 483 Drinking Water Treatment (3) Studies scientific, engineering, and regulatory principles underlying drinking water treatment; development of conceptual models for how and why treatment processes work and mathematical models describing their performance under various design and operating scenarios; field trips to water treatment systems. Prerequisite: CEE 357. Offered: A.

CEE 484 Decentralized and On-Site Wastewater Management and Reuse (3) Design and performance of on-site and decentralized wastewater treatment. Determination of appropriate alternatives based on endpoints of water reuse, economics, policy, management, water quality, and ecological considerations. Meeting sanitation and water reuse for situations including, individual homes, rural areas, developing countries, and high density urban dwellings. Prerequisite: CEE 357.

CEE 487 Solid-Waste Disposal (3) Describes sources and handling of municipal and industrial solid waste, with examination of collection, processing, recycling and resource recovery, and disposal alternatives. Public policy issues, local agencies and solid waste facilities, the legal and regulatory framework are all addressed in context of solid waste engineering.

CEE 488 Hazardous Wastes Engineering (3) Classification of hazardous wastes; resource conservation, Recovery Act regulations; characteristics and behavior of toxic organics; superfund; groundwater contamination, solutions. Hazardous waste site remedial action; case histories; sampling; landfill design. Stabilization and processing technologies, including incineration, carbon adsorption, emerging techniques. Prerequisite: CEE 357. Offered: Sp.

CEE 489 Water and Air Quality Sampling (2) Samples collected from lakes, streams, precipitation, and air. Resulting (and supplemental) data interpreted for cause-effect and statistical inference. Design for water and air quality monitoring programs. Prerequisite: CEE 462.

CEE 490 Air-Pollution Control (4) Fundamental concepts of air pollution Control including emission sources, atmospheric dispersion, ambient concentrations, and emission standards, with emphasis on processes and equipment for controlling emissions. Offered: jointly with ENV H 461; ASp.

CEE 491 Deterministic Systems (3) Development of quantitative methods for mathematical problem solving with emphasis on computer applications. Linear programming, mathematics of the simplex algorithm, sensitivity analysis, dynamic programming, systems simulation, and goal programming. Class project required. Recommended: a course in statistics. Offered: A.

CEE 492 Stochastic Systems (3) Introduction to probability distributions and statistics useful in systems analysis, conditional distributions, queuing theory and applications,

Monte Carlo simulation, chance-constrained mathematical programming, and stochastic dynamic programming. Emphasis on application of the techniques to civil engineering systems problems, including transportation, water resources, and structures. Prerequisite: CEE 491.

CEE 493 Air-Pollution Source Testing and Equipment Evaluation (3) Engineering evaluation of air pollutant sources and air control equipment. Fundamentals of source testing and stack sampling, including laboratory exercises.

CEE 494 Air-Pollution Control Equipment Design (3) Designs to control air pollutants from stationary sources. Procedures for calculating design and operating parameters. Fundamental mechanisms and processes of gaseous and particulate control equipment for absorption and adsorption of gaseous pollutants; electrostatic precipitation and filtration of particulate pollutants. Actual case studies. Offered: jointly with CHEM E 468/M E 468.

CEE 495 Sustainability and Design for Environment (3) Cooper Analysis and design of technology systems within the context of the environment, economy, and society. Applies the concepts of resource conservation, pollution prevention, life cycle assessment, and extended product responsibility. Examines the practice, opportunities, and role of engineering, management, and public policy. Offered: jointly with ENVIR 415/M E 415.

CEE 496 Fate and Transport of Chemicals in the Environment (3) Neumann Presents a general introduction to the fundamental physical, chemical, and biological processes governing the movement and fate of chemicals in surface water and groundwater. Provides basic literacy in environment transport and fate processes, creating a solid foundation for accessing and synthesizing material on these topics. Offered: A.

CEE 497 Engineering Jordan: Water in an Arid Land Study Abroad (5) Gough Examines impacts of a hot dry climate on water engineering systems by studying the engineered water cycle in Jordan including: water cycles and sources in Jordan; drinking water treatment and desalination; wastewater treatment and reuse; decentralized and on-site treatment; and ancient water engineering.

CEE 498 Special Topics (1-5, max. 12) Special topics in civil engineering offered as course with lecture or laboratory.

CEE 499 Independent Study/Research (1-5, max. 12) Individual undergraduate research project. Recommended: 400-level CEE course.

CEE 500 Civil and Environmental Engineering Seminars (1, max. 3) Prerequisite: graduate standing in Civil and Environmental Engineering. Credit/no-credit only.

CEE 501 Structural Mechanics (6) Mackenzie, Miller Equations of a continuum for small displacements, applications to linear elasticity. Kirchhoff plate theory, problems in advanced strength of materials. Virtual work, minimum potential energy, force and displacement methods of structural analysis. Direct stiffness method. Approximate solutions, geometric stiffness matrix. Linearized buckling. Offered: A.

CEE 502 Structural Dynamics (3) Eberhard, Stanton Lagrange's equations. Free vibrations of linear, single, and multiple degree of freedom systems. Damping. Mode superposition. Forced vibrations by time history and by response spectrum methods. Free and forced vibrations of continuous systems. Wave propagation in rods and beams. Prerequisite: CEE 501. Offered: W.

CEE 503 Materials Modeling (3) Behavior of materials used in civil engineering structures. Yield and failure surfaces. Physical and phenomenological models of plastic and viscoelastic behavior. Fracture mechanics. Fatigue models and predictions. Damping and friction. Behavior of anisotropic and composite materials. Offered: S.

CEE 504 Finite Element Methods in Structural Mechanics (3) Mackenzie, Lowes, Miller Extension of the matrix methods of structural analysis to the solution of elasticity, plate, and shell problems by use of finite element approximations. Discussion of convergence and bounding and extension to

investigation of stability and finite deformations. Prerequisite: CEE 501 or permission of instructor. Offered: W.

CEE 505 Engineering Computing (3) Lowes, Mackenzie, Miller Applied computing in civil and environmental engineering contexts, including physical systems modeling, graphics and visualization, and data management. Program development using contemporary tools and strategies. Computer architecture fundamentals, theoretical and practical issues affecting memory use and performance. Offered: A.

CEE 506 Nonlinear Analysis of Structural Systems (3) Lowes, Miller, Mackenzie Formulation, solution, and interpretation of nonlinear numerical models of structural systems. Material and geometric nonlinearities for truss, beam, and frame systems. Resultant-based material laws. Large deformations. Solutions procedures, arc-length methods. Introduction to parameter identification. Prerequisite: CEE 501. Offered: Sp.

CEE 509 Engineering Rome: Study Abroad ([1/4]-, max. 5) Muench Covers Roman civil engineering over 3,000 years from Ancient Rome to the present day. Introduces civil engineering topics reinforced by practical engineering calculations, local experts, and site visits. Provides international and historical perspective on engineering and the contributions of engineers to infrastructure and society.

CEE 511 Advanced Reinforced Concrete (3) Eberhard, Stanton Behavior and design of reinforced concrete members and structures. Members subject to torsion and torsion combined with flexure and shear; members with small shear span/depth ratios, slabs. Prerequisite: CEE 452 or equivalent. Offered: A.

CEE 512 Advanced Structural Systems (3) Eberhard, Stanton Examines structural design of floor systems for buildings, including one-way and two-way slabs, strip method, yield line theory, prestressed concrete slabs. Lateral load resisting systems for buildings. Prerequisite: CEE 453; CEE 502. Offered: Sp.

CEE 513 Advanced Steel I (3) Berman, Roeder Factors influencing strength and serviceability of steel structures; LRFD limit state design procedures. Use of theories of plasticity and stability in development of design methods and specifications, bolted and welded connections, temperature effects, and affect of different fabrication methods on behavior of structure. Prerequisite: CEE 501. Offered: W.

CEE 515 Earthquake Engineering I (3) Roeder Earthquake mechanism and ground shaking, response spectra, linear elastic methods for prediction of behavior, displacement prediction methods for inelastically behaving structures, modeling and solution schemes, earthquake design philosophy, capacity design. Reinforced concrete, steel, and base-isolated structures. Prerequisite: CEE 501, CEE 502. Offered: Sp.

CEE 516 Earthquake Engineering II (3) Roeder Performance-based design, development of fragility curves, characteristics and effects of ground-shaking records, design methods, passive and active control, dynamic inelastic time history analysis, design of parts, system detailing, soil-structure interaction, repair and retrofit of structures. Prerequisite: CEE 515. Offered: A.

CEE 517 Wind Engineering Design (3) Reed Wind effects on structures, including atmospheric boundary layer flow; bluff body aerodynamics; structural dynamics and aeroelasticity; development and use of the ASCE Standards; estimation of along-wind, across-wind, and torsional response of tall buildings; design strategies for avoiding wind-induced discomfort. Fundamentals of wind tunnel testing. Offered: A.

CEE 518 Reliability and Design (3) Reed Introduction to theory of structural reliability and its application to design procedures in civil engineering, including probability theory; assessment of uncertainties; code specification and the related concept of risk and the influence of socioeconomic factors; loads, load combinations, and probabilities of damage. Offered: AS.

CEE 521 Seepage and Consolidation (3) Confined and unconfined seepage through porous media, flow net solutions, consolidation, settlement, numerical solution of seepage,

and consolidation problems. Prerequisite: CEE 367 or equivalent.

CEE 522 Shear Strength and Slope Stability (3) Shear strength of cohesive and granular soils and slope stability analysis of natural and man-made slopes. Prerequisite: CEE 367 or equivalent.

CEE 523 Advanced Foundation Engineering (3) Design of shallow and deep foundations for bearing capacity and settlement. Construction considerations. Prerequisite: CEE 522 and CEE 527.

CEE 524 Lateral Earth Pressures and Retaining Structures (3) Lateral earth pressure theory. Design of temporary and permanent retaining structures including in situ reinforcement. Prerequisite: CEE 523; CEE 527.

CEE 525 Soil Dynamics (3) Dynamics of discrete systems; dynamics of continuous systems, wave propagation; dynamic soil properties; linear, nonlinear, and equivalent linear ground response analysis; vibrations of footings; construction vibrations; vibration isolation.

CEE 526 Geotechnical Earthquake Engineering (3) Plate tectonics and elastic rebound theory of earthquakes and faults; characterization of ground motions; seismicity; seismic risk analysis; effect of local soil conditions on ground response; development of design ground motions; liquefaction; dynamic lateral earth pressures; seismic slope stability. Prerequisite: CEE 525 or permission of instructor.

CEE 527 Advanced Geotechnical Laboratory (4) Soil and site investigation, classification and engineering properties of soils and rock as determined by standard and advanced test procedures and equipment. Evaluation of test data. Report writing. Prerequisite: CEE 367 or equivalent. Offered: A.

CEE 528 Geosynthetic Engineering (3) Identification and testing of geosynthetics. Design of geosynthetic filters, roadway stabilization, earth reinforcement, and waste containment systems. Prerequisite: CEE 522 and CEE 523.

CEE 529 Foundation Soil Improvement (3) Analysis and design of physical and chemical treatment techniques commonly applied to problem foundation soils for civil engineering structure. Prerequisite: CEE 523.

CEE 530 Engineering Geology II (3) Application of engineering geology fundamentals to: location, design, and maintenance of engineered structures; policy decisions related to potential geological hazards. Case histories, governmental policy discussions, interpretation of geological maps for engineering purposes. Prerequisite: CEE 437 or permission of instructor.

CEE 531 Rock Engineering (3) Engineering classification, physical and mechanical properties of rocks, failure modes and initial stresses in rocks, laboratory and field testing of rocks, rock slope engineering, underground openings, foundations on rocks. Prerequisite: CEE 437 or permission of instructor.

CEE 540 Microbiological Process Fundamentals (3) Stahl Fundamental concepts for microbial processes including organic chemical structure, nomenclature and environmental properties, principles of microbial metabolism, study of specific types of bacteria important to environmental engineering and their metabolism, development of microbial kinetic equations, including substrate utilization, energetics, and stoichiometry. Prerequisite: permission of instructor. Offered: A.

CEE 541 Biological Treatment Systems (3) Basic reactions, design principles, current design models, and operational considerations for biological treatment systems used in environmental engineering. Applications include activated sludge design and optimization, fixed film reactors, nitrification, nitrogen removal, phosphorus removal, anaerobic treatment, biomethane production, resource recovery, and toxic organics removal. Prerequisite: either both CEE 540 and CEE 482 or equivalent. Offered: W.

CEE 543 Aquatic Chemistry (4) Principles of chemical equilibrium applicable to natural water systems and water and waste treatment processes. Chemical thermodynamics. Characteristics of acid/base, gas/liquid, solid/liquid, and

oxidation/reduction equilibria. Computer models for chemical speciation. Offered: A.

CEE 544 Physical-Chemical Treatment Processes (4) Principles and design of major physical-chemical unit processes used in water, wastewater, and hazardous waste treatment. Topics include chemical kinetics, reactor design and analysis, ion exchange, adsorption, and gas transfer. Development of mathematical models and evaluation of current design practice. Offered: W.

CEE 545 Environmental Organic Chemistry (3) Covers characterization and modeling of properties and processes governing the distribution, fate, and transformation of organic pollutants in environmental systems. Explores linear free energy relationships and their application to examining the water/soil/air partitioning, bioaccumulation, substitution and redox reaction kinetics, and abiotic transformations of organic pollutants. Prerequisite: CEE 543 or permission of instructor. Offered: W.

CEE 546 Topics in Ecological Effects of Wastewater (3) Application of ecological concepts for analysis and interpretation of bioenvironmental problems and data (eutrophication, acid rain, and toxicity). Students participate in presentation and discussion of current research. Prerequisite: CEE 462 or BIOL 473 or permission of instructor.

CEE 547 Lake and Watershed Management (3) Application of current techniques for lake and watershed analysis and modeling using fundamentals of limnology. Approaches to restoring eutrophic lakes, land use impacts on water quality. Practical exercises using data from real lake systems. Prerequisite: CEE 462/FISH 434, BIOL 473, or permission of instructor. Offered: Sp.

CEE 549 Advanced Topics in Environmental Engineering, Chemistry, and Biology (3) Special topics of current importance in environmental engineering. Application of fundamental chemical and biological principles to the study of such phenomena as the behavior of aqueous colloids, corrosion processes, and bacterial metabolism in chemically complex solutions. Prerequisite: CEE 540, CEE 541. Offered: Sp.

CEE 550 Environmental Chemical Modeling (3) Physical/chemical principles controlling the fate and distribution of environmental pollutants, and use of models to apply those principles. Includes modeling of physical transport in conjunction with chemical equilibrium and reaction kinetics. Applications focus on groundwater systems. Prerequisite: CEE 541. Offered: Sp.

CEE 551 Fate and Transport of Chemicals in the Environment (3) *Neumann* Presents a general introduction to the fundamental physical, chemical, and biological processes governing the movement and fate of chemicals in surface water and groundwater. Provides basic literacy in environment transport and fate processes, creating a solid foundation for accessing and synthesizing material on these topics. Offered: A.

CEE 552 Environmental Regulations (3) *I&S* Principal emphasis on regulations pertaining to construction site stormwater runoff, including regulatory background and requirements, how to analyze potential site problems and prepare plans to solve them, and specifying practices to avoid or reduce water pollutant releases. Briefer coverage of regulations concerning air pollutants, wetlands, hazardous wastes, and endangered species.

CEE 553 Seminar - Topics in Atmospheric Chemistry (1-3, max. 6) Seminar for atmospheric scientists, chemists, engineers in problems associated with the chemical composition of the atmosphere. Covers wide variety of topics, ranging from the natural system to urban pollution and global atmospheric change. Prerequisite: ATM S 301 or permission of instructor. Offered: jointly with ATM S 525.

CEE 554 Acoustics of Environmental Noise (4) Offered: jointly with M E 528.

CEE 555 Topics in Environmental Health (3) Introduction to human biology, including physiology, epidemiology, and toxicology. Study of contemporary environmental health problems and practices as they relate to radiological health,

solid-waste disposal, occupational health, biometeorology, and bioengineering.

CEE 557 Air Resources Management (3) Technical, administrative, and legal aspects of air conservation. Topics include urban and regional scale air quality measurement and modeling systems, receptor modeling based on chemical fingerprinting of sources and current case studies involving engineering analysis, air-quality modeling, and regulatory aspects at local, state, and federal governmental levels. Offered: A.

CEE 560 Risk Assessment for Environmental Health Hazards (3/4) Examines context, methodologies, data, uncertainties, and institutional arrangements for risk assessment. Qualitative and quantitative approaches to identification, characterization, and control of environmental hazards to health emphasized through didactic and case studies. Offered: jointly with ENV H 577/PB AF 589; A.

CEE 561 Transportation Planning and Design (4) *Avery* Provides an overview of transportation planning and how sustainability fits into this field. Topics include institutional frameworks, legal/legislative issues, land use, capacity analysis, supply management and Intelligent Transportation Systems (ITS). Covers tasks/tools of transportation planning at the site, city, region, and state levels. Offered: A.

CEE 562 Livable Communities and Design (4) *Bassok* Explores the positives and negatives affecting livability. Covers sprawl and compact cities, energy issues and environmental quality, transit-oriented and traditional neighborhood development, and mixed-use and mixed income developments. Includes context-sensitive solutions to transportation projects. Offered: A.

CEE 563 Transportation Choices and Technology (4) *Rutherford* Explores the range of sustainable transportation choices for both people and goods. Studies passenger modes of transportation including bicycles, single-occupancy vehicles, care and van pools, shared autos, bus, rail, ferries, trolleys, and foot travel in the context of sustainability. Offered: A.

CEE 564 Sustainable Transportation from a Systems Perspective (5) *McCormack* Covers tools to evaluate and develop sustainable transportation systems. Emphasizes design approaches that support sustainable transportation, methods to evaluate the full life cycle impacts of transportation systems, and tools to assess transportation networks as resilient systems. Offered: W.

CEE 565 Climate Change and Energy (5) *Larson, Mahoney* Covers the nature of global climate systems, global warming, ozone depletion, and human influences. Introduces tools to evaluate current and alternative energy production and conversion options for transportation. Explores the nexus between transportation and energy in the context of climate change adaptation and mitigation. Offered: W.

CEE 566 Environmental Analysis and Assessment (5) *Watkins* Reviews statistical methods necessary to analyze environmental issues. Uses environmental data to demonstrate how significant impacts are measured and reported. Discusses transportation data sources, sustainable transportation indicators, and related statistical analysis. Includes travel demand forecasting and a review of engineering economy. Offered: W.

CEE 567 Health and Sustainable Transportation (5) *Rowangould* Examines how transportation policy is driven by human health impacts. Highlights water and air impacts on health along with the health benefit of human powered transportation. Presents legal and regulatory issues. Case studies provide examples of application of these principles to real world transportation issues. Offered: Sp.

CEE 568 Transportation Economics (5) *Niemeier* Economics applied to transportation planning, operations, maintenance, and management problems; microeconomic and macroeconomic theories; benefit-cost analysis; and the effect of uncertainty. Presents the effect of tolls, parking pricing, transit subsidies, and other pricing and incentive policies. Offered: Sp.

CEE 569 Policy Development, Finance, and Sustainable Transportation (5) *Rutherford* Covers the development and

implementation of transportation policies to support sustainable transportation systems. Reviews regulations and finance opportunities at the local, state, and federal level highlighting those that promote sustainable transportation. Offered: Sp.

CEE 570 Hydrodynamics (4) *A. HORNER-DEVINE* Applications of the equations of motion to ideal and real fluid flow, with topics in Environmental Fluid Mechanics. Kinematics, Navier-Stokes equations, viscous flows, Coriolis, density driven flows, free surface flows, and introduction to turbulence. Applications include: tidal flushing, lakes, estuaries, gravity currents and river plumes. Prerequisite: CEE 357 or equivalent. Offered: Sp.

CEE 571 Hydrodynamics in Water Quality (3) Theoretical, field study, and laboratory model approaches to diffusion in transport problems of concern to water resources engineers. Prerequisite: CEE 342 or permission of instructor.

CEE 572 Water Wave Mechanics (3) Theory of water waves. Classical water wave problem and approximate solution techniques. Evolution equations for and their solutions wave systems. Viscous damping effects and mass transport. Nonlinear shallow-water waves and the Korteweg-deVries equation. Waves on beaches. Prerequisite: CEE 342 or permission of instructor; recommended: graduate-level course in fluid mechanics.

CEE 573 Snow Hydrology (3) *Lundquist* Introduces snow hydrology research, emphasizing current research methods and results in both measurements and modeling. Explores the impact of snow on hydrology and water resources. Offered: W.

CEE 574 Advanced Hydrology (3) *E. ISTANBULLUOGLU* Detailed treatment of statistical methods used in hydrology: trend analysis, hypothesis testing, flood frequency, and elements of stochastic hydrology and data generation. Detailed examination of hydrologic models with emphasis on evapotranspiration and water budget, use of a watershed model (e.g., Stanford Watershed Model) in catchment. Offered: Sp.

CEE 576 Water Resources Planning (3) Engineering, social, and economic factors involved in water resource development and management; water policies, programs, and administration; use relationships and conflicts; considerations for regional water resource systems.

CEE 577 Water-Quality Management (3) Application of biological, ecological, and chemical processes to modeling of water quality and use of such models in appropriate management of water resource systems. Includes units on the modeling of temperature, BOD, nutrient, phytoplankton, zooplankton, and other processes in lakes, streams, and estuaries. Recommended: CEE 476; CEE 485; CEE 462/FISH 434; CEE 491. Offered: Sp.

CEE 578 Water Resource System Management and Operations (3) Readings in recent literature related to the modeling and management of water resources. Topics include drought management, expansion of existing water supplies, hydropower production, streamflow forecasting, water demand forecasting, regional water planning, climate change, and other topical issues. Offered: Sp.

CEE 579 Advanced Traffic Detection Systems (3) *Wang* Introduction to advanced tracking and detection technologies in transportation engineering, including Global Positioning Systems (GPS), inductance loop detection systems, remote traffic microwave radar, computer-vision based technologies, and other emerging detection technologies with cutting-edge research in these areas.

CEE 580 Urban Transportation Planning (4) *Rutherford* Introduction to transportation planning, including trends and issues, land use and transportation interaction, surveys, public involvement, demand management, technology, forecasting, impacts, and policy strategies. Offered: A.

CEE 581 Travel Demand Forecasting (4) Application of mathematical models to forecast urban travel behavior. Introduces emerging methods, land use models, travel demand models, including trip generation, trip distribution, mode choice, and network assignment. Discusses validation and ethics. Offered: A.

CEE 582 Intelligent Transportation Systems (3) Application of modern computer and communication technologies to transportation systems. Benefits to public agencies, commercial companies, and travelers. Coordination between private and public sectors. Intelligent Transportation System's (ITS) social, organizational, and operational changes. Offered: A.

CEE 584 Analytical Methods in Transportation I (3) *Boyle* Application of analytical and statistical methods to issues in transportation and driving. Analysis of probability distributions that describe variables. Development of statistical models for predicting transportation phenomena. Elementary sampling theory hypothesis testing, regression analysis, time series analysis, applied to transportation data. Offered: jointly with IND E 546; W.

CEE 585 Analytical Methods in Transportation II (3) Applications of advanced econometric methods to transportation issues. Topics include, but not limited to, systems of equations, duration models, limited dependent variable approaches, and count models. Hands-on modeling, with numerous data sets, available for application. Collaborative projects. Prerequisite: CEE 584 or permission of instructor.

CEE 586 Pedestrian Travel, Land Use, and Urban Form (3) Seminar concentrating on walking as a mode of transportation in cities and city-regions, including social, cognitive, and perceptual dimensions of pedestrian movement and behavior theory. Offered: jointly with URBPD 576.

CEE 587 Global Trade, Transportation, and Logistics Management (4) Provides an overview of trade, transportation, and logistics activities. Develops an understanding of the physical and information flows in supply chains, and the economic drivers of supply chain choices. Includes methods to analyze and improve logistics and transportation systems, including applications of policy, technology, and infrastructure. Offered: Sp.

CEE 588 Energy Infrastructure and the Environment (3) *Larson, Mahoney* Focuses on energy infrastructure, including site selection, permitting, design, construction, and maintenance. Includes electrical production facilities as well as transmission, focusing on permitting and construction of renewable energy facilities. Covers renewable energy infrastructure, emphasizing wind, solar, and geothermal. Offered: A.

CEE 589 Transit Systems Planning (3) Planning, operational methods for urban public transportation. Review of technological, operating characteristics of vehicles and systems; financing, management, institutional aspects. Paratransit. Short-range planning, operational strategies, revenue-fare structures. Service monitoring. Mode choice, transit demand relating to service. Computer-aided methods for planning, design of transit systems. Offered: Sp.

CEE 590 Traffic Systems Operations (3) *Goodchild, McCormack* Operational planning, management of arterial and freeway traffic systems. Review of transportation system management strategies to achieve more efficient use of existing infrastructure, including improved and innovative traffic control systems and demand management policies, measures of effectiveness, impact assessment, traveler response. Introduction to use of relevant computer models and packages. Offered: A.

CEE 591 Freight Transportation (3) Overview of the technical and institutional aspects of transporting freight. Topics include the different modes of moving freight, the technology of transferring freight between modes at ports and terminals, issues that impact freight movement such as congestion and government regulation, and the future of freight mobility. Also covers regional freight demand modeling techniques. Offered: A.

CEE 592 Statistical Fundamentals for Construction and Materials Applications (3) *S. MUENCH* Overview of statistical measures used in various construction and materials decision-making processes. Subjects include data distributions, hypothesis tests (making decisions with statistics), regression analysis, sampling, quality control and assurance, and experimental design. Uses construction data to illustrate these measures. Offered: Sp.

CEE 593 Construction Labor Law (3) *Goldblatt* In-depth study of construction labor topics, including labor-management organization, legislation, and regulation, collective bargaining, and job site administration. Examines importance of labor relations in construction firms, whether in a union setting or an open shop environment.

CEE 594 Computer-Aided Construction (3) Application of information technology to construction management and cost estimating. Topics include, but not limited to, computerized construction, fundamentals of computer hardware, construction management software tools, web publishing, GPS application, and construction data management. Offered: S.

CEE 595 Construction Materials (3) *Mahoney* Examines the use of aggregates, bituminous mixtures, Portland cement concrete, roller compacted concrete, soil and site stabilization, utility cuts, and flowable backfill in construction projects. Emphasis on behavior of materials in various construction applications. Offered: W.

CEE 596 Pavement Construction (3) *Muench* Examines pavement construction, including pavement contracts and specifications, quality control and assurance programs, and plant and laydown operations. Reviews both national and international pavement construction practices. Offered: Sp.

CEE 598 Engineering Jordan: Water in an Arid Land Study Abroad (5) *Gough* Examines impacts of a hot dry climate on water engineering systems by studying the engineered water cycle in Jordan including: water cycles and sources in Jordan; drinking water treatment and desalination; wastewater treatment and reuse; decentralized and on-site treatment; and ancient water engineering.

CEE 599 Special Topics in Civil and Environmental Engineering (1-5, max. 20) Special topics in civil and environmental engineering offered occasionally by permanent or visiting faculty members.

CEE 600 Independent Study or Research ([2-5]-) Topics covered depend on faculty and student interest. Prerequisite: permission of instructor.

CEE 601 Internship (2) Internship in an established program between industry, government, and the University. Prerequisite: permission of Graduate Program Coordinator and committee chair.

CEE 700 Master's Thesis (*-) Prerequisite: permission of adviser.

CEE 800 Doctoral Dissertation (*-) Prerequisite: permission of adviser.

Computer Science and Engineering

AC101 Paul G. Allen Center for Computer Science and Engineering

Computer science is the study of information and algorithms within the context of real and abstract computing devices. Computer scientists are interested in such topics as the representation and storage of information; algorithms to access, display, edit, and transform information; programming languages to express algorithms; and hardware and software processors to execute algorithms. These concerns lead to practical developments in computer systems software, such as operating systems and compilers; in application areas, such as artificial intelligence, computer graphics, and computational biology; and also to theoretical investigations of computers, algorithms, and data.

Computer engineering is a closely related field concerned with the design and practical application of computer hardware and software systems to the solution of technological, economic, and societal problems. The computer engineer analyzes a problem and selects from a variety of tools

and technologies those most appropriate for its solution. A computer engineer can expect to be involved in hardware design, software creation, and systems integration.

UNDERGRADUATE PROGRAM

Adviser

101 Paul G. Allen Center for Computer Science and

Engineering, Box 352350

(206) 543-1695

ugrad-advisor@cs.washington.edu

The Department of Computer Science and Engineering offers the following programs of study:

- The Bachelor of Science in Computer Engineering degree
- The Bachelor of Science degree with a major in computer science (see Computer Science in the Arts and Sciences section of this catalog)

The core requirements of the two undergraduate majors are similar. The computer engineering major may be more appropriate for students who are interested in creating and building systems that include both hardware and software components and that must be engineered to meet a variety of cost and performance constraints. The program includes a general foundation in engineering fundamentals to enable interdisciplinary work with other departments in the College of Engineering and the University as a whole.

The computer science major may be more appropriate for students who want to earn a double major with another College of Arts and Sciences program (for example, mathematics or economics), who want the additional flexibility of the computer science requirements (the computer engineering major has more required courses and fewer electives), or who may be more interested in the theory, design, and implementation of software systems and applications (for example, the techniques of modern compilers or the algorithms behind computer graphics and animation).

Bachelor of Science in Computer Engineering

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

Department Admission Requirements

Applicants are considered in two groups: Direct Admission and Regular Admission. Admission is competitive. Completion of minimum requirements does not guarantee admission.

1. Direct Admission: Computer Science and Engineering enrolls up to 30 percent of its incoming class directly out of high school, prior to completion of university-level prerequisites. Freshman applicants to the University listing Computer Science or Computer Engineering as their intended major are automatically considered. Competitive applicants have taken calculus and at least one year of laboratory science (preferably physics) upon entering the University. Admission is for autumn quarter only.
2. Regular Admission
 - a. Minimum 2.0 grade in each of the following courses: MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136); PHYS 121; CSE 142, CSE 143; and at least five credits of English composition.
 - b. Admission is for autumn or spring quarter. Application deadlines are July 1 for autumn quarter and February 1 for spring quarter.
 - c. Individual application prerequisites may be waived or substituted with departmental permission for matriculated students who have excelled in CSE in

introductory courses. Information is available from the department adviser.

Graduation Requirements

180 credits as follows:

1. General Education Requirements (83 credits)
 - a. Written and Oral Communication (12 credits): 5-credit course in English composition from the University-approved list; HCDE 231; 4 credits of UW approved writing (W) or additional UW approved composition (C) courses.
 - b. Visual, Literary, & Performing Arts (VLPA) and Individuals & Societies (I&S) (30 credits): A minimum of 10 credits in each required area
 - c. Natural World (41 credits):
 - i. Mathematics (15-18 credits): MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136); MATH 308 or MATH 318 (waived if MATH 136 taken)
 - ii. Science (20 credits): PHYS 121, PHYS 122, and 10 additional credits from the list of approved natural science courses in the CS&E handbook
 - iii. Mathematics or Science (3-6 credits): 3 to 6 additional credits of math/science (to bring total to 41) chosen from approved natural science courses in the CS&E handbook, STAT 390, STAT 391, STAT 394, MATH 307, MATH 309, MATH 334, MATH 335, AMATH 351, or AMATH 353 (STAT 391 recommended.)
2. Major Requirements (72 credits)
 - a. Required Courses (33 credits): CSE 142, CSE 143, CSE 311, CSE 312, CSE 332, CSE 351, CSE 352; E E 215 or E E 205.
 - b. CSE Electives (39 credits):
 - i. One course chosen from: CSE 403, CSE 466, or CSE 484
 - ii. Three additional courses chosen from the CSE 401, CSE 403, CSE 444, CSE 451, CSE 452, CSE 461, CSE 466, CSE 467, CSE 471, CSE 484
 - iii. c. Two additional courses chosen from the CSE core course list in the online CSE handbook
 - iv. d. A design capstone course from the approved list in the CSE handbook.
 - c. 7 credits of College of Engineering courses from the CSE elective list
 - d. Additional (1-5 credits) CSE electives to bring total CSE electives to 39 credits
 - e. Minimum 2.0 grade for any course applied to the major, Natural World, or Written and Oral Communications requirements. Transfer students must earn a minimum of 24 graded credits toward the major at the UW
3. Free Electives (21-25 credits)

Student Outcomes and Opportunities

Learning Objectives and Expected Outcomes:

Engineering Quality: Graduates engage in the productive practice of computer engineering to identify and solve significant problems across a broad range of application areas.

Leadership: Graduates engage in successful careers in industry, academia, and public service, providing technical leadership for their business, profession, and community.

Economic Impact: Graduates enhance the economic well-being of Washington State through a combination of technical expertise, leadership, and entrepreneurship.

Lifelong Learning: Graduates adapt to new technologies, tools, and methodologies to remain at the leading edge of

computer engineering practice with the ability to respond to the challenges of a changing environment.

The computer engineering undergraduate degree is housed in the College of Engineering and is thereby accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700. The department has adopted the following student outcomes. Upon graduation from the computer engineering program, students have:

- a. An ability to apply knowledge of mathematics, science, and engineering
- b. An ability to design and conduct experiments, as well as to analyze and interpret data
- c. An ability to design a computing system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- d. An ability to function on multi-disciplinary teams
- e. An ability to identify, formulate, and solve computer engineering problems
- f. An understanding of professional and ethical responsibility
- g. An ability to communicate effectively
- h. The broad education necessary to understand the impact of computer engineering solutions in a global, economic, environmental, and societal context
- i. A recognition of the need for, and an ability to engage in life-long learning
- j. Knowledge of contemporary issues
- k. An ability to use the techniques, skills, and modern computer engineering tools necessary for engineering practice.

Instructional and Research Facilities: The department is housed in the state-of-the-art Paul G. Allen Center for Computer Science and Engineering. The Allen Center includes more than 20,000 square feet of laboratories, nearly 1,000 computer systems, and more than 50 terabytes of storage. Gigabit connectivity is provided to every desktop by more than 60 miles of data cabling, and wireless access is available throughout the building.

CSE general-purpose laboratories support the diverse set of hardware and software platforms required for a cutting-edge education in the field. CSE special-purpose laboratories provide tailored support for activities such as mobile robotics, computer graphics, digital design, motion capture, embedded systems, laser scanning, educational technology, networking, and artificial intelligence.

The Allen Center is one of the finest computer science and computer engineering facilities in the nation. All of its capabilities are available to all CSE students.

Honors Options Available: With College Honors (Completion of Honors Core and Departmental Honors requirements). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.

Research, Internships, and Service Learning: Internships and co-op opportunities are available for computer science undergraduates. See www.engr.washington.edu/coop and careers.washington.edu for information.

Departmental Scholarships: CSE has a limited number of scholarships available to current CSE majors. Scholarship information is listed at www.cs.washington.edu/education/ugradscholars/scholarships.html.

Student Organizations/Associations: A student chapter of the Association for Computing Machinery (ACM) operates within CSE. The ACM helps to coordinate new student orientations, research nights, technical talks, and various tutorials.

GRADUATE PROGRAM

Graduate Program Coordinator

AC101 Paul G. Allen Center for Computer Science and Engineering, Box 352350
(206) 543-1695

grad-admissions@cs.washington.edu

The Department of Computer Science and Engineering offers programs of study leading to the degrees of Master of Science and Doctor of Philosophy. Students can pursue full-time graduate study leading to a PhD with an integrated MS. Students can also pursue part-time graduate study in the evening, leading to an MS. Programs are designed to provide considerable breadth of knowledge, as well as depth in an area of specialization.

The department has 40 faculty and is authorized to grow over the next few years. In addition, there are nearly 40 adjunct, affiliate, and emeritus faculty members. The faculty is currently conducting research in the following areas: embedded systems and reconfigurable computing; computer architecture; networking; operating systems and distributed systems; programming systems; information retrieval, database systems, and intelligent Internet systems; software engineering; computer graphics, vision, and animation; human interface to computing; artificial intelligence; theory of computation; and computing and biology.

Master of Science

Degree Requirements

40 credits, as follows:

Non-Thesis Option:

1. Of the 40 credits required, 20 credits must be in courses numbered 500 or above, 30 credits must be in CSE courses, and 10 credits may be in one or more supporting fields.
2. Satisfactorily pass an MS qualifying evaluation. The faculty as a whole assesses whether the student has satisfactorily completed a breadth requirement and an independent project requirement as described below.
3. A breadth requirement, satisfied through coursework. The required course list may change from time to time to reflect changes in the curriculum and faculty research interests. Students may choose to meet the requirements in place when they were admitted. Students must take one course in each of the four groups below and one additional course from two of the groups (18 credits) for graded credit (a waiver is possible for graduate courses taken elsewhere):
 - a. Either CSE 521, CSE 525, or CSE 531
 - b. Either CSE 548, CSE 551, CSE 561, or CSE 567
 - c. Either CSE 501, CSE 503, CSE 505, or CSE 544
 - d. Either CSE 510, CSE 546, CSE 557, CSE 573, or CSE 576
 - e. Two additional courses from two of the groups above
4. An independent project completed under the supervision of a primary and a secondary faculty adviser. A written summary and an oral presentation are required.

Thesis Option:

1. 9 credits CSE 700, master's thesis - preparing a written thesis acceptable to a CSE Supervisory Committee and satisfactorily passing an oral examination on the thesis work
2. Of the 31 remaining credits,
 - a. 24 credits must be CSE courses
 - b. 7 credits may be in one or more supporting fields such as: engineering, mathematics, natural sciences, business administration, linguistics, philosophy, psychology, or medicine.

Professional Master's Program

Degree Requirements

To satisfy the requirements of the Professional Master's Program (PMP), students must successfully complete eight 4-credit PMP courses (determined in consultation with an adviser) and other courses providing 8 additional credits. The additional credits may be earned through participation in the department's colloquium series, which features leading-edge researchers and developers in computer science from around the world. This series airs throughout the Puget Sound region on UWTB and is available live and archived on the Internet. Students who take one course per quarter, plus 1 credit of colloquium, complete the program in two-and-a-half years.

Doctor of Philosophy

Admission Requirements

Most entering students are expected to have a solid background in computer science, including programming, machine organization, data structures, discrete mathematics, automata theory, and programming systems (i.e., the equivalent of CSE 326, CSE 321, CSE 322, and CSE 378, and either CSE 401 or CSE 451). Some exceptions to these requirements are made for otherwise-promising students. Graduate Record Examination scores are required. Scores should be earned within the preceding five years. The Computer Science and Engineering Graduate Program home page for prospective students gives full details of application procedures.

Complete applications must be received by December 15 for both U.S. and international students for autumn quarter admission.

Degree Requirements

90 credits, to include:

1. Satisfactorily pass a PhD qualifying evaluation. The faculty as a whole assesses whether the student has satisfactorily completed a breadth requirement and an independent project requirement as described below.
 - a. A breadth requirement satisfied through coursework. The required course list may change from time to time to reflect changes in the curriculum and faculty research interests. Students may choose to meet the requirements in place when they were admitted.
 - b. One course from each of the four groups below and one additional course from two of the groups (18 credits) for graded credit (a waiver is possible for graduate courses taken elsewhere):
 - i. Either CSE 521, CSE 525, or CSE 531
 - ii. Either CSE 548, CSE 551, CSE 561, or CSE 567
 - iii. Either CSE 501, CSE 503, CSE 505, or CSE 544
 - iv. Either CSE 510, CSE 544, CSE 546, CSE 557, CSE 573, or CSE 576
 - v. Two additional courses from two of the groups above
 - vi. Four additional courses taken for credit from CSE or related areas with approval.
 - c. An independent project completed under the supervision of two faculty advisers. A written summary and an oral presentation are required.
2. Satisfactorily pass the general examination. In this examination, the applicant must demonstrate depth of knowledge in a principal area acceptable to the Ph.D. Supervisory Committee.
3. Complete at least 90 credits of coursework, at least 40 of which are in courses numbered 500 or above. 45 credits should be in courses chosen from the computer science course list. At least two CSE courses numbered 500 or above (or approved courses in related disciplines)

plines) must be taken for graded credit in addition to those courses taken to satisfy the breadth component of the qualifying evaluation. Coursework taken toward the M.S. degree is applicable toward the Ph.D. degree.

4. Completion of two quarters of teaching assistantship within the department.
5. Preparation of a dissertation that must be acceptable to the Supervisory Committee. Students must register for at least 27 credits of CSE 800 (Dissertation).
6. Satisfactorily pass an oral examination on the dissertation work.

Assistantships

Research and teaching assistantships are available and are allocated on the basis of scholastic excellence and potential. All students accepted to the program are awarded three years of funding. Students who are applying for assistantships to start in autumn quarter should have all applications to the Graduate School and the department completed by December 15.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsat/

Computer Science and Engineering

CSE 120 Computer Science Principles (5) NW, QSR Introduces fundamental concepts of computer science and computational thinking. Includes logical reasoning, problem solving, data representation, abstraction, the creation of digital artifacts such as web pages and programs, managing complexity, operation of computers and networks, effective web searching, ethical, legal and social aspects of information technology. May not be taken for credit if credit earned in CSE 100/INFO 100.

CSE 131 Science and Art of Digital Photography (4) VLPA Hemingway Covers the fundamentals of digital photography, including computational imaging; the elements of photographic composition and design; and the future of internet-enabled photography.

CSE 142 Computer Programming I (4) NW, QSR Basic programming-in-the-small abilities and concepts including procedural programming (methods, parameters, return, values), basic control structures (sequence, if/else, for loop, while loop), file processing, arrays, and an introduction to defining objects. Intended for students without prior programming experience. Offered: AWSpS.

CSE 143 Computer Programming II (5) NW, QSR Continuation of CSE 142. Concepts of data abstraction and encapsulation including stacks, queues, linked lists, binary trees, recursion, instruction to complexity and use of predefined collection classes. Prerequisite: CSE 142. Offered: AWSpS.

CSE 154 Web Programming (5) QSR Covers languages, tools, and techniques for developing interactive and dynamic web pages. Topics include page styling, design, and layout; client and server side scripting; web security; and interacting with data sources such as databases. Prerequisite: minimum grade of 2.0 in either CSE 140, CSE 142, or CSE 143.

CSE 160 Data Programming (4) NW, QSR Introduction to computer programming. Assignments solve real data manipulation tasks from science, engineering, business, and the humanities. Concepts of computational thinking, problem-solving, data analysis, Python programming, control and data abstraction, file processing, and data visualization. Intended for students without prior programming experience. No credit if CSE 143 has been taken.

CSE 190 Current Topics in Computer Science and Engineering (1-5, max. 15)

CSE 311 Foundations of Computing I (4) QSR Examines fundamentals of logic, set theory, induction, and algebraic structures with applications to computing; finite state machines; and limits of computability. Prerequisite: CSE 143; either MATH 126 or MATH 136.

CSE 312 Foundations of Computing II (4) QSR Examines fundamentals of enumeration and discrete probability; applications of randomness to computing; polynomial-time versus NP; and NP-completeness. Prerequisite: CSE 311; CSE 332, which may be taken concurrently.

CSE 331 Software Design and Implementation (4) Explores concepts and techniques for design and construction of reliable and maintainable software systems in modern high-level languages; program structure and design; program-correctness approaches, including testing; and event-driven programming (e.g., graphical user interface). Includes substantial project and software-team experience. Prerequisite: CSE 143.

CSE 332 Data Abstractions (4) Covers abstract data types and structures including dictionaries, balanced trees, hash tables, priority queues, and graphs; sorting; asymptotic analysis; fundamental graph algorithms including graph search, shortest path, and minimum spanning trees; concurrency and synchronization; and parallelism. Not available for credit for students who have completed CSE 373. Prerequisite: CSE 311.

CSE 333 Systems Programming (4) Includes substantial programming experience in languages that expose machine characteristics and low-level data representation (e.g., C and C++); explicit memory management; interacting with operating-system services; and cache-aware programming. Prerequisite: CSE 351.

CSE 341 Programming Languages (4) Basic concepts of programming languages, including abstraction mechanisms, types, and scoping. Detailed study of several different programming paradigms, such as functional, object-oriented, and logic programming. No credit if CSE 413 has been taken. Prerequisite: CSE 143.

CSE 344 Introduction to Data Management (4) Introduces database management systems and writing applications that use such systems; data models (e.g., relational, semi-structured), query languages (e.g., SQL, XQuery), language bindings, conceptual modeling, transactions, security, database tuning, data warehousing, parallelism, and web-data management. Prerequisite: CSE 311.

CSE 351 The Hardware/Software Interface (4) Examines key computational abstraction levels below modern high-level languages; number representation, assembly language, introduction to C, memory management, the operating-system process model, high-level machine architecture including the memory hierarchy, and how high-level languages are implemented. Prerequisite: CSE 143.

CSE 352 Hardware Design and Implementation (4) Covers digital circuit design, processor design, and systems integration and embedded-systems issues. Includes substantial hardware laboratory. Prerequisite: CSE 311; CSE 351.

CSE 369 Introduction to Digital Design (2) Introduces the implementation of digital logic and its specification and simulation. Covers Boolean algebra; combinational circuits including arithmetic circuits and regular structures; sequential circuits including finitestate-machines; and use of field-programmable gate arrays (FPGAs). Emphasizes simulation, high-level specification, and automatic synthesis techniques. Prerequisite: CSE 311.

CSE 373 Data Structures and Algorithms (3) Fundamental algorithms and data structures for implementation. Techniques for solving problems by programming. Linked lists, stacks, queues, directed graphs. Trees: representations, traversals. Searching (hashing, binary search trees, multiway trees). Garbage collection, memory management. Internal and external sorting. Intended for non-majors. Not

open for credit to students who have completed CSE 332. Prerequisite: CSE 143.

CSE 374 Intermediate Programming Concepts and Tools (3) Covers key software development concepts and tools not in introductory courses. Concepts of lower-level programming (C/C++) and explicit memory management; techniques and tools for individual and group software development; design, implementation, and testing strategies. Intended for non-majors. Cannot be taken for credit if credit received for CSE 333. Prerequisite: CSE 143.

CSE 390 Special Topics in Computer Science and Engineering (1-5, max. 10) Covers topics of current interest in computer science and engineering.

CSE 399 CSE Foreign Study (*) Upper-division computer science or computer engineering course, taken through an approved study abroad program, for which there is no direct University of Washington equivalent. Credit/no-credit only.

CSE 401 Introduction to Compiler Construction (4) Fundamentals of compilers and interpreters; symbol tables; lexical analysis, syntax analysis, semantic analysis, code generation, and optimizations for general purpose programming languages. No credit to students who have taken CSE 413. Prerequisite: CSE 332; CSE 351.

CSE 403 Software Engineering (4) Fundamentals of software engineering using a group project as the basic vehicle. Topics covered include the software crisis, managing complexity, requirements specification, architectural and detailed design, testing and analysis, software process, and tools and environments. Prerequisite: CSE 331; CSE 332.

CSE 410 Computer Systems (3) Structure and components of hardware and software systems. Machine organization, including central processor and input-output architectures; assembly language programming; operating systems, including process, storage, and file management. Intended for non-majors. No credit to students who have completed CSE 351 or CSE 451. Prerequisite: CSE 373.

CSE 413 Programming Languages and Their Implementation (3) Basic concepts and implementation strategies for modern functional and object-oriented programming languages such as Scheme and Java. Intended for non-majors. No credit to students who have completed CSE 341 or CSE 401. Prerequisite: CSE 373.

CSE 414 Introduction to Database Systems (4) Introduces database management systems and writing applications that use such systems; data models, query languages, transactions, database tuning, data warehousing, and parallelism. Intended for non-majors. Not open for credit to students who have completed CSE 344. Prerequisite: minimum grade of 2.5 in CSE 143.

CSE 415 Introduction to Artificial Intelligence (3) NW Principles and programming techniques of artificial intelligence: LISP, symbol manipulation, knowledge representation, logical and probabilistic reasoning, learning, language understanding, vision, expert systems, and social issues. Intended for non-majors. Not open for credit to students who have completed CSE 473. Prerequisite: CSE 373.

CSE 417 Algorithms and Computational Complexity (3) Design and analysis of algorithms and data structures. Efficient algorithms for manipulating graphs and strings. Fast Fourier Transform. Models of computation, including Turing machines. Time and space complexity. NP-complete problems and undecidable problems. Intended for non-majors. Prerequisite: CSE 373.

CSE 421 Introduction to Algorithms (3) Techniques for design of efficient algorithms. Methods for showing lower bounds on computational complexity. Particular algorithms for sorting, searching, set manipulation, arithmetic, graph problems, pattern matching. Prerequisite: CSE 312; CSE 332.

CSE 427 Computational Biology (3) Algorithmic and analytic techniques underlying analysis of large-scale biological data sets such as DNA, RNA, and protein sequences or structures, expression and proteomic profiling. Hands-on experience with databases, analysis tools, and genome markers. Applications such as sequence alignment, BLAST, phylogenetics, and Markov models. Prerequisite: CSE 312; CSE 332.

CSE 428 Computational Biology Capstone (5) Designs and implements a software tool or software analysis for an important problem in computational molecular biology. Prerequisite: CSE 312; CSE 331; CSE 332.

CSE 431 Introduction to Theory of Computation (3) Models of computation, computable and noncomputable functions, space and time complexity, tractable and intractable functions. Prerequisite: CSE 312.

CSE 440 Introduction to HCI: User Interface Design, Prototyping, and Evaluation (5) Human-Computer Interaction (HCI) theory and techniques. Methods for designing, prototyping, and evaluating user interfaces to computing applications. Human capabilities, interface technology, interface design methods, and interface evaluation tools and techniques. Prerequisite: CSE 332.

CSE 441 Advanced HCI: Advanced User Interface Design, Prototyping, and Evaluation (5) Human-Computer Interaction (HCI) theory and techniques. Advanced methods for designing, prototyping, and evaluating user interfaces to computing applications. Novel interface technology, advanced interface design methods, and prototyping tools. Prerequisite: CSE 440.

CSE 444 Database Systems Internals (4) The relational data model and the SQL query language. Conceptual modeling: entity/relationships, normal forms. XML, XPath, and XQuery. Transactions: recovery and concurrency control. Implementation of a database system. A medium sized project using a relational database backend. Prerequisite: CSE 332; CSE 344.

CSE 446 Machine Learning (4) Methods for designing systems that learn from data and improve with experience. Supervised learning and predictive modeling: decision trees, rule induction, nearest neighbors, Bayesian methods, neural networks, support vector machines, and model ensembles. Unsupervised learning and clustering. Prerequisite: CSE 332; either STAT 390, STAT 391, or CSE 312.

CSE 450 Animation Production Seminar (1) Open to all students who have an interest in digital animation. Reviews and analyzes films, animated feature films, and television commercials. Emphasizes the technical and aesthetic basics of animation production in industry studio environments.

CSE 451 Introduction to Operating Systems (4) Principles of operating systems. Process management, memory management, auxiliary storage management, resource allocation. No credit to students who have completed CSE 410 or E E 474. Prerequisite: CSE 351; CSE 332; CSE 333.

CSE 452 Introduction to Distributed Systems (4) Covers abstractions and implementation techniques in the construction of distributed systems, including cloud computing, distributed storage systems, and distributed caches. Prerequisite: CSE 451.

CSE 454 Advanced Internet and Web Services (5) Design of Internet search engines, including spider architecture, inverted indices, frequency rankings, latent semantic indexing, hyperlink analysis, and refinement interfaces. Construction of scalable and secure web services. Datamining webserver logs to provide personalized and user-targeted services. Large project. Prerequisite: CSE 332; CSE 351; either CSE 331 or CSE 352.

CSE 455 Computer Vision (4) Introduction to image analysis and interpreting the 3D world from image data. Topics may include segmentation, motion estimation, image mosaics, 3D-shape reconstruction, object recognition, and image retrieval. Prerequisite: CSE 333; CSE 332.

CSE 456 Story Design for Computer Animation (4) Animation principles and production for story development and design. Design, development, and production of several storyreels, which are a tool for the pre-production of animated features and shorts. Student use authoring tools to present finished work.

CSE 457 Computer Graphics (4) Introduction to computer image synthesis, modeling, and animation. Topics may include visual perception, displays and framebuffers, image processing, affine and projective transformations, hierarchical modeling, hidden surface elimination, shading, ray-tracing, anti-aliasing, texture mapping, curves, surfaces, particle systems, dynamics, character animation, and animation principles. Prerequisite: CSE 333; CSE 332.

CSE 458 Computer Animation (5) Introduction to basic principles of computer generated animation. Focus on the modeling and lighting of animated characters. Students from art, CSE, and music team up on projects to be built on commercially-available modeling and lighting packages. Prerequisite: CSE 457.

CSE 459 Pre-Production for Collaborative Animation (5) Pre-production of collaboratively designed animated shorts. In-depth analysis of classical and computer generated works. Character design and pre-planning, model sheets, character rigging, storyreel and animatics, character motion, design for multiple characters, and principles of animation as applied to character motion and effects. Prerequisite: CSE 458.

CSE 460 Animation Capstone (5) Apply the knowledge gained in previous animation courses to produce a short animated film. Topics include scene planning, digital cinematography, creature and hard surface modeling, animatics and basics of character animation, and rendering techniques. Prerequisite: CSE 458, CSE 459.

CSE 461 Introduction to Computer-Communication Networks (4) Computer network architectures, protocol layers, network programming. Transmission media, encoding systems, switching, multiple access arbitration. Network routing, congestion control, flow control. Transport protocols, real-time, multicast, network security. Prerequisite: either CSE 326 or CSE 332; either CSE 303 or CSE 333.

CSE 464 Advanced Topics in Digital Animation (1-5, max. 10) Students design individual animated works for professional quality demo reels. 2- and 3-D animatics, special effects design, advanced character animation techniques, 3-D paint techniques and integration, short design, sequence planning, non-photorealistic rendering options, interactive animation for pre-planning, and advanced production techniques and strategies.

CSE 466 Software for Embedded Systems (4) Software issues in the design of embedded systems. Microcontroller architectures and peripherals, embedded operating systems and device drivers, compilers and debuggers, timer and interrupt systems, interfacing of devices, communications and networking. Emphasis on practical application of development platforms. Prerequisite: CSE 352; CSE 333.

CSE 467 Advanced Digital Design (4) Advanced techniques in the design of digital systems. Hardware description languages, combinational and sequential logic synthesis and optimization methods, partitioning, mapping to regular structures. Emphasis on reconfigurable logic as an implementation medium. Memory system design. Digital communication including serial/parallel and synchronous/asynchronous methods. Prerequisite: CSE 352; CSE 332.

CSE 469 Computer Architecture I (5) Introduction to computer architecture. Assembly and machine language, microprocessor organization including control and datapath. Computer arithmetic. Memory systems and caching. Performance modeling of microprocessors. Prerequisite: either E E 271 or CSE 369; CSE 143 Offered: jointly with E E 469; AWSp.

CSE 470 Computer Architecture II (4) Advanced computer architecture. Performance evaluation and energy

efficiency. Instruction set architectures. Instruction-level parallelism. Modern microprocessor micro-architecture. Thread-level parallelism. Cache coherency and memory consistency in shared-memory multiprocessors. Memory hierarchy. GPU architecture. Warehouse-scale computing. Trends in computer design. Prerequisite: CSE 351; either CSE 469 or E E 469. Offered: jointly with E E 470.

CSE 471 Computer Design and Organization (4) CPU instruction addressing models, CPU structure and functions, computer arithmetic and logic unit, register transfer level design, hardware and microprogram control, memory hierarchy design and organization, I/O and system components interconnection. Laboratory project involves design and simulation of an instruction set processor. Prerequisite: CSE 352.

CSE 472 Introduction to Computational Linguistics (5) VLPA/NW E. BENDER Introduction to computational approaches to modeling language, for linguistic research and practical applications, including analyses at different levels of linguistic structure and symbolic as well as statistical approaches. Prerequisite: either LING 200 or LING 400; either LING 461 or CSE 311. Offered: jointly with LING 472.

CSE 473 Introduction to Artificial Intelligence (3) Principal ideas and developments in artificial intelligence: Problem solving and search, game playing, knowledge representation and reasoning, uncertainty, machine learning, natural language processing. Not open for credit to students who have completed CSE 415. Prerequisite: CSE 332.

CSE 474 Introduction to Embedded Systems (4) Introduces the specification, design, development, and test of real time embedded system software. Use of a modern embedded microcomputer or microcontroller as a target environment for a series of laboratory projects and a comprehensive final project. Prerequisite: CSE 143. Offered: jointly with E E 474; AWSpS.

CSE 475 Embedded Systems Capstone (5) Capstone design experience. Prototype a substantial project mixing hardware, software, and communications. Focuses on embedded processors, programmable logic devices, and emerging platforms for the development of digital systems. Provides a comprehensive experience in specification, design, and management of contemporary embedded systems. Prerequisite: either E E 271 or CSE 369; either CSE 466, E E 472, or CSE 474/E E 474. Offered: jointly with E E 475; AWSpS.

CSE 477 Digital System Design (5) Capstone design experience. Prototype a substantial project mixing hardware, software, and communication components. Focuses on use of embedded processors and programmable logic in digital system design, case studies, and emerging components and platforms. Provides a complete experience in embedded system design and management. Prerequisite: CSE 451; CSE 466; CSE 467.

CSE 481 Capstone Software Design (5, max. 15) Students work in teams to design and implement a software project involving multiple areas of the CSE curriculum. Emphasis is placed on the development process itself, rather than on the product. Prerequisite: CSE 332; CSE 351; either CSE 331 or CSE 352.

CSE 484 Computer Security (4) Foundations of modern computer security, including software security, operating system security, network security, applied cryptography, human factors, authentication, anonymity, and web security. Prerequisite: CSE 332; CSE 351.

CSE 486 Introduction to Synthetic Biology (3) Studies mathematical modeling of transcription, translation, regulation, and metabolism in cell; computer aided design methods for synthetic biology; implementation of information processing, Boolean logic and feedback control laws with genetic regulatory networks; modularity, impedance matching and isolation in biochemical circuits; and parameter estimation methods. Prerequisite: either MATH 136

or MATH 307, AMATH 351, or CSE 311 and MATH 308 or AMATH 352. Offered: jointly with BIOEN 423/E E 423; A.

CSE 487 Advanced Systems and Synthetic Biology (3) Covers advanced concepts in system and synthetic biology. Includes kinetics, modeling, stoichiometry, control theory, metabolic systems, signaling, and motifs. All topics are set against problems in synthetic biology. Prerequisite: either BIOEN 401, BIOEN 423, E E 423, or CSE 486. Offered: jointly with BIOEN 424/E E 424; W.

CSE 488 Laboratory Methods in Synthetic Biology (4) Designs and builds transgenic bacterial using promoters and genes taken from a variety of organisms. Uses construction techniques including recombination, gene synthesis, and gene extraction. Evaluates designs using sequencing, fluorescence assays, enzyme activity assays, and single cell studies using time-lapse microscopy. Prerequisite: either BIOEN 423, E E 423, or CSE 486; either CHEM 142, CHEM 144, or CHEM 145. Offered: jointly with BIOEN 425/E E 425; W.

CSE 490 Special Topics in Computer Science and Engineering (1-5, max. 15) Lectures, discussions, and possibly labs on topics of current interest in computer science and engineering not covered by other CSE undergraduate courses.

CSE 495 Project Practicum ([1-5]-, max. 5) Available in special situations for computer science majors to compete, under instructor guidance, a substantial computing project that deepens one's knowledge and experience in the field. Projects may involve a group of students.

CSE 497 Undergraduate Research Seminar (1) Students prepare and give a public talk on their faculty-sponsored research projects.

CSE 498 Senior Project ([1-9]-, max. 9) A report (and perhaps demonstration) describing a development, survey, or small research project in computer science or an application to another field. Objectives: (1) integrating material from several courses, (2) introducing the professional literature, (3) gaining experience in writing a technical document, and (4) showing evidence of independent work. Work normally extends over more than one quarter, for a maximum of 6 credits for CSE 498; 9 credits are required for CSE 498H.

CSE 499 Reading and Research (1-24, max. 24) Available in special situations for advanced computer science majors to do reading and research in field, subject to approval of undergraduate adviser and CSE faculty member. Free elective, but does not replace core course or computer science elective. Credit/no-credit only.

CSE 501 Programming Language Analysis and Implementation (4) Design and implementation of compilers and run-time systems for imperative, object-oriented, and functional languages. Intra- and interprocedural analyses and optimizations. Prerequisite: CSE 341.

CSE 503 Software Engineering (4) Specification, implementation, and testing of large, multiperson, software systems. Topics include abstraction, information hiding, software development environments, and formal specifications.

CSE 504 Advanced Topics in Software Engineering (4) Topics vary but may include software design and evolution, formal methods, requirements specifications, software and system safety, reverse engineering, real-time software, metrics and measurement, programming environments, and verification and validation.

CSE 505 Principles of Programming Languages (4) Design and formal semantics of modern programming languages, includes functional and object-oriented languages. Prerequisite: CSE 341.

CSE 506 Advanced Topics in Programming Languages (4) May include functional, object-oriented, parallel, and logic programming languages; semantics for languages of these kinds; type declaration, inference, and checking (including

polymorphic types); implementation issues, such as compilation, lazy evaluation, combinators, parallelism, various optimization techniques. Implementation project required. Prerequisite: CSE 501 which may be taken concurrently, and CSE 505.

CSE 507 Computer-Aided Reasoning for Software (4) Covers theory, implementation, and applications of automated reasoning techniques, such as satisfiability solving, theorem proving, model checking, and abstract interpretation. Topics include concepts from mathematical logic and applications of automated reasoning to the design, construction, and analysis of software.

CSE 510 Advanced Topics in Human-Computer Interaction (4) Content varies, including interface issues for networks, embedded systems, education applications, safety and critical systems, graphics and virtual reality, databases, and computer-supported cooperative work.

CSE 512 Data Visualization (4) Covers techniques and algorithms for creating effective visualizations based on principles from graphic design, visual art, perceptual psychology, and cognitive science. Topics include data and image models; visual encoding; graphical perception; color; animation; interaction techniques; graph layout; and automated design. Lectures, reading, and project.

CSE 515 Statistical Methods in Computer Science (4) Introduction to the probabilistic and statistical techniques used in modern computer systems. Graphical models, probabilistic inference, statistical learning, sequential models, decision theory. Prerequisite: either CSE 312, STAT 341, STAT 391 or equivalent.

CSE 517 Natural Language Processing (4) Overview of modern approaches for natural language processing. Topics include language models, text, classification, tagging, parsing, machine translation, semantic, and discourse analysis.

CSE 519 Current Research in Computer Science (1, max. 18) Weekly presentations on current research activities by members of the department. Only computer science graduate students may register, although others are encouraged to attend. Credit/no-credit only.

CSE 520 Computer Science Colloquium (1, max. 18) Weekly public presentations on topics of current interest by visiting computer scientists. Credit/no-credit only.

CSE 521 Design and Analysis of Algorithms I (4) Principles of design of efficient algorithms: recursion, divide and conquer, balancing, dynamic programming, greedy method, network flow, linear programming. Correctness and analysis of algorithms. NP-completeness. Prerequisite: either CSE 332 or equivalent.

CSE 522 Design and Analysis of Algorithms II (4) Analysis of algorithms more sophisticated than those treated in CSE 521. Content varies and may include such topics as algebraic algorithms, combinatorial algorithms, techniques for proving lower bounds on complexity, and algorithms for special computing devices such as networks or formulas. Prerequisite: CSE 521.

CSE 523 Computational Geometry (4) Algorithms for discrete computational geometry. Geometric computation, range searching, convex hulls, proximity, Voronoi diagrams, intersection. Application areas include VLSI design and computer graphics. Prerequisite: CSE 521.

CSE 524 Parallel Algorithms (4) Design and analysis of parallel algorithms: fundamental parallel algorithms for sorting, arithmetic, matrix and graph problems, and additional selected topics. Emphasis on general techniques and approaches used for developing fast and efficient parallel algorithms and on limitations to their efficacy. Prerequisite: CSE 521.

CSE 525 Randomized Algorithms and Probabilistic Analysis (4) Examines algorithmic techniques: random selection, random sampling, backwards analysis, algebraic methods, Monte Carlo methods, and randomized rounding; random

graphs; the probabilistic method; Markov chains and random walks; and analysis tools: random variables, moments and deviations, Chernoff bounds, martingales, and balls in bins. Prerequisite: either CSE 521 or equivalent.

CSE 527 Computational Biology (4) Introduces computational methods for understanding biological systems at the molecular level. Problem areas such as mapping and sequencing, sequence analysis, structure prediction, phylogenetic inference, regulatory analysis. Techniques such as dynamic programming, Markov models, expectation-maximization, local search.

CSE 528 Computational Neuroscience (3) Introduction to computational methods for understanding nervous systems and the principles governing their operation. Topics include representation of information by spiking neurons, information processing in neural circuits, and algorithms for adaptation and learning. Prerequisite: elementary calculus, linear algebra, and statistics, or permission of instructor. Offered: jointly with NEURO 528.

CSE 529 Neural Control of Movement: A Computational Perspective (3) Systematic overview of sensorimotor function on multiple levels of analysis, with emphasis on the phenomenology amenable to computational modeling. Topics include musculoskeletal mechanics, neural networks, optimal control and Bayesian inference, learning and adaptation, internal models, and neural coding and decoding. Prerequisite: vector calculus, linear algebra, MATLAB, or permission of instructor. Offered: jointly with AMATH 533.

CSE 531 Computational Complexity I (4) Deterministic and nondeterministic time and space complexity, complexity classes, and complete problems. Time and space hierarchies. Alternation and the polynomial-time hierarchy. Circuit complexity. Probabilistic computation. Exponential complexity lower bounds. Interactive proofs. Prerequisite: either CSE 311 or equivalent.

CSE 532 Computational Complexity II (4) Advanced computational complexity including several of the following: circuit complexity lower bounds, #p and counting classes, probabilistically-checkable proofs, de-randomization, logical characteristics of complexity, communication complexity, time-space tradeoffs, complexity of data structures.

CSE 533 Advanced Topics in Complexity Theory (4) An in-depth study of advanced topics in computational complexity.

CSE 544 Principles of Database Systems (4) Data models and query languages (SQL, datalog, OQL). Relational databases, enforcement of integrity constraints. Object-oriented databases and object-relational databases. Principles of data storage and indexing. Query-execution methods and query optimization algorithms. Static analysis of queries and rewriting of queries using views. Data integration. Data mining. Principles of transaction processing.

CSE 546 Machine Learning (4) Explores methods for designing systems that learn from data and improve with experience. Supervised learning and predictive modeling: decision trees, rule induction, nearest neighbors, Bayesian methods, neural networks, support vector machines, and model ensembles. Unsupervised learning and clustering. Prerequisite: either CSE 312, STAT 341, STAT 391 or equivalent.

CSE 547 Machine Learning for Big Data (4) *Fox, Guestrin* Covers machine learning and statistical techniques for analyzing datasets of massive size and dimensionality. Representations include regularized linear models, graphical models, matrix factorization, sparsity, clustering, and latent factor models. Algorithms include sketching, random projections, hashing, fast nearest-neighbors, large-scale online learning, and parallel learning (Map-Reduce, GraphLab). Prerequisite: either STAT 535 or CSE 546. Offered: jointly with STAT 548; W.

CSE 548 Computer Systems Architecture (4) Notations for computer systems. Processor design (single chip, look-

ahead, pipelined, data flow). Memory hierarchy organization and management (virtual memory and caches). Micro-programming. I/O processing. Multiprocessors (SIMD and MIMD). Prerequisite: CSE 451.

CSE 549 High-Performance Computer Architectures (4) Algorithm design, software techniques, computer organizations for high-performance computing systems. Selected topics from: VLSI complexity for parallel algorithms, compiling techniques for parallel and vector machines, large MIMD machines, interconnection networks, reconfigurable systems, memory hierarchies in multiprocessors, algorithmically specialized processors, data flow architectures. Prerequisite: CSE 548 or permission of instructor.

CSE 550 Computer Systems (4) Explores computer system design, implementation, and evaluation. Covers principles, techniques, and examples related to the construction of computer systems, including concepts that span network systems, operating systems, web servers, parallel computing, and databases. Prerequisite: CSE 451.

CSE 551 Operating Systems (4) Operating system design and construction techniques. Concurrent programming, operating system kernels, correctness, deadlock, protection, transaction processing, design methodologies, comparative structure of different kinds of operating systems, and other topics. Prerequisite: CSE 451.

CSE 552 Distributed and Parallel Systems (4) Principles, techniques, and examples related to the design, implementation, and analysis of distributed and parallel computer systems. Prerequisite: CSE 551.

CSE 553 Real-Time Systems (4) Design and construction of software for real-time computer systems. Software architectures. Requirements and specification methods. Scheduling algorithms and timing analysis. Real-time operating systems. Real-time programming languages. Selected case studies. Prerequisite: CSE 451.

CSE 557 Computer Graphics (4) Introduction to image synthesis and computer modeling, emphasizing the underlying theory required for undertaking computer graphics research. Topics include color theory, image processing, affine and projective geometry, hidden-surface determination, photorealistic image synthesis, advanced curve and surface design, dynamics, realistic character animation. Prerequisite: solid knowledge of linear algebra.

CSE 558 Special Topics in Computer Graphics (4) Advanced topics in computer graphics not treated in CSE 557. Topics vary from year to year but typically include advanced aspects of image synthesis, animation, and 3D photography. Prerequisite: CSE 557 or permission of instructor.

CSE 561 Computer Communication and Networks (4) Fundamentals of data transmission: coding, message formats, and protocols. Organization of computer networks. Examples of network implementations. Prerequisite: either CSE 451 or equivalent.

CSE 564 Computer Security and Privacy (4) Examines the fundamentals of computer security including: human factors; attack detection, measurements, and models; cryptography and communications security; system design and implementation; and side channels.

CSE 567 Principles of Digital Systems Design (4) Principles of logic design, combinational and sequential circuits, minimization techniques, structured design methods, CMOS technology, complementary and ratioed gates, delay estimation and performance analysis, arithmetic circuits, memories, clocking methodologies, synthesis and simulation tools, VLSI processor architecture. Prerequisite: basic knowledge of logic design.

CSE 568 Introduction to VLSI Systems (4) Introduction to CMOS technology and circuit design; combinational logic-design alternatives; register-design and system-clocking methodologies; datapath and subsystem design; VLSI system-design methodologies; CAD tools for synthesis, layout, simulation, and validation; design of a complex VLSI chip. Prerequisite: either CSE 567 or permission of instructor.

CSE 571 AI-based Mobile Robotics (4) Overview of mobile robot control and sensing. Behavior-based control, world modeling, localization, navigation, and planning Probabilistic sensor interpretation, Bayes filters, particle filters. Projects: Program real robots to perform navigation tasks. Prerequisite: either CSE 473 or permission of instructor.

CSE 573 Artificial Intelligence I (4) Intensive introduction to artificial intelligence: Problem solving and search, game playing, knowledge representation and reasoning, uncertainty, machine learning, natural language processing. Prerequisite: either CSE 421 or equivalent; exposure to logic, probability, and statistics.

CSE 574 Artificial Intelligence II (4) Advanced topics in artificial intelligence. Subjects include planning, natural language understanding, qualitative physics, machine learning, and formal models of time and action. Students are required to do projects. Prerequisite: CSE 573.

CSE 576 Computer Vision (3) Principles and methods for interpreting the three-dimensional world from images. Topics include feature detection, image segmentation, motion estimation, image mosaics, 3D-shape reconstruction, object recognition, and image retrieval. Prerequisite: solid knowledge of linear algebra; good programming skills. Offered: jointly with E E 576.

CSE 577 Special Topics in Computer Vision (3) Topics vary and may include vision for graphics, probabilistic vision and learning, medical imaging, content-based image and video retrieval, robot vision, or 3D object recognition. Prerequisite: CSE 576/E E 576. Offered: jointly with E E 577.

CSE 579 Intelligent Control through Learning and Optimization (3) Design or near-optimal controllers for complex dynamical systems, using analytical techniques, machine learning, and optimization. Topics from deterministic and stochastic optimal control, reinforcement learning and dynamic programming, numerical optimization in the context of control, and robotics. Prerequisite: vector calculus; linear algebra; MATLAB. Offered: jointly with AMATH 579.

CSE 586 Introduction to Synthetic Biology (3) Studies mathematical modeling of transcription, translation, regulation, and metabolism in cell; computer aided design methods for synthetic biology; implementation of information processing, Boolean logic and feedback control laws with genetic regulatory networks; modularity, impedance matching and isolation in biochemical circuits; and parameter estimation methods. Prerequisite: either MATH 136 or MATH 307, AMATH 351, or CSE 311 and MATH 308 or AMATH 352. Offered: jointly with BIOEN 523/E E 523.

CSE 587 Advanced Systems and Synthetic Biology (3) Covers advanced concepts in system and synthetic biology. Includes kinetics, modeling, stoichiometry, control theory, metabolic systems, signaling, and motifs. All topics are set against problems in synthetic biology. Prerequisite: either BIOEN 523, E E 523, or CSE 586. Offered: jointly with BIOEN 524/E E 524; W.

CSE 590 Research Seminar (*, max. 50) Several offerings each quarter, on topics of current interest.

CSE 591 Group Projects in Computer Science (1-3, max. 25) Focuses on specialized topics and research activities in computer science.

CSE 599 Special Topics in Computer Science (1-5, max. 30) Studies of emerging areas and specialized topics in computer science.

CSE 600 Independent Study or Research (*-) Credit/no-credit only.

CSE 700 Master's Thesis (*-) Credit/no-credit only.

CSE 800 Doctoral Dissertation (*-) Credit/no-credit only.

Accelerated Masters Program

CSE M 544 Database Systems (4) Relational data model and SQL query language. Conceptual modeling; normal forms; XML. Transactions: recovery and concurrency control. Implementation of a database system. Application

project using a relational database system. Study of database research papers. May not be taken for credit if student has taken CSE 444. Prerequisite: CSE 332; CSE 344.

CSE M 552 Introduction to Distributed Systems (4) Covers abstractions and implementation techniques in the construction of distributed systems, including cloud computing, distributed storage systems, and distributed caches. Prerequisite: CSE 451

CSE M 584 Computer Security (4) Explores foundations and new directions in computer security and privacy, including: risk analysis, system security, applied cryptography, human-computer interaction, design and implementation issues, anonymity, web security, and side channels. Studies security and privacy research papers. Prerequisite: CSE 351; either CSE 451 or CSE 461.

Professional Masters Program

CSE P 501 Compiler Construction (4) Principles and practice of building efficient implementations of modern programming languages. Lexical, syntactic, and semantic analysis of programs. Intermediate program representations. Intra- and interprocedural analysis and optimization. Run-time system techniques. Related programming environment facilities such as source-level debuggers and profilers.

CSE P 503 Principles of Software Engineering (4) Study of major developments in software engineering over the past three decades. Topics may include design (information hiding, layering, open implementations), requirements specification (informal and formal approaches), quality assurance (testing, verification and analysis, inspections), reverse and re-engineering (tools, models, approaches).

CSE P 504 Advanced Topics in Software Systems (4) Topics include software architecture, software tools, programming language analysis, type systems, formal reasoning, and other pertinent topics in software engineering and programming languages research.

CSE P 505 Programming Languages (4) A study of non-imperative programming paradigms such as functional, object-oriented, logic, and constraint programming. Programming language semantics and type theory.

CSE P 510 Human Computer Interaction (4) Topics in human-computer interaction, including tools and skills for user interface design, user interface software architecture, rapid prototyping and iterative design, safety and critical systems, evaluation techniques, and computer supported cooperative work.

CSE P 517 Natural Language Processing (4) Provides an overview of modern approaches for natural language processing. Topics include language models, text classification, tagging, parsing, machine translation, semantics, and discourse analysis.

CSE P 521 Applied Algorithms (4) Principles of design of efficient algorithms with emphasis on algorithms with real world applications. Examples drawn from computational geometry, biology, scientific computation, image processing, combinatorial optimization, cryptography, and operations research.

CSE P 524 Parallel Computation (4) Survey of parallel computing including the processing modes of pipelining, data parallelism, thread parallelism, and task parallelism; algorithmic implications of memory models; shared memory and message passing; hardware implementations; bandwidth and latency; synchronization, consistency, interprocessor communication; programming issues including implicit and explicit parallelism, locality, portability.

CSE P 531 Computability and Complexity Theory (4) Survey of the theory of computation including Turing Machines, Church's Thesis, computability, incompleteness, undecidability, complexity classes, problem reductions, Cook's theorem, NP-completeness, randomized computation, cryptography, parallel computation, and space complexity.

Some emphasis placed on historical and philosophical aspects of the theory of computation.

CSE P 544 Database Management System (4) Introduction to the principles of database management systems. Topics include database system architecture, data models, theory of database design, query optimization, concurrency control, crash recovery, and storage strategies.

CSE P 545 Transaction Processing (4) Technology supporting reliable large-scale distributed computing, including transaction programming models, TP monitors, transactional communications, persistent queuing, software fault tolerance, concurrency control and recovery algorithms, distributed transactions, two-phase commit, data replication.

CSE P 546 Data Mining (4) Methods for identifying valid, novel, useful, and understandable patterns in data. Induction of predictive models from data: classification, regression, probability estimation. Discovery of clusters and association rules.

CSE P 548 Computer Architecture (4) Architecture of the single-chip microprocessor: instruction set design and processor implementation (pipelining, multiple issue, speculative execution). Memory hierarchy: on-chip and off-chip caches, TLBs and their management, virtual memory from the hardware viewpoint. I/O devices and control: buses, disks, and RAID's.

CSE P 551 Computer Operating Systems (4) A study of developments in operating systems from the 1960s to the present. Topics include operating system structure, protection, virtual memory, communication mechanisms, concurrency, lightweight threads, object-oriented systems, distributed systems, and transaction support in operating systems.

CSE P 552 Distributed Systems (4) Principles, techniques, and examples related to the design, implementation, and analysis of distributed computer systems.

CSE P 557 Current Trends in Computer Graphics (4) Introduction to computer image synthesis, modeling, and animation emphasizing the state-of-the-art algorithm applications. Topics may include visual perception, image processing, geometric transformations, hierarchical modeling, hidden-surface elimination, shading, ray-tracing, anti-aliasing, texture mapping, curves, surfaces, particle systems, dynamics, realistic character animation, and traditional animation principles.

CSE P 561 Network Systems (4) Current choices and challenges in network systems. Fundamental concepts combined with emphasis on evaluation of design/operations alternatives. Topics include alternative link, network, and transport-layer technologies, topologies, routing, congestion control multimedia, IPv6, ATM v. IP, network management and policy issues.

CSE P 564 Computer Security and Privacy (4) Examines the fundamental of computer security including: human factors; attack detection, measurements, and models; cryptography and communications security; system design and implementation; and side channels.

CSE P 567 Design and Implementation of Digital Systems (4) Overview of current implementation technologies for digital systems including custom integrated circuits, field-programmable logic, and embedded processors. Systems components such as buses and communications structures, interfaces, memory architectures, embedded systems, and application-specific devices. Focus on the design of large systems using modern CAD tools.

CSE P 573 Applications of Artificial Intelligence (4) Introduction to the use of Artificial Intelligence tools and techniques in industrial and company settings. Topics include foundations (search, knowledge representation) and tools such as expert systems, natural language interfaces, and machine learning techniques.

CSE P 576 Computer Vision (4) Provides an overview of computer vision, emphasizing the middle ground between image processing and artificial intelligence. Image formation, pre-attentive image processing, boundary and region representations, and case studies of vision architectures.

CSE P 590 Special Topics in Computer Science (1-4, max. 20)

CSE P 595 Software Entrepreneurship (4) Provides an overview of the major elements of entrepreneurial activity in software, including market identification and analysis, evaluation and planning of the business, financing, typical operating and administrative problems, and alternatives for growth or sale.

CSE P 596 Business Basics Computer Science Professionals (4) Business principles relevant to the software industry in four areas: competitive strategy, finance, accounting, and human resources. Organized as a series of case studies and lectures. Progresses from an emphasis on tools to a more high-level look at competitive dynamics in high-tech industries.

CSE P 600 Independent Study or Research ([1-4]-)

Electrical Engineering

AE100R Paul Allen Center

Electrical engineering is concerned with the understanding and utilization of electricity and with providing society useful, efficient, and economic products and services. It encompasses everything from batteries and power supplies to crystal fabrication, autonomous robots, and devices that can recognize human speech. Electrical engineers design, produce, study, and operate all manner of devices and systems that use electric and electromagnetic energy. They also work on systems at the macro scale of electric power grids and at the micro scale of nanotechnology.

Contemporary society is in the midst of an information revolution, created in large part from the fruits of electrical engineering. Rapid improvements in communication technologies, computer visualization, and information access continue to have a significant impact on manufacturing, medicine, transportation, and environmental monitoring. Dramatic advances in personal communication services, digital imaging, and network hardware and software are changing the texture of everyday life for an increasing portion of the world's population.

UNDERGRADUATE PROGRAM

Adviser

AE 100R Paul Allen Center

(206) 543-2142

undergrad@ee.washington.edu

The Department of Electrical Engineering offers the following programs of study:

- The Bachelor of Science in Electrical Engineering degree
- The Bachelor of Science in Electrical Engineering degree with an option in nanoscience and molecular engineering

Bachelor of Science in Electrical Engineering

Suggested First- and Second-Year Courses: MATH 124, MATH 125, MATH 126; CHEM 142; English composition; PHYS 121 (and beyond if possible). Students should start in math courses right away and follow with physics, chemistry, computer programming, etc., as soon as possible. The department publishes a sample four-year plan of study

for fulfilling all degree requirements, including those to be taken during the first year, online at www.engr.washington.edu/files/curr_students/docs/EE_2014.pdf.

Department Admission Requirements

Because resources are limited, students must apply for admission to the electrical engineering program. Admission to the department is competitive and completion of the requirements does not guarantee admission. Appeal of the department's admission decision is possible only if there was an error in the data considered by the admissions committee. Additional information on the program and admission is available through the department's website.

Direct Freshman Admission

The Department of Electrical Engineering enrolls up to one-third of its incoming class directly out of high school, prior to completion of University-level prerequisites. Freshman applicants to the UW who list electrical engineering as their intended major are automatically considered. Competitive applicants have taken or are taking calculus and at least one year of laboratory science (preferably physics). Admission is for autumn quarter only.

General Admission

Application for general admission is through the online College of Engineering Departmental Application. Application deadlines are February 1 for spring quarter and July 1 for autumn quarter.

1. *Course Requirements:* MATH 124, MATH 125, MATH 126; PHYS 121, PHYS 122; CHEM 142; 5 credits of English composition.
2. *Grade Requirements:* Minimum overall 2.50 GPA and minimum 2.50 GPA in courses required for admission.

Nanoscience and Molecular Engineering Option (NME): Admission to the NME option is by self-selection and normally occurs in winter quarter of the junior year, upon completion of all electrical engineering prerequisites and formal admission to the BS electrical engineering major. Students who have completed NME 220 with a minimum 2.0 grade are eligible. To declare, students schedule an appointment with an EE undergraduate adviser. Students applying for the NME option should indicate that interest on their electrical engineering major application and discuss their interests/background in their application personal statement.

Graduation Requirements

General Education Requirements (81 credits)

1. *Written and Oral Communications:* 12 credits, to include one 5-credit English composition course from the University list; HCDE 231; HCDE 333 (or department-approved alternative).
2. *Visual, Literary, & Performing Arts (VLPA), and Individuals & Societies (I&S) (25 credits):* Minimum 10 credits required in each area.
3. *Natural World (44 credits):*
 - a. Mathematics (24 credits): MATH 124, MATH 125, MATH 126, MATH 307 (or AMATH 351), MATH 308 (or AMATH 352), and MATH 324.
 - b. Science (20 credits): CHEM 142; PHYS 121, PHYS 122, PHYS 123

Major Requirements (80-81 credits)

1. *Computer Programming (9 credits):* CSE 142, CSE 143
2. *Electrical Engineering Core (14 credits):* E E 215, E E 233, E E 235
3. *Electrical Engineering Major Concentration Area (24 credits minimum)*
4. *Electrical Engineering Electives (up to 20 credits):* See adviser for list of acceptable courses. Number of credits of the major concentration and electives should total 44.

5. *Professional Issues:* One course. See adviser for list of acceptable courses. Course may also be counted toward Electrical Engineering Core, Electrical Engineering Major Concentration Area, or Electrical Engineering Electives requirement.
6. *Engineering Electives (10 credits):* See adviser for list of acceptable courses.
7. *Statistics (3-4 credits):* STAT 390/MATH 390 or IND E 315
8. *Grade Requirements:* Minimum 2.00 GPA in all E E courses with no grade below 2.0 in any of these courses.

Nanoscience and Molecular Engineering Option Requirements (80-81 credits)

1. *Computer Programming (9 credits):* CSE 142, CSE 143
2. *Electrical Engineering Core (14 credits):* E E 215, E E 233, E E 235
3. *Nanoscience and Molecular Engineering Courses (6 credits):* NME 220, NME 221, NME 421
4. *Electrical Engineering Major Concentration Area (24 credits minimum)* See adviser for list of acceptable courses.
5. *Electrical Engineering Electives (up to 20 credits):* See adviser for list of acceptable courses. Number of credits of the major concentration and electives should total 44.
6. *Professional Issues:* One course. See adviser for list of acceptable courses. Course may also be counted toward Electrical Engineering Core, Electrical Engineering Major Concentration Area, or Electrical Engineering Electives requirement.
7. *Engineering Electives (10 credits):* See adviser for list of acceptable courses.
8. *Statistics (3-4 credits):* STAT 390/MATH 390 or IND E 315
9. *Grade Requirements:* Minimum 2.00 GPA in all E E courses with no grade below 2.0 in any of these courses.

Electives (18-19 credits)

1. *Approved Non-Electrical Engineering Electives (10 credits):* Selected from courses listed in the departmental handbook.
2. *Free Electives (8-9 credits)*

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Graduates with a degree in electrical engineering find employment in industries such as aerospace, communications, computer manufacturing, power distribution, consumer electronics, and biomedical engineering. Positions can be found focusing on the research, design, and testing of new products; in technical sales and marketing; business consulting; and even growing areas such as intellectual property. Students who pursue graduate studies are quite successful in highly competitive national and international programs.

The BSEE program is accredited by the Accrediting Board for Engineering and Technology (ABET) and the department has adopted the following student outcomes:

- a. ability to apply knowledge of mathematics, science, and engineering
- b. ability to apply knowledge of probability and statistics, including applications appropriate to the program name and objectives
- c. ability to apply knowledge of mathematics through differential and integral calculus, basic science, and engineering sciences necessary to analyze and design complex electrical and electronic devices, software, and systems containing hardware and software components

- d. ability to apply knowledge of advanced mathematics, typically involving differential equations, linear algebra, complex variables, and discrete mathematics
- e. ability to design and conduct experiments, as well as to analyze and interpret data
- f. ability to design a system, component, or process to meet desired needs
- g. ability to function on multi-disciplinary teams
- h. ability to identify, formulate, and solve engineering problems
- i. understanding of professional and ethical responsibility
- j. ability to communicate effectively
- k. the broad education necessary to understand the impact of engineering solutions in a global and societal context

- *Instructional and Research Facilities:* The department maintains a number of instructional and research laboratories to support courses and independent study activities. There are three general-purpose computing laboratories. Instructional laboratories include a large instrumentation laboratory supporting numerous electronics courses; individual laboratories for digital design courses; a power laboratory to support the power/energy systems classes; and laboratories that support capstone design classes. Students participating in undergraduate research and independent study generally have access to the research laboratories of their supervising faculty member.

- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.

- *Research, Internships, and Service Learning:* Many electrical engineering students participate every year in internship and co-op (cooperative education) programs. The Engineering Co-op Office is one source for companies recruiting for internship and co-op students. The Center for Career Services also lists a variety of internship opportunities.

- *Department Scholarships:* Many scholarships specifically for electrical engineering majors and based on merit and financial need are awarded each year. Students interested in applying for these and other College of Engineering scholarships may obtain information from the Department of Electrical Engineering Scholarship Award Committee Chair.

- *Student Organizations/Associations:* The Institute of Electrical and Electronics Engineers (IEEE), UW student chapter organizes social activities, workshops, field trips and other professional development opportunities. Eta Kappa Nu (HKN) is an invitation-only honor society for electrical engineering students. HKN organizes tutoring services, tutorial workshops, social activities, and community services projects.

GRADUATE PROGRAM

Graduate Program Coordinator

AE100R Paul Allen Center, Box 352500

(206) 543-2142

grad@ee.washington.edu

The Department of Electrical Engineering offers graduate programs leading to the degrees of Master of Science in Electrical Engineering (MSEE) and Doctor of Philosophy (PhD). Graduate courses and research programs are offered in biosystems, circuits and network theory, computational intelligence, computer networks and distributed systems, computer architecture, digital systems, software

engineering, operating systems, microprocessors, VLSI design, control systems, electromagnetics (including optics and radio science), electronic materials (including devices and micro-electronics), energy systems (including power electronics and electric drives), signal and image processing, telecommunications, and virtual reality. Numerous interdisciplinary research opportunities exist, including projects relating to bioengineering, computer engineering, and marine acoustics. The department does extensive research in coordination with the University of Washington's Applied Physics laboratory and Washington Technology Center.

The MSEE degree may be earned in three ways, each of which requires the accumulation of 45 credits. A student may perform research and write a thesis; a student may pursue a one-quarter project as part of his or her studies; or a student may simply accumulate a suitable distribution of 45 credits of coursework. Coursework for each of the options is developed with the advice of faculty advisers as well as through the department advising staff.

For the PhD degree, students must pass the departmental qualifying examination, pass an advanced General Examination, pursue an original research problem, and report the results of that research in a dissertation that must be a contribution to knowledge. At least one year of coursework beyond the MSEE degree is usually desirable.

Master of Science in Electrical Engineering

Admission Requirements

In addition to meeting Graduate School admission requirements, the Graduate Record Examination (GRE) general test is required. Official test scores must be submitted, along with a formal application, a statement of purpose, and a minimum of two reference letters.

Although most applicants have baccalaureate degrees in electrical engineering, applicants with degrees in other branches of engineering, the physical sciences, computer science, or mathematics often are able to pursue graduate study in electrical engineering following some additional preparation. Such applicants are strongly encouraged to contact the department for further information.

For more information on admission qualifications, visit the department's website at www.ee.washington.edu/admissions/graduate/index.html.

Degree Requirements

Master's students have the option of choosing between two different pathways for pursuing their degree:

1. **Thesis Option:** The thesis option is best for students who wish to pursue an in-depth research experience with intended preparation for pursuing a PhD
2. **Coursework Option:** A student whose main goal is to work in industry immediately upon graduation may find the coursework option more suitable to his or her needs.

These two options have several related requirements:

1. Complete a plan of study by second quarter of study
2. Complete a minimum of 45 credits
3. Register full time (10 credits) per quarter (less in summer)
4. Apply no more than 3 credits of E E 500. 1 credit required
5. Apply no more than 5 credits of E E 599 to the degree
6. Take 1 credit of E E 592, offered autumn quarter

Thesis Option

45 credits, as follows:

1. 9-12 credits of E E 700
2. At least 20 credits in E E courses numbered 500 and above

3. No more than 12 credits in E E 400-level courses

4. No more than 9 credits from non-E E courses

The thesis option is an opportunity to pursue an individual problem in depth and in close collaboration with a faculty member. Typical problems involve basic research or application of classroom principles to a professional problem beyond the routine practice of electrical engineering. Students who choose the thesis option must complete a written thesis and oral examination based upon the thesis material before their degree is granted.

Coursework Option

45 credits, as follows:

1. At least 25 credits in E E courses numbered 500 and above
2. No more than 12 credits in E E 400-level courses
3. No more than 9 credits from non-E E courses

The coursework option allows students to pursue the MSEE by taking a prearranged course load specific to each of the seven curriculum areas. A generic coursework option is also available. The curriculum group chair and the Graduate Program Coordinator must approve deviation from these prearranged plans.

Doctor of Philosophy

Admission Requirements

In addition to meeting Graduate School admission requirements, the Graduate Record Examination (GRE) general test is required. Official test scores must be submitted, along with a formal application, a statement of purpose, and a minimum of two reference letters.

Although most applicants have baccalaureate degrees in electrical engineering, applicants with degrees in other branches of engineering, the physical sciences, computer science, or mathematics often are able to pursue graduate study in electrical engineering following some additional preparation. Such applicants are strongly encouraged to contact the department for further information.

For more information on admission qualifications, visit the department's Website at www.ee.washington.edu/admissions/graduate/index.html.

Degree Requirements

Minimum 90 credits, to include:

The PhD is awarded based on general proficiency and distinctive attainments in electrical engineering, particularly on the demonstrated ability of independent investigation. As evidence of ability, the student must produce a doctoral dissertation embodying original research yielding a new contribution to knowledge and presented with a satisfactory degree of literary skill. The majority of PhD students hold master's degrees within the same field, although students with degrees in the physical sciences and other engineering fields are also admitted. To earn a PhD, students must:

1. Pass the department qualifying examination
2. Complete an individualized course of study approved by the student's PhD Supervisory Committee
3. Pass the University general examination
4. Prepare and defend a satisfactory dissertation based on original research
5. Complete at least 90 credits of coursework, independent study, and dissertation (60 of which must be completed at the UW), 18 of which must be graded credits
6. Maintain a cumulative minimum GPA of 3.00.
7. Complete 30 credits of dissertation credits (E E 800)

Research Groups

Facilities in the Department of Electrical Engineering include research laboratories for advanced digital systems, advanced power technology, applied electromagnetics, optics, remote sensing, applied signal and image processing, mechatronics and intelligent control, modern sensors, and semiconductor technology

Financial Aid

Research assistantships, teaching assistantships, scholarships, and graduate fellowships are available to qualified graduate students in all areas of electrical engineering. Most awards include a monthly stipend plus payment of tuition and fees.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

EE 135 The Digital World of Multimedia (4) NW Introduces signal processing concepts behind multimedia creation, storage, and communication. Includes digitizing, decomposing, and modifying sounds and images; coding information for compression, errors, and security; and basics of network communication. Team-oriented labwork involves creating digital sounds and images using MATLAB, and experiments with streaming media technology.

E E 205 Introduction to Signal Conditioning (4) QSR Introduces analog circuits interfacing sensors to digital systems. /includes connection, attenuation, amplification, sampling, filtering, termination, controls, Kirchhoff's Laws, sources, resistors, op amps, capacitors, inductors, PSice, and MATLAB. Intended for non-EE majors. Prerequisite: either MATH 126 or MATH 136; PHYS 122. Offered: W.

E E 215 Fundamentals of Electrical Engineering (4) NW Introduction to electrical engineering. Basic circuit and systems concepts. Mathematical models of components. Kirchhoff's laws. Resistors, sources, capacitors, inductors, and operational amplifiers. Solution of first and second order linear differential equations associated with basic circuit forms. Prerequisite: either MATH 126 and MATH 307, which may be taken concurrently or MATH 136; PHYS 122. Offered: AWSpS.

EE 233 Circuit Theory (5) Electric circuit theory. Analysis of circuits with sinusoidal signals. Phasors, system functions, and complex frequency. Frequency response. Computer analysis of electrical circuits. Power and energy. Two port network theory. Laboratory in basic electrical engineering topics. Prerequisite: 1.0 in E E 215. Offered: AWSpS.

E E 235 Continuous Time Linear Systems (5) Introduction to continuous time signal analysis. Basic signals including impulses, pulses, and unit steps. Periodic signals. Convolution of signals. Fourier series and transforms in discrete and continuous time. Computer laboratory. Prerequisite: either MATH 136, MATH 307, or AMATH 351, any of which may be taken concurrently; PHYS 122; CSE 142, which may be taken concurrently. Offered: AWSp.

EE 271 Digital Circuits and Systems (5) Overview of digital computer systems. Digital logic, Boolean algebra, combinational and sequential circuits and logic design, programmable logic devices, and the design and operation of digital computers, including ALU, memory, and I/O. Weekly laboratories. Prerequisite: CSE 142. Offered: AWSpS.

E E 299 Introductory Topics in Electrical Engineering (1-5, max. 10) NW New and experimental approaches to basic electrical engineering. May include design and construction projects.

E E 331 Devices and Circuits I (5) Physics, characteristics, applications, analysis, and design of circuits using semiconductor diodes and field-effect transistors with an em-

phasis on large-signal behavior and digital logic circuits. Classroom concepts are reinforced through laboratory experiments and design exercises. Prerequisite: 1.0 in E E 233. Offered: AWSpS.

EE332 Devices and Circuits II (5) Characteristics of bipolar transistors, large- and small- signal models for bipolar and field effect transistors, linear circuit applications, including low and high frequency analysis of differential amplifiers, current sources, gain stages and output stages, internal circuitry of op-amps, op-amp configurations, op-amp stability and compensation. Weekly laboratory. Prerequisite: 1.0 in E E 331. Offered: AWSpS.

EE341 Discrete Time Linear Systems (5) Discrete time signals and systems, impulse response, convolution, Z-transforms, discrete time Fourier analysis. Computer laboratory. Prerequisite: 1.0 in E E 235. Offered: WSpS.

E E 351 Energy Systems (5) Develops understanding of modern energy systems through theory and analysis of the system and its components. Discussions of generation, transmission, and utilization are complemented by environmental and energy resources topics as well as electro-mechanical conversion, power electronics, electric safety, renewable energy, and electricity blackouts. Prerequisite: 1.0 in E E 233. Offered: ASp.

E E 361 Applied Electromagnetics (5) Introductory electromagnetic field theory and Maxwell's equations in integral and differential forms; uniform plane waves in linear media; boundary conditions and reflection and transmission of waves; guided waves; transmission lines and Smith chart; electrostatics. Prerequisite: 1.0 in E E 233; MATH 324; PHYS 123. Offered: AW.

EE371 Design of Digital Circuits and Systems (5) Provides a theoretical background in, and practical experience with, tools, and techniques for modeling complex digital systems with the Verilog hardware description language, maintaining signal integrity, managing power consumption, and ensuring robust intra- and inter-system communication. Prerequisite: either E E 205 or E E 215; E E 271.

EE393 Advanced Technical Writing in Electrical Engineering (4) Develops formal technical writing skills for engineering students. Includes organization and structure of papers and reports, clear and concise technical language, choice of appropriate terminology, and an overview of common grammatical errors. Covers implementation of figures, equations, and literature citations, with specific recommendations for electrical engineers. Prerequisite: HCDE 231. Offered: AWSp.

E E 398 Introduction to Professional Issues (1) Covers topics of interest to students planning their educational and professional path, including salaries, the value of advanced degrees, societal expectations of engineering professionals, the corporate enterprise, ethical dilemmas, patents and trade secrets, outsourcing, and the global market. Offered: AWSp.

EE399 Special Topics in Electrical Engineering (1-5, max. 10) New and experimental approaches to current electrical engineering problems. May include design and construction projects.

E E 400 Advanced Topics in Electrical Engineering (1-5, max. 10) Contemporary topics at the advanced undergraduate elective level. Faculty presents advanced elective topics not included in the established curriculum.

E E 401 Engineering Design in Large Teams (4) Engineering design process, including project management, team formation, working with technical literature, concept development (e.g., brainstorming, morphological analysis, biomimetics, theory of inventive problem solving), intellectual property, high-tech ventures. Prerequisite: E E 215.

E E 402 Engineering Design in Large Teams: Robotics II (5) Engineering design process applied to robot design. Involves project management, mentoring, marketing, and multi-disciplinary collaboration. The team designs, prototypes, manufactures, assembles, tests, modifies, trouble-

shoots, and learns to operate a system that competes in an international design contest. Prerequisite: E E 215; E E 401.

E E 406 Engineering Design for K-12 Outreach (3) Design process targeted toward development of relevant activities for K-12 audiences in such areas of science and engineering. Instruction in basic design process, design specification combined with an overview of relevant cognitive/social development in K-12. Prerequisite: either E E 271, E E 331, E E 341, E E 351 or E E 361.

E E 415 Computer-Aided System Analysis and Design (3) Concepts, principles, and techniques concerned with the design, testing, and application of general-purpose problem-oriented computer programs for analyzing large-scale systems.

E E 416 Random Signals for Communications and Signal Processing (4) Probability and random processes in communications. Random variables, distributions, and expectation. Statistical filter design for detection and estimation. Prerequisite: E E 341; either STAT 390 or IND E 315. Offered: A.

EE417 Modern Wireless Communications (4) Introduction to wireless networks as an application of basic communication theorems. Examines modulation techniques for digital communications, signal space, optimum receiver design, error performance, error control coding for high reliability, multipath fading and its effects, RF link budget analysis, WiFi and Wimax systems. Prerequisite: E E 341; either IND E 315, MATH 390, or STAT 390. Offered: W.

EE418 Network Security and Cryptography (3) Fundamental principles of cryptography and its application to network and communication security. An introduction to the fundamental tools in cryptography and the protocols that enable its application to network and communication security. Prerequisite: MATH 308; either MATH 390, STAT 390, or IND E 315. Offered: A.

E E 420 Design in Communications (4) Design projects in communications. Frequent projects solved by student teams. Reports and presentations. Prerequisite: 1.0 in E E 417 which may be taken concurrently. Offered: Sp.

E E 423 Introduction to Synthetic Biology (3) Studies mathematical modeling of transcription, translation, regulation, and metabolism in cell; computer aided design methods for synthetic biology; implementation of information processing, Boolean logic and feedback control laws with genetic regulatory networks; modularity, impedance matching and isolation in biochemical circuits; and parameter estimation methods. Prerequisite: either MATH 136 or MATH 307, AMATH 351, or CSE 311 and MATH 308 or AMATH 352. Offered: jointly with BIOEN 423/CSE 486; A.

E E 424 Advanced Systems and Synthetic Biology (3) Covers advanced concepts in system and synthetic biology. Includes kinetics, modeling, stoichiometry, control theory, metabolic systems, signaling, and motifs. All topics are set against problems in synthetic biology. Prerequisite: either BIOEN 401, BIOEN 423, E E 423, or CSE 486. Offered: jointly with BIOEN 424/CSE 487; W.

E E 425 Laboratory Methods in Synthetic Biology (4) Designs and builds transgenic bacterial using promoters and genes taken from a variety of organisms. Uses construction techniques including recombination, gene synthesis, and gene extraction. Evaluates designs using sequencing, fluorescence assays, enzyme activity assays, and single cell studies using time-lapse microscopy. Prerequisite: either BIOEN 423, E E 423, or CSE 486; either CHEM 142, CHEM 144, or CHEM 145. Offered: jointly with BIOEN 425/CSE 488; W.

EE433 Analog Circuit Design (5) Design of analog circuits and systems applying modern integrated circuit technology: operational amplifiers, differential amplifiers, active filters, voltage references and regulators. Prerequisite: 1.0 in E E 332. Offered: A.

E E 436 Medical Instrumentation (4) Introductory course in the application of instrumentation to medicine. Topics include transducers, signal-conditioning amplifiers, electrodes and electrochemistry, ultrasound systems, electrical safety, and the design of clinical electronics. Laboratory included. For upper-division and first-year graduate students preparing for careers in bioengineering - both research and industrial. Prerequisite: E E 332. Offered: Sp.

EE440 Introduction to Digital Imaging Systems (4) Image representation and standards, visual perception and color spaces, spatial domain image filtering and enhancement, image restoration, image transforms, image and video coding, image geometrical transformation and camera modeling. Prerequisite: E E 341. Offered: A.

E E 442 Digital Signals and Filtering (3) Methods and techniques for digital signal processing. Review of sampling theorems, A/D and D/A converters. Demodulation by quadrature sampling. Z-transform methods, system functions, linear shift-invariant systems, difference equations. Signal flow graphs for digital networks, canonical forms. Design of digital filters, practical considerations, IIR and FIR filters. Digital Fourier transforms and FFT techniques. Prerequisite: 1.0 in E E 341. Offered: W.

E E 443 Design and Application of Digital Signal Processing (5) Application of learned theories/algorithms and available computer technologies to modern image and speech processing problems. Two-dimensional signals and systems. Image transform, enhancement, restoration, coding. Characteristics of speech signals, linear predictive coding (LPC) of speech, pitch detection, and LPC speech synthesis, speech recognition, hardware designs for signal processing. Prerequisite: 1.0 in E E 442. Offered: Sp.

E E 447 Control System Analysis I (4) Linear Servomechanism theory and design principles. Pole-zero analysis, stability of feedback systems by root locus and real-frequency response methods. Design methods of Bode and Nichols. Introduction to advanced topics in automatic control theory, state variable methods. Prerequisite: E E 233; E E 235; MATH 308. Offered: A.

E E 448 Systems, Controls, and Robotics Capstone (4-) In-depth control engineering design experience in small design teams. Includes project planning and management, reporting, and technical communication. Student teams design, implement, test, and report on their project results. Includes lectures on selected topics, e.g., project management, intellectual property, and some control engineering topics. Prerequisite: E E 447. Offered: W.

E E 449 Systems, Controls, and Robotics Capstone (-4) In-depth control engineering design experience in small design teams. Includes project planning and management, reporting, and technical communication. Student teams design, implement, test, and report on their project results. Includes lectures on selected topics, e.g., project management, intellectual property, and some control engineering topics. Prerequisite: E E 448. Offered: Sp.

EE451 Wind Energy (4) Covers the operation and modeling of wind energy, wind statistics, wind generators and converters, wind energy systems, challenges to wind energy development, impacts of wind energy on the power grid, and existing and potential solutions to wind energy integration. Prerequisite: E E 351. Offered: Sp, odd years.

EE452 Power Electronics Design (5) Electronic conversion and control of electrical power. Includes semiconductor switching devices, power converter circuits, design of magnetics, and control of power converters. Also ac/ac, ac/dc, and dc/dc power converters; circuit simulation; extensive laboratory work; a four-week power converter design project. Prerequisite: 1.0 in E E 331; 1.0 in E E 351. Offered: A.

E E 453 Electric Drives (5) Elements of drive systems, speed-torque characteristics of electric motors and industrial loads, solid-state converter. Starting and braking methods of loaded motors. Speed control of electric motors. Solid-state drives. Transient analysis of loaded mo-

tors. Special forms of individual- and multimotor drives. Prerequisite: 1.0 in E E 452. Offered: W.

EE 454 Power System Analysis (4) Introduction to methods of analyzing power systems. Includes symmetrical components, calculation of line parameters, representation of transmission lines and power components, and power flow control. Prerequisite: 1.0 in E E 351. Offered: A.

E E 455 Power System Dynamics and Protection (4) Analysis of symmetrical and unsymmetrical power systems' networks, fault analysis, and stability studies. Prerequisite: 1.0 in E E 351. Offered: W.

E E 456 Computer-Aided Design in Power Systems (4) Design-oriented course in power system engineering. Students are assigned a project concerning system operation and planning, steady-state and dynamic behaviors of power systems, or distribution systems. Each involves formulation of design criteria, development of approach, application of existing software. Prerequisite: either 1.0 in E E 454 or 1.0 in E E 455. Offered: Sp.

E E 457 Electric Energy Distribution Systems (4) Introduction to electric utility distribution systems. Primary and secondary network analysis and design, distribution substation problems, distribution transformers, capacitor application, overcurrent and overvoltage protection. System planning and reliability. Prerequisite: 1.0 in E E 351. Offered: W.

E E 461 Introduction to Computer-Communication Networks (4) Computer network architectures and protocols. OSI Layers and performance analysis. Transmission media, switching, multiple access arbitration. Network routing, congestion control, flow control. Transport protocols, real-time, multicast, network security. Prerequisite: CSE 143; either MATH 390/STAT 390, STAT 391, or IND E 315. Offered: Sp.

E E 465 Fiber Optics, Devices, and Applications (4) Wave propagation in optical waveguiding structures, signal distortion, coupling of modes, modulation, sources and detectors, fabrication and measurement methods, communication and sensor systems. Prerequisite: E E 331; E E 361.

E E 467 Antennas: Analysis and Design (4) Fundamentals of antennas, analysis, synthesis, and computer-aided design, and applications in communications, remote sensing, and radars. Radiation pattern, directivity, impedance, wire antennas, arrays, numerical methods for analysis, horn antennas, microstrip antennas, and reflector antennas. Prerequisite: 1.0 in E E 361. Offered: Sp.

E E 469 Computer Architecture I (5) Introduction to computer architecture. Assembly and machine language, microprocessor organization including control and datapath. Computer arithmetic. Memory systems and caching. Performance modeling of microprocessors. Prerequisite: either E E 271 or CSE 369; CSE 143 Offered: jointly with CSE 469; AWSp.

E E 470 Computer Architecture II (4) Advanced computer architecture. Performance evaluation and energy efficiency. Instruction set architectures. Instruction-level parallelism. Modern microprocessor micro-architecture. Thread-level parallelism. Cache coherency and memory consistency in shared-memory multiprocessors. Memory hierarchy. GPU architecture. Warehouse-scale computing. Trends in computer design. Prerequisite: CSE 351; either CSE 469 or E E 469. Offered: jointly with CSE 470.

E E 471 Computer Design and Organization (5) Introduction to computer architecture, algorithms, hardware design for various computer subsystems, CPU control unit design, hardware and microprogrammed control, memory organization, cache design, virtual memory, I/O organization, and I/O hardware design. Prerequisite: either E E 271 or CSE 370; CSE 143. Offered: AWSp.

E E 472 Microcomputer Systems (5) Concepts of multi-level machines and computer systems organization. Utilizing microprocessors, digital computer studied at assembly; also, high-language levels with emphasis on concepts of

central processor architecture, memory organization, input/output, and interrupts. Assembly language programming concepts applied to solution of various laboratory problems including I/O programming. Prerequisite: CSE 143. Offered: AWSp.

E E 473 Linear Integrated Circuits (5) Design of linear integrated circuits applying modern MOS and BJT integrated circuit technologies: single-stage amplifiers; current-mirror DC bias and active load circuits; stability and frequency compensation of single-stage and two-stage operational amplifiers; output stages; current and voltage reference circuits. Prerequisite: 1.0 in E E 332. Offered: W.

E E 474 Introduction to Embedded Systems (4) Introduces the specification, design, development, and test of real time embedded system software. Use of a modern embedded microcomputer or microcontroller as a target environment for a series of laboratory projects and a comprehensive final project. Prerequisite: CSE 143. Offered: jointly with CSE 474; AWSp.

E E 475 Embedded Systems Capstone (5) Capstone design experience. Prototype a substantial project mixing hardware, software, and communications. Focuses on embedded processors, programmable logic devices, and emerging platforms for the development of digital systems. Provides a comprehensive experience in specification, design, and management of contemporary embedded systems. Prerequisite: either E E 271 or CSE 369; either CSE 466, E E 472, or CSE 474/E E 474. Offered: jointly with CSE 475; AWSp.

E E 476 Digital Integrated Circuit Design (5) Comprehensive view of digital integrated circuit design. Topics to be covered include the design of inverters, static logic circuits, switch logic, and synchronous logic. Students design, simulate, and layout a complete digital IC using modern computer-aided design tools. Prerequisite: either E E 205 or E E 215; E E 271. Offered: A.

E E 477 VLSI II (5) Provides a fairly deep understanding of how IC-based memory and datapath blocks are designed using static and dynamic CMOS technologies. Gives students extensive experience with industry-standard computer-aided design tools, including Cadence (Virtuoso, DRC, LVS) and Avant! (Hspice). Credit not allowed for both E E 477 and E E 525. Prerequisite: E E 331; E E 476. Offered: W.

EE 478 Design of Computer Subsystems (5) Design of digital computer subsystems and systems, using SSI, MSI, and LSI digital components. Combinational logic, sequential logic, memory hardware designs, I/O hardware and interface design, system design steps, high-speed digital circuit design, noise reduction techniques, and hardware description language. One four-hour laboratory each week and design project. Prerequisite: E E 271; E E 472. Offered: AWSp.

E E 480 Microwave Engineering I (4) Analysis and design of transmission lines and matching circuits. Lossy transmission lines. Mode structures in metallic and dielectric waveguides. Microwave resonators and magnetic devices. Smith chart and matching techniques. Prerequisite: 1.0 in E E 361. Offered: A.

E E 481 Microwave Electronic Design (4) Design of microwave circuits using S-parameter techniques. Measurement techniques, CAD of microwave systems. Includes design, fabrication, and evaluation of a microwave amplifier. Prerequisite: 1.0 in E E 332; 1.0 in E E 361. Offered: W.

EE 482 Semiconductor Devices (4) Fundamentals of semiconductor theory: carrier diffusion and drift; concept of direct and indirect energy materials, effective mass of mobile carriers; device physics: homo- and heterojunctions, operating principles of bipolar, junction, and MOS field-effect transistors. Prerequisite: E E 331; E E 361. Offered: A.

E E 484 Sensors and Sensor Systems (4) Introduction to optical and solid-state chemical and physical sensors. Topics include transduction mechanisms, design parameters,

fabrication methods and applications. Prerequisite: E E 331. Offered: Sp.

E E 485 Introduction to Photonics (4) Introduction to optical principles and phenomena. Topics include electromagnetic theory of light, interference, diffraction, polarization, photon optics, laser principles, Gaussian beam optics, semiconductor optics, semiconductor photonic devices. Prerequisite: E E 361 or PHYS 123. Offered: W.

E E 486 Fundamentals of Integrated Circuit Technology (3) Processing physics, chemistry, and technology, including evaporation, sputtering, epitaxial growth, diffusion, ion implantation, laser annealing, oxidation, chemical vapor deposition, photoresists. Design considerations for bipolar and MOS devices, materials and process characterization. Future trends. Prerequisite: either both E E 331 and E E 361 or MSE 351. Offered: jointly with MSE 486; AW.

E E 488 Photonics Design Capstone (4) Design of optical and optoelectronic devices using fundamental principles of photonics. Recent advances in contemporary research. Construction of microscopes or spectrometers. Involves a major design experience. Prerequisite: E E 485.

EE 490 Reading and Research (1-5, max. 25) Reading and research in the field under supervision of an E E faculty member. Credit/no-credit only.

E E 491 Undergraduate Seminar (1, max. 2) Weekly seminars on current topics in electrical engineering. Credit/no-credit only.

E E 499 Undergraduate Research and Special Projects (2-5, max. 10) Undergraduate research or design project carried out under the supervision of a faculty sponsor.

E E 500 Graduate Seminar (1, max. 9) Weekly seminars on current topics in electrical engineering. More than one section may be offered in a given quarter. Credit/no-credit only.

EE 501 Radar Remote Sensing (4) Introduces radar remote sensing. Covers the fundamentals of radar systems, monostatic and bistatic topologies, radar equation, range-time diagram; ambiguity function, pulse compression, elementary estimation and detection theory, spectrum estimation for underspread and overspread targets; interferometry, source imaging; and Time Difference of Arrival, Aperture Synthesis (SAR and ISAR).

EE 502 Introduction to Microelectro Mechanical Systems (4) Theoretical and practical aspects in design, analysis, and fabrication of MEMS devices. Fabrication processes, including bulk and surface micromachining. MEMS design and layout. MEMS CAD tools. Mechanical and electrical design. Applications such as micro sensors and actuators, or chemical and thermal transducers, recent advances. Offered: jointly with M E 504/MSE 504.

E E 503 Modeling of MEMS (4) Explores microelectro mechanical systems (MEMS) including lumped modeling, conjugate power variables, electrostatic and magnetic actuators, linear transducers, linear system dynamics, design optimization, and thermal analysis. Numerical modeling topics include electro (quasi) static, mechanical, electro mechanical, magneto (quasi) static, and fluidic phenomena; parametric analysis, visualization of multi-dimensional solutions; and verification of validity of results.

E E 505 Probability and Random Processes (4) Foundations for the engineering analysis of random processes: set theoretic fundamentals, basic axioms of probability models, conditional probabilities and independence, discrete and continuous random variables, multiple random variables, sequences of random variables, limit theorems, models of stochastic processes, noise, stationarity and ergodicity, Gaussian processes, power spectral densities. Prerequisite: graduate standing and understanding of probability at the level of E E 416.

E E 506 Fundamentals of Wireless Communication (4) Reviews fundamentals of wireless communications including signal and noise theory, modulation techniques, fading

channels, error analysis, synchronization, and coding. Prerequisite: E E 505.

E E 507 Communication Theory II (3) Review of stochastic processes. Communication system models. Channel noise and capacity. Optimum detection, modulation, and coding, convolutional coders and decoders. Typical channels, random and fading channels. Waveform communication, optimum filters. Prerequisite: E E 506.

E E 508 Stochastic Processes in Engineering (3) Non-measure theoretic introduction to stochastic processes. Topics include Poisson processes, renewal processes, Markov and semi-Markov processes, Brownian motion, and martingales, with applications to problems in queuing, supply chain management, signal processing, control, and communications. Prerequisite: E E 505. Offered: jointly with IND E 508.

E E 510 Mathematical Foundations of Systems Theory (4) Mathematical foundations for system theory presented from an engineering viewpoint. Includes set theory; functions, inverse functions; metric spaces; finite dimensional linear spaces; linear operators on finite dimensional spaces; projections on Hilbert spaces. Applications to engineering systems stressed. Offered: jointly with A A 510/CHEM E 510/M E 510.

E E 511 Introduction to Statistical Learning (4) Covers classification and estimation of vector observations, including both parametric and nonparametric approaches. Includes classification with likelihood functions and general discriminant functions, density estimation, supervised and unsupervised learning, feature reduction, model selection, and performance estimation. Prerequisite: either E E 505 or CSE 515.

E E 512 Graphical Models in Pattern Recognition (4) Bayesian networks, Markov random fields, factor graphs, Markov properties, standard models as graphical models, graph theory (e.g., moralization and triangulation), probabilistic inference (including Pearl's belief propagation, Hugin, and Shafer-Shenoy), junction trees, dynamic Bayesian networks (including hidden Markov models), learning new models, models in practice. Prerequisite: E E 508; E E 511.

E E 514 Information Theory I (4) Includes entropy, mutual information, Shannon's source coding theorem, data compression to entropy limit, method of types, Huffman coding, Kraft inequality, arithmetic coding, Kolmogorov complexity, communication at channel capacity (channel coding), coding theory, introduction to modern statistical coding techniques, differential entropy, and Gaussian channels. Prerequisite: E E 505.

E E 515 Information Theory II (4) Includes advanced modern statistical coding techniques (statistical coding), advanced codes and graphs, source coding with errors (rate distortion), alternating minimization principles, channel coding with errors, network information theory, multiple description coding, and information theory in other areas including pattern recognition, bio-informatics, natural language processing, and computer science. Prerequisite: E E 514.

E E 516 Computer Speech Processing (4) Introduction to automatic speech processing. Overview of human speech production and perception. Fundamental theory in speech coding, synthesis and reproduction, as well as system design methodologies. Advanced topics include speaker and language identification and adaptation. Prerequisite: E E 505; E E 518.

E E 517 Statistical Language Processing (4) Introduction to major issues in natural language processing and human language technology, with emphasis on statistical approaches. Addresses topics in statistical parsing and tagging, dialogue systems, information extraction, and machine translation. Prerequisite: E E 505.

EE 518 Digital Signal Processing (4) Digital representation of analog signals. Frequency domain and Z-transforms of digital signals and systems design of digital systems; IIR

and FIR filter design techniques, fast Fourier transform algorithms. Sources of error in digital systems. Analysis of noise in digital systems. Prerequisite: knowledge of Fourier analysis techniques.

EE 519 Stochastic Analysis of Data From Physical Systems (4) Computer systems for acquisition and processing of stochastic signals. Calculation of typical descriptors of such random processes as correlation functions, spectral densities, probability densities. Interpretation of statistical measurements made on a variety of physical systems (e.g., electrical, mechanical, acoustic, nuclear). Lecture plus laboratory. Prerequisite: E E 505.

E E 520 Spectral Analysis of Time Series (4) Estimation of spectral densities for single and multiple time series. Non-parametric estimation of spectral density, cross-spectral density, and coherence for stationary time series, real and complex spectrum techniques. Bispectrum. Digital filtering techniques. Aliasing, prewhitening. Choice of lag windows and data windows. Use of the fast Fourier transform. The parametric autoregressive spectral density estimate for single and multiple stationary time series. Spectral analysis of nonstationary random processes and for randomly sampled processes. Techniques of robust spectral analysis. Prerequisite: one of STAT 342, STAT 390, STAT 481, STAT 509/CS&SS 509/ECON 580, or IND E 315. Offered: jointly with STAT 520.

E E 521 Quantum Mechanics for Engineers (4) Covers the basic theory of quantum mechanics in the context of modern examples of technological importance involving 1D, 2D, and 3D nanomaterials. Develops a qualitative and quantitative understanding of the principles of quantization, band structure, density of states, and Fermi's golden rule (optical absorption, electron-impurity/phonon scattering). Prerequisite: MATH 307 or AMATH 351.

E E 523 Introduction to Synthetic Biology (3) Studies mathematical modeling of transcription, translation, regulation, and metabolism in cell; computer aided design methods for synthetic biology; implementation of information processing, Boolean logic and feedback control laws with genetic regulatory networks; modularity, impedance matching and isolation in biochemical circuits; and parameter estimation methods. Prerequisite: either MATH 136 or MATH 307, AMATH 351, or CSE 311 and MATH 308 or AMATH 352. Offered: jointly with BIOEN 523/CSE 586.

E E 524 Advanced Systems and Synthetic Biology (3) Covers advanced concepts in system and synthetic biology. Includes kinetics, modeling, stoichiometry, control theory, metabolic systems, signaling, and motifs. All topics are set against problems in synthetic biology. Prerequisite: either BIOEN 523, E E 523, or CSE 586. Offered: jointly with BIOEN 524/CSE 587; W.

EE 525 VLSI II (5) Analyzes how IC-based memory and datapath blocks are designed using static and dynamic CMOS technologies. Gives students extensive experience with industry-standard computer-aided design tools, including Cadence (Virtuoso, DRC, LVS) and Avant! (Hspice). Credit not allowed for both E E 477 and E E 525. Prerequisite: E E 476.

EE 526 VLSI III (4) Ultra-high speed digital logical families based on output prediction logic; high-speed division; input and output pad design; state-of-the-art latch and flip-flop design; clock distribution, including PLLs and DLLs; noise considerations in high-speed digital IC design. Prerequisite: E E 477 or E E 525.

EE 527 Microfabrication (4) Principles and techniques for the fabrication of microelectronics devices and integrated circuits. Includes clean room laboratory practices and chemical safety, photolithography, wet and dry etching, oxidation and diffusion, metallization and dielectric deposition, compressed gas systems, vacuum systems, thermal processing systems, plasma systems, and metrology. Extensive laboratory with limited enrollment.

E E 528 Physics and Modeling of VLSI Fabrication (4) Physics of VLSI fabrication, emphasizing processing modeling and simulation. CMOS process, sequences, point defects and diffusion, ion implantation and annealing, film growth kinetics, deposition and etching, advanced photolithography. Process interactions and process integration. Extensive use of process simulation software. Prerequisite: either E E 486/MSE 467, E E 520/M E 504/MSE 504, or E E 527. Offered: jointly with MSE 528.

EE 529 Semiconductor Optoelectronics (4) Covers optical processes in semiconductors; optical waveguide theory; junction theory; LEDs; lasers photodetectors; photovoltaics; and optical modulators and switches. Prerequisite: E E 485.

E E 530 Wavelets: Data Analysis, Algorithms, and Theory (3) Review of spectral analysis. Theory of continuous and discrete wavelets. Multiresolution analysis. Computation of discrete wavelet transform. Time-scale analysis. Wavelet packets. Statistical properties of wavelet signal extraction and smoothers. Estimation of wavelet variance. Prerequisite: some Fourier theory and linear algebra; MATH 390/STAT 390, ECON 481 or STAT 481, STAT 509/CS&SS 509/ECON 580, STAT 513, or IND E 315. Offered: jointly with STAT 530; Sp.

E E 531 Semiconductor Devices and Device Simulation (4) Physical principles in semiconductor devices. Generation, recombination, p-n junctions, MOS, metal-semiconductor and other interface structures. Carrier transport at low and high level injection levels. Device simulation used to demonstrate physical principles and basic device operation. Project using device simulation. Prerequisite: E E 482.

E E 533 Photodetectors and Photodetection (4) Includes both the device physics and signal processing aspects of photodetection. Photodiodes, photoconductors, photomultipliers, and solar cells. Noise, signal-to-noise ratios, and imaging considerations. Prerequisite: E E 482.

E E 534 Power Electronics (4) Detailed study of DC-to-AC inverters, pulse-width modulated and resonant DC-to-DC converter topologies; drive and protection circuits for efficient switching of semiconductor devices. Includes extensive computer-aided circuit simulation and power supply control.

E E 536 Design of Analog Integrated Circuits and Systems (4) Design of analog VLSI: specifications, design, simulation, layout. Covering CMOS and Bi CMOS technologies. Prerequisite: E E 433.

E E 537 Computation Methods for Circuit Analysis and Simulation (3) Introduction to numerical algorithms and computer-aided techniques for the simulation of electronic circuits. Theoretical and practical aspects of important analyses: large-signal nonlinear DC, small-signal AC, nonlinear transient, and large-signal steady-state. Simulation concepts applied to the modeling and characterization of various electronic devices.

E E 538 Topics in Electronic Circuit Design (1-5, max. 16) Topics of current interest in electronic circuit and system design. Course content varies from year to year, based on current professional interests of the faculty member in charge.

E E 539 Advanced Topics in Solid-State Electronics (1-5, max. 16) Lectures or discussions of topics of current interest in the field of solid-state electronics for advanced graduate students having adequate preparation in solid-state theory. Subject matter may vary according to the interests of students and faculty.

E E 540 VLSI Testing (4) VLSI testing and design-for-test techniques, covering digital systems, mixed analog-digital systems, integrated sensor systems, and radio-frequency systems. Projects include test algorithm design, testing of fabricated circuits, and parametric testing of state-of-the-art industry circuits. Prerequisite: either E E 477 or E E 525.

E E 541 Automatic Layout of Integrated Circuits (4) Examines the algorithms behind the following commonly used

physical design automation tools: floorplanning, partitioning, placement, routing, compaction, and verification. Prerequisite: either E E 271 or CSE 370; CSE 143.

E E 542 Advanced Embedded Systems Design (5) Studies advanced embedded system design principles and practices. Emphasizes formal design methodologies such as hardware-software co-design, investigates techniques for performance optimization, and examines distributed embedded systems. Prerequisite: E E 478.

E E 543 Models of Robot Manipulation (4) Mathematical models of arbitrary articulated robotic (or biological) arms and their application to realistic arms and tasks, including the homogeneous coordinate model of positioning tasks, the forward and inverse kinematic models, the Jacobian Matrix, and the recursive Newton-Euler dynamic model. Prerequisite: linear algebra.

E E 544 Advanced Robot Manipulation (4) Continuation of the analysis of robot manipulation, considering kinematic redundancy, control of robot manipulators in contact with the environment, teleoperation, and grasping with multi-fingered hands. Students perform a project and critique a research paper in the area of the project. Prerequisite: E E 543.

E E 545 Autonomous Multi-Robot Systems (4) Design-oriented course in autonomous multi-robot systems. Wireless peer communication protocols, multi-robot control methodologies and computational issues. Laboratory exercises include design, construction, and testing of multiple autonomous mobile robots, which compete as a team at the end of the term. Prerequisite: either E E 462 or E E 463.

E E 546 Advanced Topics in Control System Theory (1-5, max. 16) Topics of current interest in control system theory for advanced graduate students with adequate preparation in linear and nonlinear system theory. Prerequisite: permission of instructor. Offered when adequate enrollment develops prior to close of advance registration.

E E 547 Linear Systems Theory (4) Linearity, linearization, finite dimensionality, time-varying vs. time-invariant linear systems, interconnection of linear systems, functional/structural descriptions of linear systems, system zeros and invertibility, linear system stability, system norms, state transition, matrix exponentials, controllability and observability, realization theory. Offered: jointly with A A 547/M E 547.

E E 548 Linear Multivariable Control (3) Introduction to MIMO systems, successive single loop design comparison, Lyapunov stability theorem, full state feedback controller design, observer design, LQR problem statement, design, stability analysis, and tracking design. LQG design, separation principle, stability robustness. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with A A 548/M E 548.

E E 549 Estimation and System Identification (3) Fundamentals of state estimation for linear and nonlinear systems. Discrete and continuous systems. Probability and stochastic systems theory. Models with noise. Kalman-Bucy filters, extended Kalman filters, recursive estimation. Numerical issues in filter design and implementation. Prerequisite: either A A 547, E E 547, or M E 547. Offered: jointly with A A 549/M E 549.

E E 550 Nonlinear Optimal Control (3) Calculus of variations for dynamical systems, definition of the dynamic optimization problem, constraints and Lagrange multipliers, the Pontryagin Maximum Principle, necessary conditions for optimality, the Hamilton-Jacobi-Bellman equation, singular arc problems, computational techniques for solution of the necessary conditions. Offered: jointly with A A 550/M E 550.

E E 551 Wind Energy (4) Covers the operation and modeling of wind energy, wind statistics, wind generators and converters, wind energy systems, challenges to wind energy development, impacts of wind energy on the power grid, and existing and potential solutions to wind energy integration. Prerequisite: E E 351.

E E 552 Power Systems Dynamics and Control (4) Advanced computer modeling and analysis of power systems. Application of modern systems and control theories. Prerequisite: E E 351 and E E 455.

E E 553 Power System Economics (4) Economic structure of power systems. Problem formulation, optimization methods and programming for economic analysis of power system operation and planning. Economic dispatch, load forecasting, unit commitment, interchange, planning and reliability analysis. Provides background to pursue advanced work in planning and operation.

E E 554 Large Electric Energy Systems Analysis (4) Deals with problems whose solution depends upon the inversion of sparse matrices that occur in the planning and operational studies of large interconnected energy systems. Application studies include system model development, state estimation, and load flow. Prerequisite: E E 456.

E E 555 Fundamentals of Intelligent Systems (4) Fundamentals and applications of intelligent systems and biologically inspired algorithms such as neural networks, evolutionary computations, swarm optimization and fuzzy systems. Solving complex engineering applications with a combination of these technologies as well as with more traditional approaches such as statistical system theories.

E E 556 Analyzing the Power Grid (4) Discusses the models of the various components of an electricity grid and how they are combined into a set of equations that can be used to analyze the grid under normal, steady state conditions, as well as to calculate fault currents and assess its transient stability.

E E 557 Dynamics of Controlled Systems (4) Explores control techniques for high precision motion control. Covers state variable feedback of linear and nonlinear, multivariable systems in depth. Uses physical system modeling, graphical analysis, and numerical analysis to describe system performance. Uses simulation mini-projects to emphasize the dynamics of controlled systems and their performance.

E E 558 Substation and Distribution Automation (4) Examines how smart grid technologies affect substation and distribution operations and how history, customer expectations, and state and federal policies have shaped the existing infrastructure. Studies the capabilities of various emerging technologies to assess how they are able to solve existing issues.

E E 559 Special Topics in Electrical Energy Systems (1-5, max. 16) Topics of current interest in electrical power and energy devices and systems. Content varies from year to year, based on current professional interests of faculty member in charge.

E E 560 Advanced Electric Machines and Drives (4) Fundamentals of electric machines and drives, including brush DC, brushless DC, PM synchronous, induction machines, inverter topologies, and control techniques. Evaluation of torque production and control in machines with electronic drives (motor controllers).

E E 562 Artificial Intelligence for Engineers (3) Covers main areas of artificial intelligence (AI) without need for extensive prerequisites. Programming languages for AI; problem solving; representations; control strategies; searching strategies; predicate calculus; rule-based deduction; goal-directed planning; knowledge-based systems. Prerequisite: CSE 373.

E E 565 Computer-Communication Networks I (4) Network architectures and protocols; layered model; reliable transmission protocols at the data control layer; Transmission Control Protocols (TCP); routing algorithms; performance modeling, and analysis of packet-switched networks. Multi-access. Projects involving routing and multi-access principles. Prerequisite: E E 505.

E E 566 Computer-Communication Networks II (3) Local area, metropolitan area, satellite, and packet radio networks; routing algorithms for wide area networks; optimal

design of packet-switched networks; congestion and flow control; fast packet switching; gigabit networks. Prerequisite: E E 565.

E E 567 Mobile Radio Networks (4) Wireless communication networks, including digital broadcasting, wireless LAN, wireless access networks and ultra wide band (UWB); OFDM modem design; dirty-paper coding; MAC and RLP; TCP/UDP over wireless; multi-radio networks; cross-layer protocol optimization; radio network planning. Prerequisite: E E 506; E E 565.

E E 568 Image Processing Computer Systems (4) All components of digital image-processing computer systems. Two-dimensional filtering and optimal filter design as well as basic image processing operations. Selected advanced image processing topics. Individual student project. Prerequisite: permission of instructor.

E E 570 Manifolds and Geometry for Systems and Control (3) Introduction to fundamentals of calculus on manifolds and group theory with applications in robotics and control theory. Topics include: manifolds, tangent spaces and bundles, Lie groups and algebras, coordinate vs. coordinate-free representations. Applications from physics, robotics, and control theory. Offered: jointly with A A 570/M E 570; W, even years.

E E 571 High Frequency Circuits and Antennas: Computation of Fields and Waves (4) Planar microstrip structures are high frequency circuits and antennas used in communication, aerospace and computer industries. Examines the computation of fields and waves in such structures. How to calculate circuit parameters and radiation characteristics. Structures studied include microstrip lines, coupled lines, antennas, resonators, and discontinuities. Prerequisite: either E E 482 or E E 572.

E E 572 Electromagnetic Theory and Applications I (4) Electromagnetic waves in layered media; complex waves, leaky and slow waves, waves in periodic structures, optical fibers, ionosphere and other guiding structures; transients and dispersive media; waveguides and cavities; beam waves; eigenfunctions and eigenvalues.

E E 573 Electromagnetic Computations and Applications I (4) Fundamentals of computational electromagnetics, method of moments, integral equations, basis functions, iterative methods, periodic structures and Green's Functions finite difference time domain method, Yee's lattice, absorbing boundary conditions, variational principles, and finite element method. Applications in antennas, waveguides, and scattering problems. Prerequisite: E E 572.

E E 574 Electromagnetic Computations and Applications II (4) Current topics in computational electromagnetics, fast multipole multilevel method, sparse matrix canonical grid method, wavelet based methods, recursive method, spectral time domain method. Applications in large scale problems such as array antennas, radar cross section, rough surface scattering, and dense media scattering. Prerequisite: E E 573.

E E 575 Waves in Random Media (4) Propagation and scattering of electromagnetic, optical, and acoustic waves in turbulence and random media, scattering from rough surfaces and randomly distributed particles. Atmospheric turbulence, fog, rain, smog, clear-air turbulence detection, remote sensing, terrain scattering, scattering from blood cells and tissues, scattering by ocean waves. Applications to atmospheric sciences, bioengineering, geoscience, ocean engineering.

E E 576 Computer Vision (3) Principles and methods for interpreting the three-dimensional world from images. Topics include feature detection, image segmentation, motion estimation, image mosaics, 3D-shape reconstruction, object recognition, and image retrieval. Prerequisite: solid knowledge of linear algebra; good programming skills. Offered: jointly with CSE 576.

E E 577 Special Topics in Computer Vision (3) Topics vary and may include vision for graphics, probabilistic vision

and learning, medical imaging, content-based image and video retrieval, robot vision, or 3D object recognition. Prerequisite: CSE 576/E E 576. Offered: jointly with CSE 577.

E E 578 Optimization in System Sciences (3) Covers convex sets, separation theorems, theorem of alternatives and their applications, convex analysis, convex functions, conjugation, subgradients, convex optimization, duality and applications, linear and semi-definite programming. Linear matrix inequalities, optimization algorithms, applications in system theory and control, bilinear, rank minimization, optimization software. Offered: jointly with A A 578/M E 578; W.

E E 579 Advanced Topics in Electromagnetics, Optics, and Acoustics (1-5, max. 16) Topics of current interest in electromagnetics, optics, and acoustics. Content varies from year to year, based on current professional interests of faculty member in charge.

E E 580 Geometric Methods for Non-Linear Control Systems (3) Analysis and design of nonlinear control systems focusing on differential geometric methods. Topics include controllability, observability, feedback linearization, invariant distributions, and local coordinate transformations. Emphasis on systems evolving on Lie groups and linearly uncontrollable systems. Prerequisite: A A 570/E E 570/M E 570. Offered: jointly with A A 580/M E 580; Sp, even years.

E E 581 Digital Control (3) Chizeck Sampled-data systems, and z-transform. Frequency domain properties. Sampling D/A and A/D conversion. Controller design via discrete-time equivalents, direct methods, state feedback and observers. Quantization effects. LQR control and introduction to LQG optimal control. Prerequisite: E E 548/A A 548/ M E 548. Offered: jointly with A A 581/M E 581; W.

E E 582 Introduction to Discrete Event Systems (3) Berg Modeling DES with automata and Petri nets. Languages. State estimation and diagnostics. Control specifications. Feedback control. Dealing with uncontrollability and unobservability. Dealing with blocking. Timed automata and Petri nets. Prerequisite: A A 447/E E 447/ M E 471. Offered: jointly with A A 582/M E 582; Sp, even years.

E E 583 Nonlinear Control Systems (3) Analysis of nonlinear systems and nonlinear control system design. Phase plane analysis. Lyapunov stability analysis. Describing functions. Feedback linearization. Introduction to variable structure control. Prerequisite: A A 447/E E 447/M E 471. Offered: jointly with A A 583/M E 583.

E E 585 System Identification and Adaptive Control (3) Theory and methods of system identification and adaptive control. Identification of linear-in-parameter systems, using recursive LS and extended LS methods; model order selection. Indirect and direct adaptive control. Controller synthesis, transient and stability properties. Offered: jointly with A A 585/M E 585.

E E 586 Digital Video Coding Systems (4) Introduction to digital video coding algorithms and systems. Theoretical and practical aspects of important topics on digital video coding algorithms, motion estimation, video coding standards, systems issues, and visual communications.

E E 587 Multimedia Compression and Networking (4) Addresses four major components of multimedia: 1) data compression of multimedia (e.g., speech, audio, image, and video); 2) quality of service (QoS) issues for data transmission over IP; 3) multimedia streaming and conferencing applications; and 4) intellectual property management and protection (IPMP) of multimedia contents. Co-requisite: E E 518.

E E 589 Advanced Topics in Sensors and Sensor Systems (3) Topics of current interest in sensors and sensor systems.

E E 590 Advanced Topics in Digital Computers (2-5, max. 16) Lectures or discussions of topics of current interest in the field of digital systems. Subject matter may vary from year to year.

E E 591 Robotics and Control Systems Colloquium (1, max. 30) Colloquium on current topics in robotics and control systems analysis and design. Topics presented by invited speakers as well as on-campus speakers. Emphasis on the cross-disciplinary nature of robotics and control systems. Credit/no-credit only. Offered: jointly with A A 591/CHEM E 591/M E 591.

E E 592 Electrical Engineering Research Survey (1, max. 2) Weekly presentations on current research activities by members of the department. Credit/no-credit only.

E E 593 Feedforward Control (3) Devasia Design feedforward controllers for precision output tracking; inversion-based control of non-minimum-phase systems; effect of plant uncertainty on feedforward control; design of feedforward controllers for applications such as vertical take off and landing aircraft, flexible structures and piezo-actuators. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with A A 593/M E 593; Sp, even years.

E E 594 Robust Control (3) Basic foundations of linear analysis and control theory, model realization and reduction, balanced realization and truncation, stabilization problem, coprime factorizations, Youla parameterization, matrix inequalities, H-infinity and H2 control, KYP lemma, uncertain systems, robust H2, integral quadratic constraints, linear parameter varying synthesis, applications of robust control. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with A A 594/M E 594; Sp, odd years.

E E 595 Advanced Topics in Communication Theory (1-5, max. 16) Extension of E E 507, E E 508, E E 518, E E 519, E E 520. Material differs each year, covering such topics as: detection theory, decision theory, game theory, adaptive communication systems, nonlinear random processes.

E E 596 Advanced Topics in Signal and Image Processing (2-5, max. 16) Topics of current interest in signal and image processing. Content may vary from offering to offering.

E E 597 Networked Dynamics Systems (3) Provides an overview of graph-theoretic techniques that are instrumental for studying dynamic systems that coordinate their states over a signal-exchange network. Topics include network models, network properties, dynamics over networks, formation control, biological networks, observability, controllability, and performance measures over networks. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with A A 597/M E 597.

E E 599 Selected Topics in Electrical Engineering (1-5, max. 15) Prerequisite: permission of instructor.

E E 600 Independent Study or Research (*)

E E 700 Master's Thesis (*)

E E 800 Doctoral Dissertation (*)

Human Centered Design and Engineering

423 Sieg Hall

In the Department of Human Centered Design and Engineering (HCDE), students are designing the future by building innovative technologies and systems. Putting people first, HCDE students and faculty research, design, and engineer interactions between humans and technology. HCDE students and faculty focus on understanding human needs and interests as they design and build engineering solutions to the world's problems.

HCDE faculty are award-winning and interdisciplinary, with graduate degrees in fields such as computer science, information studies, industrial engineering, design, education, English, linguistics, public policy, and technology and society studies.

HCDE prepares students for leadership roles in user interface design, user experience research and design, human-computer interaction, information and communication systems, computer-supported cooperative work, and related specializations, all from a human-centered perspective. In classes, directed research groups, and capstone projects, students develop portfolio quality products. HCDE graduates obtain jobs, primarily in the high-tech industry (e.g., Microsoft, Intel, Amazon, Facebook, T-Mobile, Google, Boeing), researching and designing user interfaces, websites, and other form factors to improve the user experience.

HCDE emphasizes student-centered, hands-on learning. Beyond taking traditional classroom courses, students join research groups and work side-by-side with top-ranked professors and graduate students to enhance the knowledge base of this dynamic field. Our educational mission is supported by up-to-date facilities.

HCDE prepares students to assume positions of intellectual leadership in industry, government, non-profit organizations, and academia nationally and globally. Whatever their professional direction, HCDE students learn the research skills appropriate to their interests, the most effective design strategies, and the most current technologies and practices. They also learn enduring theory and principles so they can dynamically respond to the evolving field of human centered design and engineering.

UNDERGRADUATE PROGRAM

Adviser

428 Sieg, Box 352315

(206) 543-2567

www.hcde.washington.edu

The Department of Human Centered Design and Engineering (HCDE) offers the following programs of study:

- Bachelor of Science in Human Centered Design and Engineering degree
- A minor in technical Japanese

Bachelor of Science in Human Centered Design and Engineering

Suggested First-Year College Courses: See regular admission requirements

Department Admission Requirements

Admission is competitive. Completion of minimum requirements does not guarantee admission. All applicants have the right to petition and appeal the department's admission decision.

Direct Freshman Admission

The department enrolls up to 30% of its incoming class directly from high school, before completion of University-level prerequisites. Students accepted to the UW are automatically considered for admission to HCDE if they indicate Human Centered Design and Engineering as their preferred major on the freshman application. Competitive applicants have taken or are taking calculus and at least two years of laboratory science (physics and chemistry are preferred) in high school. Admission is for autumn quarter only.

Regular Admission

1. Course Requirements:

- a. Minimum 5 credits of mathematics: MATH 120 or MATH 124
- b. Minimum 5 credits of statistics: STAT 220, STAT 221/ SOC 221/CS&SS 221, STAT 311, STAT 390, QMETH 201, Q SCI 190, or Q SCI 381
- c. Minimum 10 credits of science: BIOL 118, BIOL 180, BIO A 201, CHEM 142, CHEM 152, PHYS 114, PHYS 115, PHYS 121, PHYS 122, or PSYCH 202

- d. Minimum 5 credits of first-year composition
 - e. CSE 140 or CSE 142
 - f. All courses must be completed before July 1 or February 1 application deadlines
2. *Application Deadline:* July 1 for autumn quarter and February 1 for spring quarter
 3. *Grade Requirement:* Minimum 2.00 cumulative GPA

Graduation Requirements

180 credits as follows:

General Education Requirements (88 credits)

1. *Written and Oral Communication (8 credits):* 5 credits English composition from the University list; HCDE 231. University required additional 5 writing credits are built into the major core requirements
2. *Visual, Literary, & Performing Arts (VLPA), and Individuals & Societies (I&S) (30 credits):* Minimum 10 credits required in both areas
3. *Natural World (50 credits):*
 - a. *Mathematics* (minimum 15 credits; see list of qualifying courses on HCDE website)
 - b. *Science* (minimum 15 credits; see list of qualifying courses on HCDE website)

Major Requirements (83-87 credits)

1. *HCDE Core (46 credits):* HCDE 300, HCDE 301, HCDE 308, HCDE 310, HCDE 313, HCDE 318, HCDE 321, HCDE 322, HCDE 492, HCDE 493, HCDE 495 (3), HCDE 496 (2)
2. *Engineering Fundamentals (12 credits):* See department for approved list.
3. *HCDE Electives (25-29 credits)*
 - a. *Standard Option:* See department for approved list of HCDE electives
 - b. *HCI Option:* To satisfy the requirements for the HCI option, students must take at least one course in HCI foundations, and three additional courses from at least two of the four HCI course areas – user interface, software, and technology; design; usability and user research; and social and ethical dimensions. See department website for approved area courses. Students then take additional approved HCDE elective courses to reach the overall electives requirements (25-29 credits)

Free Electives (as needed)

Continuation Policy

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

Minor

Minor Requirements

Technical Japanese: Minimum 25 credits to include HCDE 461, HCDE 462, HCDE 463, plus 10 credits from the approved list of elective courses. For more information, contact the departmental adviser.

Student Outcomes and Opportunities

- *Expected Outcomes:* HCDE BS graduates contribute to society by applying design and engineering processes to solve problems through a deep understanding of people and their contexts. In particular, they are leaders in:
 - Investigating people and systems, using quantitative and qualitative methods, to identify opportunities for new systems and strengths and weaknesses of existing systems.

- Designing, building, and evaluating systems according to a variety of perspectives, with an emphasis on understanding the relationships between social and technical elements of systems.
- Bringing ideas to actualization through expertise in design strategy and processes, effective communication and collaboration skills, and ethical perspectives.
- Identifying and learning new skills, perspectives, and tools that help them and others accomplish their goals.

The Department of Human Centered Design and Engineering prepares students to assume positions in industry, government, and non-profit organizations and to apply to graduate programs.

- *Instructional and Research Facilities:* Department facilities include the HCDE Design Laboratory and Laboratory for Usability Testing and Evaluation (LUTE).
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* HCDE undergraduates are required to complete at least one 3-credit internship. The supervised internship must be approved by the faculty internship adviser. As an internship substitution, students may elect to take part in a six-month co-op, sponsored by the Engineering Co-op program. Additionally, undergraduates work in research groups with HCDE faculty and graduate students.
- *Department Scholarships:* HCDE selects one recipient of a College of Engineering Scholarship annually. The criteria for this scholarship are the applicant's academic history and likelihood for success in the technical communication field.
- *Student Organizations/Associations:* Students in the HCDE degree program participate in student activities such as the HCDE Student Association, the Minority Science and Engineering Program (MSEP), and Women in Science and Engineering (WISE).
- *Of Special Note:* The HCDE department is an inclusive, interdisciplinary academic community. Students generally call their professors by their first name and have the opportunity to work individually on projects and research supervised by HCDE faculty. Undergraduate students are encouraged to work in research groups and to attend conferences and professional meetings.

GRADUATE PROGRAMS

Graduate Program Coordinator

1428 Sieg Hall, Box 352315

(206) 543-1798

hcde@uw.edu

Master of Science in Human Centered Design and Engineering

The Department of Human Centered Design and Engineering (HCDE) offers a Master of Science in Human Centered Design and Engineering (MS HCDE) – an engineering degree. An evening program is offered through UW Educational Outreach, serving full time and part time students. HCDE offers a Master of Science in Human Centered Design and Engineering (MSHCDE). (An evening program is offered through UW Educational Outreach.) A total of 48 credits is required for the MSHCDE degree, which includes 25 credits of required HCDE graduate courses and 23 credits of approved electives. MSHCDE students may elect to pursue a master's thesis or project report with the approval of their Supervisory Committee.

Upon completion of the HCDE MS degree, students assume leadership roles in human-centered design and engineering in academia, industry, government, and non-profits. HCDE MS graduates are able to:

- Evaluate and understand human needs as a basis for designing and engineering new technologies.
- Master conceptual frameworks that motivate interdisciplinary research and design in HCDE.
- Select and critically evaluate user research methods for a variety of stakeholders and product contexts.
- Create visual, interactive, experience, and systems designs and prototypes.
- Translate organizational requirements into interface and product solutions, while accounting for all stakeholder perspectives and working ethically and collaboratively.
- Communicate effectively in oral, written, and visual forms, while scaling communications to audience needs and sociotechnical contexts.

Admission Requirements

In making recommendations for admission, the faculty consider the following from an applicant's record:

1. Undergraduate GPA
2. Undergraduate degree program and work experience
3. Test of English as a Foreign Language (TOEFL) score (if applicable)
4. Letters of recommendation
5. Statement of goals and career objectives. A limited number of prerequisite undergraduate courses may be required.

Degree Requirements

48 credits, to include:

1. *Core Courses (22 credits):* HCDE 501, HCDE 503, HCDE 517, HCDE 518, HCDE 521 (1 credit required, max. 2), HCDE 592, HCDE 593
2. *Specialized content areas (minimum 12 credits):* minimum 4 credits in each of the three areas: research, design, and engineering. Research courses: HCDE 502, HCDE 516, HCDE 519; design courses: HCDE 508, HCDE 511, HCDE 520, HCDE 536; engineering courses: HCDE 530, HCDE 532, HCDE 537, HCDE 539. Students are encouraged to gain depth in any or all of the three areas by taking additional courses beyond the minimum.
3. *Additional coursework to complete at least 48 HCDE credits.* May include credits from electives, directed research groups, and optional internships. Students select electives based on specific academic, research, and professional goals.
4. Students may also pursue a formal transcribed option in User-Centered Design (UCD).

Certificate in User-Centered Design (UCD)

An evening, graduate-level, one-year, four-course program for students who wish to explore a wide range of UCD issues. Involves sophisticated methods for planning and developing intuitive, user-friendly product designs. Students study the latest user research and design theories and practices for placing user needs at the forefront of each stage of the design process.

Focuses on usability studies, user-centered design theory and practice, visual communication and information visualization, and web design.

12 of the 13 credits earned for the UCD certificate may later count toward the MS in Human Centered Design and Engineering if students apply for Graduate Non-Matriculated Status prior to taking coursework.

Certificate Requirements

1. HCDE 517 (autumn)
2. HCDE 518 (winter)
3. HCDE 521 (winter only)
4. One of the following electives: HCDE 508, HCDE 511, HCDE 536, HCDE 537 (optional prerequisite for HCDE 537 is HCDE 532)

Inter-Engineering Master's in Technical Japanese

The inter-engineering master's in technical Japanese is a two-year degree program that combines the study of engineering and technical Japanese. Students take classes in an engineering specialty and in advanced Japanese. After their first year, they spend summer quarter and optionally the following autumn quarter in Japan doing a required internship in a Japanese company or research lab. Students graduate with an inter-engineering MSE or MS degree.

Admission Requirements

Program no longer accepts applications: 2014 - 2015 is its last year.

Degree Requirements

Minimum 54 credits, to include:

1. **Engineering Fields:** Students must select an engineering field (usually the same as the undergraduate area of concentration) from among the following:
 - a. Aeronautics and Astronautics
 - b. Bioengineering
 - c. Chemical Engineering
 - d. Civil and Environmental Engineering
 - e. Computer Science and Engineering
 - f. Electrical Engineering
 - g. Mechanical Engineering
2. **Credit Requirements:**
 - a. **Distribution:** 24 credits in one engineering specialty, 27 credits of coursework in technical Japanese, and 3 credits of summer internship in Japan. Note: 3 credits of internship may be substituted for 3 credits of coursework.
 - b. **Technical Japanese coursework:**
 - i. Oral communication in technical and business settings: HCDE 471, HCDE 472, HCDE 473
 - ii. Reading techniques in technical Japanese: HCDE 461, HCDE 462, HCDE 463
 - iii. Advanced Japanese for technical and business professionals: HCDE 561, HCDE 562, HCDE 563

Doctor of Philosophy

The Department of Human Centered Design and Engineering (HCDE) offers a PhD in Human Centered Design and Engineering (PhD HCDE)—an engineering degree. The program provides unparalleled depth and experience for students interested in studying the conception, design, implementation, use, evaluation, and effects of technologies.

HCDE is an interdisciplinary engineering department at the University of Washington in Seattle, an internationally ranked, R1 research institution. HCDE's interdisciplinary faculty have graduate degrees from fields such as computer science, industrial engineering, information studies, design, education, English, linguistics, public policy, and technology and society studies. The faculty's research and teaching focus on six areas of study: influencing awareness, thinking, and behavior; design for emergent collaborations and organizations; low resource and underserved populations; material and embodied technologies, and ubiquitous computing; data visualization and big data; and learning in professional and technical environments.

The HCDE doctoral program prepares students for careers as scholars and researchers through relevant coursework, mentorship from faculty, and collaboration with peers. Early in the program, students may explore different topics and research areas through directed research groups and other independent projects.

Goals of the HCDE PhD program are as follows:

- To prepare graduates for a career as researchers, teachers, and intellectual leaders in the discipline of HCDE
- To enable graduates to develop theoretical frameworks, apply investigative methods, and translate theory and research findings into technical or strategic innovations in the field of HCDE
- To foster the development and dissemination of new knowledge in HCDE
- To foster the development of an international, multi-cultural perspective and a diverse, inclusive student body and workforce in HCDE

Admission Requirements

Completion of either an undergraduate degree or a master's degree in HCDE or a relevant field (up to 30 credits of master's work may be applied toward the 105-credit requirement). Applicants often come from a wide range of backgrounds.

Applicants must submit the following:

1. UW HCDE PhD admission forms
2. Official transcripts of all academic study
3. Evidence of a minimum 3.00 GPA
4. Three letters of recommendation
5. A curriculum vitae
6. A personal statement of objectives and research area of interest.

International students must also submit a TOEFL iBT test score of at least 106 (including a speaking sub-score of 26), obtained within the last two years.

Degree Requirements

105 credits, to include:

1. 34 core credits (HCDE 541, HCDE 542, HCDE 543, HCDE 544, HCDE 545, HCDE 546, HCDE 547, HCDE 548); 12 credits of directed research (HCDE 596); HCDE 521, HCDE 523; 30 credits of approved electives to include HCDE 518 and one additional graded, graduate-level course in each of four thematic areas; minimum 27 dissertation credits.
2. Preliminary examination
3. Select committee chair within two quarters of passing preliminary examination
4. Successfully complete all course distribution and credit-hour requirements
5. Successfully complete the requirements for directed research.
6. Pass a general examination to attain formal candidacy for the PhD program (candidate's certificate).
7. Successfully defend a dissertation proposal before a supervisory committee.
8. Successfully defend the dissertation itself before a reading committee (final examination).

Students are encouraged but not required to teach

Early in the program, students often explore different topics and research areas through directed research groups and other independent projects. No later than the end of the quarter following passing the preliminary exam (usually the end of the fourth quarter in the program), students choose a dissertation adviser and begin to focus on a research area for the dissertation. Students are often supported by a research assistantship by that adviser.

Students who enter the PhD program with a previous graduate degree relevant to HCDE can petition to have up to 30 credits transferred toward this program. Check with the doctoral adviser for details.

Research Facilities

The Department of Human Design and Engineering has well-equipped laboratories that effectively support its courses and research projects. Also, HCDE graduate students can utilize significant College of Engineering and University-level research facilities.

Financial Aid

A limited number of teaching and research assistantships and scholarships are available for the financial support of graduate students in HCDE. More information and application forms can be obtained by contacting the department.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

HCDE 100 Introduction to Human Centered Design and Engineering (5) Topics may include: virtual communities, human-computer interaction, web design, usability testing, visual design, and others. Explores course content through individual and group hands-on projects. Offered: A.

HCDE 231 Introduction to Technical Communication (3) Examines fundamentals of research and presenting technical information for various audiences and purposes. Individually and in teams, students learn to construct documents and presentations, following conventions of oral, written, and visual communication. Assignments are framed around ethical and sustainable engineering practices. Prerequisite: either C LIT 240, both ENGL 109 and ENGL 110, ENGL 111, ENGL 121, ENGL 131, ENGL 182, ENGL 197, ENGL 198, ENGL 199, or ENGL 281. Offered: AWSp.

HCDE 300 Foundations of Human Centered Design and Engineering (5) Examines principles and practices of human centered design and engineering. Includes overview of conceptual problems in human centered design and engineering, issues related to communicating scientific and technical information to a variety of audiences, and human centered design approaches. Includes attention to social contexts and environments (legal, ethical, cultural).

HCDE 301 Written Communication in Human Centered Design and Engineering (5) Reviews the writing process including analyzing audience and purpose, planning and designing communication, integrating graphics, mastering style and syntax in Standard American English, and using appropriate tone. Prerequisite: HCDE 231.

HCDE 303 Project Management and Computer Supported Collaboration and Work (5) Addresses how to understand and manage communication practices and projects in scientific and technical organizations. Topics include: system design, project design, supporting workflow, communication practices, information structures, and planning. Focuses on CMC and CSC principles and practices.

HCDE 308 Visual Communication in Human Centered Design and Engineering (5) VLPA Introduces principles of visual communication and design used in human centered design and engineering so that students gain a systematic understanding as they create visual communication components of print, interactive, and video media. Students develop this understanding through hands-on exercises, design critiques, discussions, lectures, and readings in a studio environment.

HCDE 310 Interactive Systems Design and Technology (5) Provides opportunities to identify and build interactive systems to solve problems in human centered design and

engineering. Students specify, design, build, and justify design solutions in terms of user experience and technical design choices. Prerequisite: either CSE 140 or CSE 142. Offered: A.

HCDE 313 Introduction to User Research (5) Introduces user research methods, such as interviews, surveys, usability tests, content analysis, and focus groups. Reviews selecting an appropriate research method, how to conduct research and analyze results, conveying research data in the form of design requirements, and ethics.

HCDE 318 Introduction to User-Centered Design (5) Explores the user-centered design paradigm from a broad perspective, with an emphasis on the importance of developing and applying design processes and strategies. Students learn to think like a user-centered designer and carry out activities that are key to user-centered design.

HCDE 321 Portfolio (2) Covers recent trends in design and communication portfolios, as well as foundational considerations for portfolio development. Prerequisite: minimum grade of 2.0 in HCDE 310; may not be repeated. Credit/no-credit only.

HCDE 322 Organizational Teamwork (2) Introduces students to teamwork and leadership competencies of particular significance to interdisciplinary, design-oriented, creative, and distributed work of human-centered design and engineering. Particular emphasis on competencies related to interpersonal interactions, group dynamics, and civic responsibility. Credit/no-credit only.

HCDE 333 Advanced Technical Writing and Oral Presentation (4) Emphasizes the principles of written and oral communication for the engineering workplace. Designs solutions to professional communication problems: technical reports, proposals, correspondence, resumes, and oral presentations. Focuses on needs assessment and designing solutions that call for effective selection and integration of verbal and visual components. For engineering majors. Prerequisite: HCDE 231. Offered: AWSpS.

HCDE 407 Software User Assistance (5) Concepts, skills, and industry practices for designing the full spectrum of information resources that users need to master complex interfaces. Includes interface text, embedded and standard help, manuals, wizards, tutorials, SDK documentations and troubleshooting (Knowledge Base) content, and the role of social media and user-generated content. Prerequisite: HCDE 310. Offered: Sp.

HCDE 408 Public Documents: Proposals, EISs, Assessments (3) Analyzing special documents of public character: proposals, EISs, questionnaires, technology assessments. Understanding socio-political milieu in which they are planned, organized, written; the specialized audiences (e.g., agencies with their missions, guidelines, constituencies; citizen groups; commercial interests) they serve. Documents, the decision-making process. Offered: Sp, odd years.

HCDE 411 Information Visualization (5) VLPA/I&S Introduces the design and presentation of digital information. Covers the use of graphics, animation, sound, and other modalities in presenting information to the user; understanding vision and perception; methods of presenting complex information to enhance comprehension and analysis; and the incorporation of visualization techniques into human-computer interfaces. Prerequisite: minimum grade of 2.0 in HCDE 310; HCDE 308; may not be repeated.

HCDE 417 Usability Research Techniques (5) Introduces usability research methods used in the product-development process; contextual inquiry, surveys and interviews, focus groups, user profiling, usability testing, cognitive walkthroughs, heuristics, and others. Prerequisite: minimum grade of 2.0 in HCDE 313; may not be repeated.

HCDE 418 User Experience Design (5) Provides a project-based introduction to the user interface design process and is oriented toward practical methods for approaching

a design problem. Focuses on developing conceptual designs based on user need. Prerequisite: HCDE 318.

HCDE 419 Concepts in Human-Computer Interaction (5) I&S Studies the social, cognitive, behavioral, and contextual aspects of information systems and informational dimensions of the human-computer interface, and other user-centered design concepts. Surveys research literature of human information behavior, as well as ethical standards. Prerequisite: HCDE 300.

HCDE 421 Current Practices in Technical Communication (3) Covers principles and practices of writing to communicate scientific and technical information to a variety of readers. Teaches how to write for the expert, general scientific and technical reader, manager, and general public.

HCDE 422 Style in Technical Communication (3) Covers principles and practices of writing publication-ready American English writing for global audiences. Teaches how to write for the expert, general scientific and technical reader, manager, and general public.

HCDE 423 Introduction to Technical Editing (3) Covers editorial practices and responsibilities in communication of scientific and technical information. Includes the editor's role as an editor of documents, a collaborator in document development, and a manager of publication projects and groups.

HCDE 424 The Computer in Technical Communication (4) Introduces popular tools used by TC professionals. Students examine the tools' functionality, the types of design activities supported, and techniques for designing effective solutions. Project-driven course project teaches students how to transform unformatted content, using these tools, into a polished set of documents in multiple formats.

HCDE 426 Software User Assistance (3) Covers how to write effective documentations for a variety of software users, from end-users to developers. Students produce a complete documentation set for a software product or service using the most appropriate delivery mechanisms for the content and the audience. Prerequisite: HCDE 310.

HCDE 427 Production Editing (4) Covers the editorial role in the preparation of text and visual materials, both print and online, for production. Teaches the editor's responsibilities and prerogatives as they relate to those of other professionals in the production phase of the publication's field.

HCDE 435 Introduction to Content Management (3) Principles and practices of building, managing, and using content management systems in the workplace. Examines both the intricacies of collaborative workflow technologies and the organizational contexts that surround them.

HCDE 437 Web Design and Web Publishing (5) VLPA/I&S Design principles and skills including navigation, functional design, visual design, and content development. Includes the ongoing process of Web publishing. Addresses societal issues pertaining to the web and Internet. Students build a website and plan for ongoing web publishing. Prerequisite: HCDE 318. Offered: W.

HCDE 438 Web Technologies (5) Markup languages and styles, JavaScript, Flash, Photoshop, and the fundamentals of digital sound and video. Includes an introduction to server-side technologies. Students expand their existing design skills to encompass the use of these web technologies. Prerequisite: HCDE 310. Offered: Sp.

HCDE 455 User Interface Design (4) Furness Design oriented to cover fundamentals of user interface design; models on human computer interaction, software psychology, input devices, usability, cognitive and perceptual aspects of human-computer interaction, advanced interface, and research methodologies are discussed. Offered: jointly with IND E 455; A.

HCDE 461 Japanese for Technical and Business Professions I (5) VLPA Kato Strengthens knowledge of grammar and vocabulary and applies this to basic technical busi-

ness communication situations. Covers cultural concepts underlying these situations. Reviews authentic materials on technology-related topics. Teaches skills to analyze sentence structure for accurate interpretation. Laboratory work required. Placement test before admission. Offered: A.

HCDE 462 Japanese for Technical and Business Professions II (5) VLPA Kato Covers the functional/situational conversation skills necessary in technical and business communication situations, plus the cultural concepts underlying these situations. Reviews skills (such as prediction) for more effective reading and improves skills for analyzing complex sentence structure. Additional grammar, vocabulary, and kanji are introduced. Laboratory work required. Prerequisite: HCDE 461. Offered: W.

HCDE 463 Japanese for Technical and Business Professions III (5) VLPA Kato Covers the functional/situational conversation skills necessary in technical and business communication situations, plus the cultural concepts underlying these situations. Further improves skills introduced in previous courses and reviews skills for understanding inter-sentence structure. Additional grammar, vocabulary, and kanji introduced. Laboratory work required. Prerequisite: HCDE 462. Offered: Sp.

HCDE 492 Capstone Planning (2) Helps students define capstone topics, form project teams, and develop initial concepts, deliverables, and schedules for the HCDE capstone project. Credit/no-credit only.

HCDE 493 Senior Capstone (5) Capstone design experience. Integrates knowledge and skills acquired during major program into one paper or project. Prerequisite: minimum grade of 2.0 in HCDE 417; may not be repeated.

HCDE 495 Professional Practice (3-10, max. 10) Supervised internship in a publications organization approved by the faculty adviser. A minimum of one internship is required of students majoring in human centered design and engineering. Credit/no-credit only. Offered: AWSpS.

HCDE 496 Directed Research in Human Centered Design and Engineering (1-5, max. 10) Students, working in teams under the supervision of individual faculty members, review relevant literature, pose research questions, design and conduct studies, and present the results in papers prepared either for submission to a professional journal or for presentation at a professional conference. Credit/no-credit only. Offered: AWSpS.

HCDE 497 Study Abroad: Human Centered Design and Engineering (3-5, max. 15) Upper-division human centered design and engineering courses, for which there are no direct University of Washington equivalents, taken through the Department of Human Centered Design and Engineering's study abroad program. Credit/no-credit only. Offered: S.

HCDE 498 Special Topics (1-5, max. 15) Special topics in human centered design and engineering to be offered occasionally by permanent or visiting faculty members.

HCDE 499 Special Projects (1-5, max. 10) Individual undergraduate projects in human centered design and engineering. Offered: AWSpS.

HCDE 501 Theoretical Foundations of Human Centered Design and Engineering (4) Examination of the theories that inform work in human centered design and engineering, focusing particularly on communication and interaction design theories. Topics include the complexities of communication as it is configured in different theoretical frameworks, the implications of these different configurations, and why these differences matter to people engaged in professional practice or research. Prerequisite: admission to an engineering master's program or permission of instructor. Offered: A.

HCDE 502 Empirical Traditions in Human Centered Design and Engineering (4) Introduction to empirical traditions that inform research and practice in field of human centered design and engineering. Topics include epistemologi-

cal assumptions underlying empirical research, empirical methods, and survey of results of empirical research on effects of text and visual media on comprehension, recall, and performance. Prerequisite: graduate standing or permission of instructor. Offered: Sp.

HCDE 503 Navigating Design in Organizations (4) Examines how to manage the incubation and development of an idea, communicate it effectively to stakeholders, and deliver a quality product. Students learn to manage a design project from start to finish, collaborating across disciplines, working with partners and end-users, and communicating strategies for project management in organizations.

HCDE 505 Computer-Assisted Communication (4) Explores computer-assisted communication from three perspectives: (1) cultural roles of communication technologies; (2) relationships between communication and information including information technologies in the workplace, academe, and other settings; and (3) application to design including models for audience analysis, task analysis, and cognitive systems engineering. Prerequisite: graduate standing or permission of instructor. Offered: Sp.

HCDE 508 Visual Communication (4) Reviews principles of visual communication and design used in HCDE so that students gain a systematic and critical understanding so they can create visual communication components of print and interactive media. Students develop this understanding through hands-on exercises, design critiques, discussions, lectures, and readings in a studio environment.

HCDE 509 Writing the Scientific Article (3) Examination of principles and practice of writing research manuscripts, articles, abstracts, and oral presentations. Detailed examination of scientific publication process includes issues of style, organization, and ethics. Students draft, critique, and revise their own manuscripts and learn to review the manuscripts of others. Offered: Sp.

HCDE 510 Information Design (4) Examination of the design principles and procedures underlying the creation of both print and electronic information presentations. Topics include: print vs. electronic media, designing for the page and screen, information topologies, and hypermedia. Seminar includes a design project. Prerequisite: HCDE 501 or permission of instructor. Offered: A.

HCDE 511 Information Visualization (4) Covers the design and presentation of digital information. Uses graphics, animation, sound, and other modalities in presenting information to users. Studies understanding vision and perception. Includes methods of presenting complex information to enhance comprehension and analysis; and incorporation of visualization techniques into human-computer interfaces.

HCDE 512 International User Experience and Communication (4) Covers theory, research, and approaches for creating digital media for international audiences. Topics include cultural schemata and contrastive rhetoric, content, and text types and corresponding translation and localization strategies, market relevance and adaptation, international user research and usability, international policies and geopolitics, and cross-cultural business management and team work. Offered: Sp.

HCDE 513 Globalization and Localization Management (4) Spyridakis Examines globalization and localization business processes. Topics include localization challenges for various business sectors and audiences as well as selecting localization software, services, and content; project types; and associated start-to-finish processes. Offered: S.

HCDE 514 Strategies for International Product Management (4) Spyridakis Examines best practices in establishing localization work in technology companies. Covers facets important to research, planning, and decision-making processes, including use of internal company data, and economic, marketing, and technology factors. Uses real-life scenarios to demonstrate how companies have instituted localization processes given user-centered practices.

es. Prerequisite: HCDE 512; HCDE 513; or permission of instructor.

HCDE 516 Experimental Research Methods (4) Introduction to experimental research methods in human centered design and engineering. Examines the relationship between theory and research, hypothesis testing, experimental designs, modes of observation, sampling, validity, and data analysis and interpretation. Prerequisite: introductory statistics course. Offered: Sp.

HCDE 517 Usability Studies (4) Discusses the human-computer interface (HCI) as the communicative aspect of a computer system. Analyzes usability issues in HCI design, explores design-phase methods of predictability, and introduces evaluative methods of usability testing. Prerequisite: substantial experience with computers and graduate standing, or permission of instructor. Offered: A.

HCDE 518 User-Centered Design (4) Explores the user-centered design paradigm from a broad perspective, emphasizing how user research and prototype assessment can be integrated into different phases of the design process. Students learn to think like a user-centered designer and carry out activities that are key to user-centered design. Offered: jointly with IND E 545; W.

HCDE 519 Qualitative Research Methods (4) Provides hands-on experience with qualitative research methods, such as interviewing and participant observation, as used in human-centered design and engineering. Students learn to develop appropriate research questions, collect observational data, develop interview protocols, conduct interviews, analyze data, and communicate findings.

HCDE 521 Seminar: Current Issues in Human Centered Design and Engineering (1-2, max. 3) Presentations on current issues in human centered design and engineering. Prerequisite: HCDE graduate student status or permission of instructor. Credit/no-credit only. Offered: AW.

HCDE 523 Design Use Build (DUB) Seminar (1, max. 3) Exploration of advanced issues in human centered design and engineering research and practice. Students are encouraged to join the dub mailing list for calendar of events. Credit/no-credit only. Offered: AWSp.

HCDE 530 Computational Concepts in HCDE (4) Introduces basic computational concepts and programming skills needed to work with interactive systems in HCDE. Draws on topics such as log analysis, visualization, prototyping, and data mining. Students analyze data to inform user research and design.

HCDE 532 Web Design Studio (2) Provides an overview of basic principles and practices of professional web site design and programming. Students gain hands-on experience with designing and building a successful website using industry standard techniques. For students planning to take HCDE 535 or HCDE 537 without previous programming experience.

HCDE 534 Designing a Human Centered Venture (4) Explores the planning of a new venture related to human-centered design. Examines relevant topics, such as team formation, user and market research, value creation, and the iterative demand planning for a new venture.

HCDE 536 Interaction Design and Prototyping (4) Investigates advanced topics in the theory and practice of interaction design, using a project-oriented approach. Develops expertise in design, development, and critique of solutions in online and mobile platforms. Examines issues such as interaction theory, requirements and specifications, design language, prototyping, and presentation of projects. Prerequisite: HCDE 518.

HCDE 537 User-Centered Web Design (4) Theory and practice of the user-centered web development process. Principles and processes for documenting and implementing various development stages, including requirements analysis, user needs analysis, information architecture, prototyping, mock-ups, and production. Prerequisite: HCDE 518.

HCDE 539 Physical Computing and Prototyping (4) Reviews fundamentals of designing and prototyping human-centered interactive systems and environments that include software and hardware components. Students build projects using electronic devices and fabrication tools. Provides hands on experience in a project-based, studio environment.

HCDE 541 Grant Writing for Career Development (4) Introduces the steps on compiling a grant proposal, with an emphasis on increasing research fluency. Provides hands-on experience with communicating research topics, particularly for the purpose of applying for grant support.

HCDE 542 Theoretical Foundations in Human Centered Design and Engineering (4) Examines theories that inform work in human centered design and engineering, focusing particularly on theories of communication and interaction design. Topics include complexities of interaction as it is configured in different theoretical frameworks, implications of these different configurations, and why these differences matter to people engaged in professional practice/research.

HCDE 543 Empirical Traditions in Human Centered Design and Engineering (4) Introduces empirical traditions that inform research and practice in the field of human centered design and engineering. Topics include epistemological assumptions underlying research approaches and a survey of empirical methods.

HCDE 544 Research Methods I (4) Introduces experimental, quasi-experimental, and related research methods in human centered design and engineering. Examines the relationship between theory and research, hypothesis testing, experimental designs, modes of observation, sampling, validity, and data analysis and interpretation. Students undertake an intensive research project. Prerequisite: Introductory statistics course.

HCDE 545 Research Methods II (4) Provides hands-on experience with qualitative research methods with particular emphasis on how ethnographic fieldwork methods (e.g., interviewing and participant observation) are used in human centered design and engineering. Students undertake an intensive research project at a field site, collecting and analyzing data.

HCDE 546 Design Thinking (4) Examines how design is enacted within disciplines, exploring commonalities and differences in design practices. Surveys empirical studies of design practices and approaches.

HCDE 547 Academic Development Seminar (1, max. 10) Addresses academic research and professional competencies necessary for doctoral students. Credit/no-credit only.

HCDE 548 Advanced Topics in Human Centered Design and Engineering (4, max. 20) In-depth examination of a specialized topic in an emerging area of human centered design and engineering.

HCDE 561 Advanced Japanese for Technical and Business Professions 1 (4) Tsutsui Focuses on reading skills (e.g., vocabulary, phrases, grasping main ideas and paragraph structure) and familiarizes students with Japanese web sites and web reading tools. Students also develop the skills necessary for giving oral reports on technical/business articles. Teaches skills for writing summaries. Prerequisite: HCDE 463. Offered: A.

HCDE 562 Advanced Japanese for Technical and Business Professions 2 (4) Tsutsui Further develops reading skills. Students read more extensively, expand their technical/business vocabulary, and improve skills for grasping main ideas quickly. Students also improve oral skills for report giving and discussion and writing skills for emails and summaries. Laboratory work is required. Prerequisite: HCDE 561. Offered: W.

HCDE 563 Advanced Japanese for Technical and Business Professions 3 (4) Tsutsui Integrates the reading, oral, and writing skills acquired through the first-year and second-year technical/business Japanese sequences. Students

work on research projects, give formal presentations, and submit project reports. Substantial individual readings are involved as well as individual conferences with the instructor on research methods, readings, and report drafts. Prerequisite: HCDE 562. Offered: Sp.

HCDE 592 Capstone Planning (1) Helps students define capstone topics, form project teams, and develop initial concepts, deliverables, and schedules for the HCDE capstone project.

HCDE 593 Capstone (4) Capstone design experience. Integration of knowledge and skills acquired during program into one project. Prerequisite: HCDE 518; HCDE 592.

HCDE 596 Directed Research in Human Centered Design and Engineering (1-5, max. 18) Students, working in teams under the supervision of individual faculty members, review relevant literature, pose research questions, design and conduct studies, and present the results in papers prepared either for submission to a professional journal or for presentation at a professional conference. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

HCDE 597 Approaches to Teaching Technical Communication (1-2, max. 2) Examines theory and practice of teaching engineering undergraduate students written and oral technical communication competencies, strategies for developing teaching skills and philosophies. Teaching seminar for instructors of HCDE 231 and HCDE 333. Prerequisite: concurrent teaching appointment or permission of instructor. Credit/no-credit only. Offered: AWSpS.

HCDE 599 Special Projects (1-5, max. 5) Written report required. Prerequisite: permission of graduate adviser or committee chair. Offered: AWSpS.

HCDE 600 Independent Study or Research (*-)

HCDE 601 Internship (2-10, max. 10) Written report required. Prerequisite: permission of committee chair. Offered: AWSpS.

HCDE 700 Master's Thesis (*-) Prerequisite: permission of thesis adviser. Offered: AWSpS.

HCDE 800 Doctoral Dissertation ([1-10]-) Prerequisite: permission of thesis adviser. Credit/no-credit only. Offered: AWSpS.

Industrial and Systems Engineering

G-7 Mechanical Engineering Building

Industrial and systems engineering (ISE) prepares students for careers in an increasingly diverse, dynamic, and technological world. Industrial engineers focus on the integration of humans, machines, materials, and information to achieve optimum performance of operating systems. This focus on the "big picture" makes industrial and systems engineering one of the most people-oriented and customer-focused of the engineering disciplines.

Industrial and systems engineering involves the study of engineering design, system integration, optimization, quality and reliability, supply chain management, virtual reality, and manufacturing.

Being an industrial engineer is about choices. Industrial engineers have the opportunity to work in many different kinds of businesses and nonprofit organizations. The most distinctive aspect of industrial engineering is the flexibility it offers. Many industrial engineers eventually move into supervisory or management positions where they continue to draw on their technical background. Demand for industrial engineers has grown dramatically over the past two decades.

UNDERGRADUATE PROGRAM

Adviser

G7 Mechanical Engineering, Box 352650

(206) 543-5041

leadvise@uw.edu

Industrial and Systems Engineering offers the following program of study:

- The Bachelor of Science in Industrial Engineering degree (BSIE)

Bachelor of Science in Industrial Engineering

Suggested First- and Second-Year College Courses: MATH 124, MATH 125, MATH 126; CHEM 142, CHEM 152; PHYS 121, PHYS 122, PHYS 123; English composition; courses to fulfill VLP and I&S requirements.

Department Admission Requirements

Applicants are considered in three groups -- Freshman Admission, Early Admission, and Upper-Division Admission. Admission is competitive, and completion of the minimum requirements does not necessarily guarantee admission. Applicants not admitted under one admission group may subsequently apply to another admission group after completing more coursework. All applicants have the right to petition and appeal the department's admission decision.

Freshman Admission

The UW Industrial and Systems Engineering program enrolls up to 10 percent of its incoming class directly out of high school, prior to completion of university-level prerequisites. Freshman applicants to the UW who have listed industrial and systems engineering as their intended major are automatically considered. Competitive applicants have taken or are taking calculus and at least one year of laboratory science (preferably physics). Admission is for autumn quarter only.

Early Admission

1. *Course Requirements:* MATH 124, MATH 125, MATH 126; 10 credits of physical-science courses plus accompanying laboratory, at the level of PHYS 121, PHYS 122, PHYS 123, or CHEM 142, CHEM 152; and 5 credits of English composition. All courses must be completed prior to the July 1 application deadline. Admission is for autumn quarter only.
2. Applicants must be currently enrolled at the UW and must have completed a minimum of 15 credits taken in residence at the UW.
3. *Grade Requirements:* Minimum 2.0 grade in each prerequisite course and a minimum 2.50 overall GPA.

Upper-Division Admission

1. *Course Requirements:* MATH 124, MATH 125, MATH 126; PHYS 121, PHYS 122, PHYS 123; CHEM 142, CHEM 152; and at least 5 credits of English composition.
2. 45 credits completed by application deadline. Applications are accepted for autumn quarter admission only. Application deadline is July 1.

Graduation Requirements

180 credits as follows:

General Education Requirements (91 credits)

1. *Written and Oral Communications (12 credits):* 5-credits English composition from the University-approved list; HCDE 231; HCDE 333 (or department-approved alternative).

2. *Visual, Literary, & Performing Arts (VLP) and Individuals & Societies (I&S) (30 credits):* Minimum 10 credits in each area
3. *Natural World (49 credits)*
 - a. *Mathematics (24 credits):* MATH 124, MATH 125, MATH 126, MATH 307, MATH 308; IND E 315
 - b. *Science (25 credits):* CHEM 142, CHEM 152; PHYS 121, PHYS 122, PHYS 123

Major Requirements (89 credits)

1. *Engineering Fundamentals (28 credits):* CSE 142, MSE 170, A A 210, E E 215, CEE 220, M E 230, IND E 250
2. *Industrial Engineering Core (24 credits):* IND E 316, IND E 337, IND E 410, IND E 411, IND E 494, IND E 495
3. *Technical Electives (37 credits):* At least one class from approved courses in each of the following areas: operations research, statistics, production/operations, design, and general engineering. See adviser for list of approved technical electives.
4. *Grade Requirements:* Minimum 2.00 cumulative GPA in all engineering courses with no grade below 1.0 in these courses.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Industrial and systems engineering graduates are proficient in mathematics, sciences, engineering fundamentals, and the use of computers; use a broad knowledge of industrial engineering methods and tools associated with operations research, quality engineering, and human factors; apply engineering design methods and tools to represent, integrate, and solve problems, including the ability to recognize problem context and integrate knowledge and skills from allied disciplines; communicate effectively; and possess the professional characteristics of leadership, ethics, and the ability to motivate and work with others.

IE prepares students to serve as the efficiency experts of organizational change. Students are encouraged to take a systems view when solving problems, recognize the organizational and societal impact of technical decisions, develop good oral and written communication skills, participate in teams, and take initiative. Industrial engineers draw upon specialized knowledge and skills in math, the physical sciences, and social sciences together with the principles and methods of engineering analysis and design.

- *Instructional and Research Facilities:* Industrial and systems engineering provides designated computing facilities for undergraduate students. Research facilities include the Human Interface Technology Laboratory, the Production Systems Laboratory, the Manufacturing Laboratory, and the Center for Engineering Learning and Teaching.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major).. See adviser for requirements.
- *Research, Internships, and Service Learning:* Students have the opportunity to pursue cooperative and internship programs at the College level through the College's Engineering Co-op Program (www.engr.washington.edu/coop/).
- *Department Scholarships:* ISE offers scholarships to outstanding undergraduate students. All applicants to the BSIE program are considered for these scholarships. Awards are made based on both merit and financial need.

- *Student Organizations/Associations:* Students are actively involved in the UW student chapter of the Institute of Industrial Engineers (IIE); the ISE National Honor Society, Alpha Pi Mu; and the IE Student Advisory Board.

GRADUATE PROGRAM

Graduate Program Coordinator

G7 Mechanical Engineering, Box 352650

(206) 543-5041

leadvise@uw.edu

The Department of Industrial and Systems Engineering offers graduate programs leading to the Master of Science in Industrial Engineering (M.S.I.E.) and Doctor of Philosophy (Ph.D.). Graduate courses and research programs are offered in manufacturing, operations research, large-scale assembly, experimental statistics, production planning, quality control, reliability engineering, computer-integrated manufacturing, simulation, supply chain, human factors, virtual reality, and human interface technology.

Master of Science in Industrial and Systems Engineering

Admission Requirements

For consideration, applicants are expected to have a bachelor's degree in engineering, mathematics, or science, with a minimum 3.00 GPA.

Degree Requirements

41 credits, as follows:

Coursework Only Program

1. 21 graded credits in industrial engineering (500 level or above) courses
2. 17 graded credits in technical electives (a maximum of 9 technical elective credits may be taken at the 400 level)
3. 3 credits of industrial engineering seminar: IND E 591, IND E 592, IND E 593

Thesis Program

1. 18 graded credits in industrial engineering (500 level or above) courses
2. 11 graded credits in technical electives (a maximum of 9 technical elective credits may be taken at the 400 level)
3. 9 credits of master's thesis (IND E 700)
4. 3 credits of industrial engineering seminar: IND E 591, IND E 592, IND E 593

Doctor of Philosophy

Admission Requirements

For consideration to the Ph.D. in Industrial Engineering degree, applicants should have, or be close to completing, their master's degree in any discipline of engineering when applying, with a minimum 3.00 GPA.

Degree Requirements

90 credits, as follows:

1. 3 credits of industrial engineering graduate seminar: IND E 591, IND E 592, IND E 593 (1, 1, 1)
2. 60 credits of coursework, with at least 18 credit hours of 500-level courses. A master's degree from the UW or another institution may be used as a substitute for 30 of these 60 credits.
3. General examination

4. Dissertation: 27 credits of dissertation (IND E 800) over a period of at least three quarters.
5. Final examination

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsat/.

IND E 101 Introduction to Industrial Engineering (1) I&S Examines the basic concepts and methods of industrial engineering through team-based hands-on activities. Explores the profession of industrial engineering. Discusses resources available to industrial engineering students at the University of Washington. Offered: A.

IND E 250 Fundamentals of Engineering Economy (4) NW Chaovalitwongse Basics of industrial cost analysis and accounting. Application of interest computations to engineering decision making. Analysis of engineering alternatives based on use of interest computations, valuations, depreciation, and cost estimates. Offered: ASpS.

IND E 315 Probability and Statistics for Engineers (3) NW Boyle, Johnson, Kapur, Mastrangelo Application of probability theory and statistics to engineering problems, distribution theory and discussion of particular distributions of interest in engineering, statistical estimation and data analysis. Illustrative statistical applications may include quality control, linear regression, and analysis of engineering data sets. Prerequisite: either MATH 136, MATH 307, or AMATH 351. Offered: AWSpS.

IND E 316 Design of Experiments and Regression Analysis (4) NW Kapur Introduction to the analysis of data from planned experiments. Analysis of variance for multiple factors and applications of orthogonal arrays and linear graphs for fractional factorial designs to product and process design optimization. Regression analysis with applications in engineering. Prerequisite: IND E 315. Offered: jointly with STAT 316; W.

IND E 321 Statistical Quality Control (4) Boyle, Mastrangelo Design of quality control and assurance systems. Statistical Process Control (SPC) design and implementation. Control charts for attributes and variables. Process capability analysis and process improvement techniques. Statistical tolerance design. Quality management and recent developments. Prerequisite: IND E 315. Offered: W.

IND E 337 Introduction to Manufacturing Systems (4) Storch Description of manufacturing systems. Includes discussion of current trends in manufacturing. Introduces process flow analysis, manufacturing organizations including job-shop, assembly lines, and group technology, manufacturing inventory philosophies (just-in-time, MRP, OPT), work environment, and work simplification.

IND E 351 Human Factors in Design (4) Boyle Engineering considerations of the abilities and limitations of the human aspect in the design of operational systems and components. Functional, psychological, physiological, and environmental considerations. Offered: Sp.

IND E 410 Linear and Network Programming (4) Gbate, Zabinsky Modeling and optimization of linear network problems. Topics include: optimization of linear systems, mathematical model design, simplex method, primal-dual algorithms, parametric programming, goal programming, network problems and algorithms, and PERT/CPM. Prerequisite: either MATH 136 or MATH 308; CSE 142. Offered: A.

IND E 411 Stochastic Models and Decision Analysis (4) Gbate, Zabinsky Stochastic systems analysis to industrial engineering problems. Topics include: Markov chains, queueing theory, queueing applications, and decision analysis. Prerequisite: IND E 315; IND E 410. Offered: W.

IND E 412 Integer and Dynamic Programming (4) Gbate, Zabinsky Modeling and optimization of problems and dynamic programming approach to optimization. Topics in-

clude: integer programming formulation techniques, linear and Lagrangian relaxation, branch-and-bound and cutting-plane methods, integer programming applications, and dynamic programming. Prerequisite: IND E 411. Offered: Sp.

IND E 424 Simulation (4) Beamon Discrete-event simulation methodology emphasizing model formulation and construction with modern simulation languages and environments, statistical basis for evaluating model results, design and management of simulation projects. Application to manufacturing, retail, and service industries. Prerequisite: IND E 337, which may be taken concurrently; IND E 411. Offered: W.

IND E 426 Reliability Engineering and System Safety (4) Kapur Reliability and system safety measures. Life distributions and their applications in reliability. System reliability models. Design by reliability and probabilistic design. Reliability and safety analysis through FMECA and FTA. Reliability estimation and measurement by testing for binomial, exponential, and Weibull distributions. Prerequisite: IND E 315. Offered: Sp.

IND E 430 Manufacturing Scheduling and Inventory (4) Beamon Manufacturing scheduling and inventory control for different work organizations. Coverage of workforce scheduling, job- and flow-shop scheduling and order release, production line balancing, MRP II, Lean Production, and data management. Particular attention to computer-based aspects of management and scheduling for manufacturing and service industries. Prerequisite: IND E 337; IND E 410, both of which may be taken concurrently. Offered: A.

IND E 439 Plant Layout and Material Handling (4) Beamon Design of new or expanding industrial facilities. Consideration of work organization and layout. Study of basic design of plant systems, including plumbing, electrical, HVAC, illumination, acoustics, and waste handling. In depth coverage of material handling system design and equipment choices. Prerequisite: IND E 410 which may be taken concurrently. Offered: A.

IND E 455 User Interface Design (4) Furness Design oriented to cover fundamentals of user interface design; models on human computer interaction, software psychology, input devices, usability, cognitive and perceptual aspects of human-computer interaction, advanced interface, and research methodologies are discussed. Offered: jointly with HCDE 455; A.

IND E 470 Systems Engineering (4) Concepts of system approach, system hierarchies, functional analysis, requirements, trade studies, and other concepts used to define and integrate complex engineering systems. Introduction to risk analysis and reliability, failure modes and effects analysis, writing specifications, and lean manufacturing. Offered: jointly with A A 470.

IND E 494 Design in the Manufacturing Firm (4) Mastrangelo Engineering design in manufacturing firms is presented. Topics include design methodology, concurrent engineering, and project management. Focus on the relationship between product design and manufacturing (design for production and assembly). Prerequisite: IND E 337. Offered: W.

IND E 495 Industrial Engineering Design (4) Mastrangelo Capstone senior design project involving identification and synthesis of industrial engineering skills. Students apply their knowledge of industrial engineering to actual industrial problems. Prerequisite: IND E 494. Offered: Sp.

IND E 496 Technology-Based Entrepreneurship (3) Furness Concentrates on hands-on aspects of innovation and entrepreneurial enterprise development. Examines relationships between innovation, iterative prototyping, and marketing testing. Students identify market opportunities, create new technology-based products and services to satisfy customer needs, and construct and test prototypes. Offered: jointly with M E 496.

IND E 498 Special Topics in Industrial Engineering (1-5, max. 9) Lecture and/or laboratory.

IND E 499 Special Projects (2-5, max. 12)

IND E 508 Stochastic Processes in Engineering (3) Non-measure theoretic introduction to stochastic processes. Topics include Poisson processes, renewal processes, Markov and semi-Markov processes, Brownian motion, and martingales, with applications to problems in queuing, supply chain management, signal processing, control, and communications. Prerequisite: E E 505. Offered: jointly with E E 508.

IND E 512 Introduction to Optimization Models (3) *Chao-lit Wongse, Zabinsky* Presents optimization models that are used in applications such as industrial engineering, production, transportation, financial investment, health-care systems, and environmental ecology. Problems span a variety of continuous and integer optimization models, with discussion of multi-objectives and incorporating randomness into optimization models.

IND E 513 Linear Optimization Models in Engineering (3) *Ghate, Zabinsky* Advanced formulation techniques to expand applications of linear programming to large-scale models. Appreciation of role of optimization models in engineering applications through introduction of techniques such as decomposition. Individual engineering projects. Prerequisite: IND E 410 and MATH 308 or permission of instructor.

IND E 515 Fundamentals of Optimization (5) Maximization and minimization of functions of finitely many variables subject to constraints. Basic problem types and examples of applications; linear, convex, smooth, and nonsmooth programming. Optimality conditions. Saddlepoints and dual problems. Penalties, decomposition. Overview of computational approaches. Prerequisite: linear algebra and advanced calculus. Offered: jointly with AMATH 515/MATH 515.

IND E 516 Applications of Optimization in Engineering Design (3) *Zabinsky* Discussion of issues arising in applications of optimization to engineering design. Emphasis on formulating problems and selecting appropriate solution techniques. Random search methods for problems otherwise computationally intractable. Individual projects in engineering optimal design. Prerequisite: AMATH 515/MATH 515/IND E 515 and MATH 328 or permission of instructor.

IND E 521 Quality Control in Manufacturing (3) *Mastrangelo* Design of quality control systems in manufacturing. Use of advanced statistical process controls, sampling inspection techniques, process capability, and other statistical tools. Also includes vendor sourcing and control tools, methods for establishing specifications and tolerances, quality function deployment, and other quality control techniques. Prerequisite: graduate standing.

IND E 524 Robust Design and Quality Engineering (3) *Kapur* Introduction to robust design and quality engineering. Applications of design of experiments for product and process design optimization. Experimental design using orthogonal arrays and linear graphs. System models using Chebyshev's orthogonal polynomials. Robustness in design and quality improvement for complex systems including Taguchi methods for quality engineering. Prerequisite: IND E 316 or equivalent.

IND E 526 Reliability in Product Design and Testing (3) *Kapur* Product assurance including reliability and quality engineering. Reliability design, measurement, and optimization. Advanced topics in probabilistic design. Design of reliability test plans and analysis of test data. Design of reliability programs and their management. Prerequisite: graduate standing.

IND E 531 Computer Integrated Manufacturing (3) Design and analysis of advanced manufacturing systems from a strategic as well as technological perspective. Focus on information generation, management, and coordination aspects of complex manufacturing organizations. Examination

of system integration alternatives and consequences for relationships with customers and suppliers. Prerequisite: IND E 431 or equivalent. Offered: jointly with M E 505.

IND E 535 Engineering Simulation (3) *Beamon* Advanced applications of discrete event, continuous, and combined discrete-continuous simulation modeling, detailed examination of fundamental computer programming concepts underlying the design and development of simulation languages, variance reduction techniques, and output analysis for various engineering, service systems, and manufacturing applications. Prerequisite: IND E 424 or equivalent.

IND E 537 Introduction to Manufacturing Systems (3) Description of manufacturing systems. Includes discussion of current trends in manufacturing, especially lean principles. Introduces process flow analysis, manufacturing organizations including job-shop, assembly lines, and group technology, manufacturing inventory philosophies (just-in-time, MRP, OPT), work environment, and work simplification. Offered: jointly with ENV H 537; A.

IND E 538 Large Assembly Manufacturing Systems (3) *Storch* Presents principles of group technology, zone construction, product-oriented work breakdown structure. Application to shipbuilding, aircraft, rail-car, and truck manufacture. Techniques of production planning, scheduling and control, organization, and plant layout, as well as the role of the computer, are studied in detail. Prerequisite: graduate standing.

IND E 543 Virtual Interface Technology (1/3, max. 3) *Furness* Explores advanced concepts and technologies for interfacing humans to complex machines, with focus on virtual interfaces. Interface design principles reviewed from psychological and technological perspectives. Hardware, software, and mindware aspects of virtual interfaces investigated. Applications postulated and designed. Prerequisite: graduate standing in College of Engineering or permission of instructor.

IND E 544 Virtual World Development (3) *Furness* Software implementation, physiological and cognitive constraints, and the mathematics and philosophy of inclusion. Development of software tools, editing and interaction techniques, disposition of virtual world entities, nature of space, situated knowledge, divergent models for multiple participants, experiential mathematics, cyberspace. Cultural, legal, moral, ethical issues. Prerequisite: IND E 543 or permission of instructor.

IND E 545 User-Centered Design (4) Explores the user-centered design paradigm from a broad perspective, emphasizing how user research and prototype assessment can be integrated into different phases of the design process. Students learn to think like a user-centered designer and carry out activities that are key to user-centered design. Offered: jointly with HCDE 518; W.

IND E 546 Analytical Methods in Transportation I (3) *Boyle* Application of analytical and statistical methods to issues in transportation and driving. Analysis of probability distributions that describe variables. Development of statistical models for predicting transportation phenomena. Elementary sampling theory hypothesis testing, regression analysis, time series analysis, applied to transportation data. Prerequisite: either IND E 315, MATH 390/STAT 390, or equivalent. Offered: jointly with CEE 584; W.

IND E 549 Human Factors in Engineering Design (3) Engineering considerations of the abilities and limitations of the human aspect in the design of operational systems and components. Functional, psychological, physiological, and environmental considerations. Covers traditional human factors material with a project-based focus/emphasis. Offered: jointly with ENV H 549; Sp.

IND E 551 Elements of Dynamic Enterprise Modeling (3) Introduces practical techniques for modeling, analyzing, and implementing real-time enterprise control systems in application area such as manufacturing, supply chain flow control, and logistics decision schemas. Uses basic mathematical

tools supported with a symbolic algebra software tool. Requires basic computer skills. Offered: A.

IND E 552 Introduction to Real-Time Enterprise Control (3) Provides students with principles, designs, techniques, and algorithms for synthesizing real-time control of enterprise processes, using hybrid systems theory. Application areas include supply chain flow control, logistics decision schemas, transportation systems, dynamic reconciliation procedures, minimum cost production, and maximum profit price/ordering strategies. Prerequisite: IND E 551, or permission of instructor. Offered: W.

IND E 553 Modeling and Automation of Enterprise Processes (3) Third course in a three-course sequence. Provides architecture, algorithms, and procedures for designing and implementing enterprise control policies for automating and enhancing enterprise functionality. Emphasis on hybrid system theories. Prerequisite: IND E 552, or permission of instructor. Offered: Sp.

IND E 564 Recognition of Health and Safety Problems in Industry (2) Develops skills in occupational health and safety hazard recognition in a variety of important Northwest industries. Focuses on process understanding and hazard recognition skills during walk-through inspections of several local facilities, stressing a multidisciplinary approach. Offered: jointly with ENV H 564; A.

IND E 566 Introduction to Ergonomics (3) Basic principles of ergonomics in work environment applied to problems of worker and management. Topics include measurement of physical work capacity, problems of fatigue and heat stress, applied biomechanics, worker-machine interactions and communication, design of displays and controls. Prerequisite: basic human physiology or permission of instructor. Offered: jointly with ENV H 566/NSG 508; W.

IND E 567 Applied Occupational Health and Safety (3) Application of occupational safety and health principles. Student teams perform evaluations, assess production methods/processes and exposures, health and safety procedures and programs, and develop engineering and administrative controls. Students perform on a consulting project with a local company including budgeting, project reporting, and presentation. Offered: jointly with ENV H 559/NSG 505; Sp, even years.

IND E 569 Occupational Biomechanics (4) Lectures and laboratories address human occupational biomechanical and physiological limits and measurement, analysis, and modeling techniques that are used by ergonomists for design of safe, healthful, and productive physical work. Prerequisite: ENV H 566 or permission of instructor. Offered: jointly with ENV H 569; Sp, even years.

IND E 570 Supply Chain Systems (3) *Beamon* Develops concepts related to the design, evaluation, and performance of supply chain systems through an exploration of contemporary practice and research, focusing on current issues, analytical frameworks, and case studies. Prerequisite: IND E 315 or equivalent.

IND E 571 Humanitarian Logistics (3) *Beamon* Explores the basic challenges, requirements and techniques for managing logistics operation within the domain of humanitarian relief. Students work in multi-disciplinary teams, applying course concepts and techniques to theoretical and real world humanitarian crises.

IND E 575 Inventory Management (5) *Jain* Examines modeling and analysis of inventory flow in supply chains in order to improve service and decrease cost. Covers tools and methods for making long-term and short-term inventory related decisions for items with different demand and supply characteristics. Topics include forecasting, production planning, deterministic and stochastic inventory models, and supply management. Offered: jointly with SCTL 503; W.

IND E 576 Facility Design and Operations Management (5) *Heim* Introduces the fundamental principles, concepts, and procedures for designing and managing supply-chain networks of factories, suppliers, warehouses, and distribu-

tion centers. Students learn to use engineering systems design methodologies and software to construct appropriately detailed quantitative models, evaluate alternative supply network configurations, and assess the management of their operations. Offered: jointly with SCTL 504; Sp.

IND E 581 Navigating the Business Environment (3) *Mastrangelo* Covers the fundamentals of finance and accounting, marketing, strategy, and business communication as well as the skill of identifying and influencing the key decision maker. Offered: A.

IND E 582 Technical Leadership (3) *Mastrangelo* Includes how to motivate, reach consensus, work virtually, recruit, and work with engineers from different cultures. Offered: W.

IND E 583 Decision Analysis in Engineering (3) *Mastrangelo* Examines multi-criteria decision tools involving qualitative and quantitative methods. Covers decision trees, subjective probability, utility and value theories, goals and objectives, risk, optimization, and simulation. Includes case studies in decision and systems analysis. Offered: Sp.

IND E 584 Project Performance (3) *Mastrangelo* Examines the fundamentals of project performance and application of systems engineering theory, concepts, and tools and techniques to plan, manage, and accomplish organizational objectives in a project framework. Also considers the critical roles leadership and team development plays in successful completion of projects. Offered: S.

IND E 591 Seminar (1-) Topics of current interest in industrial engineering. Prerequisite: graduate standing in Industrial Engineering or permission of instructor. Credit/no-credit only. Offered: A.

IND E 592 Seminar (-1-) Topics of current interest in industrial engineering. Prerequisite: graduate standing in Industrial Engineering or permission of instructor. Credit/no-credit only. Offered: W.

IND E 593 Seminar (-1) Topics of current interest in industrial engineering. Prerequisite: graduate standing in Industrial Engineering or permission of instructor. Credit/no-credit only. Offered: Sp.

IND E 595 Global Integrated Systems Engineering ([4]-6-, max. 10) Covers systems engineering, project management, finance, economics, and a seminar on global technical topics. Offered: jointly with A A 595; AW.

IND E 596 Global Integrated Systems Engineering Project (3) *Mastrangelo* Project-based systems design course. Prerequisite: A A/INDE 595. Offered: jointly with A A 596; Sp.

IND E 599 Special Topics in Industrial Engineering (1-5, max. 9) Prerequisite: permission of supervisor.

IND E 600 Independent Study or Research (*-)

IND E 700 Master's Thesis (*-)

IND E 800 Doctoral Dissertation (*-)

Materials Science and Engineering

302 Roberts

Materials science and engineering is an interdisciplinary field that addresses the structure, processing, and property relationships in materials for engineering applications. Basic principles of chemistry and physics are applied to provide an understanding of the structure of materials and the manner in which the structure determines the properties. Scientific processing methods are then applied to yield the necessary properties, which then can be integrated with, and designed to accommodate the needs of, modern technology.

Advances in materials enable technological progress in many fields. Historically, this connection between materials and technology has been so intimate that major periods in civilization have been named after the dominant material used in that era (e.g., Bronze Age, Iron Age). In the past few decades, at the core of the progress in such diverse fields as transportation, communication, electronics, energy and environment are significant advances in materials. Materials science and engineering is a broad and growing discipline.

Materials Science and Engineering at the University of Washington has recently experienced rapid expansion into new research areas, including polymers, hybrids, biomaterials, biomimetics, nanomaterials, photonic and magnetic materials. These areas have applications in current and emerging industries, and complement existing strength in ceramics, metals, electronic materials, and composites.

UNDERGRADUATE PROGRAM

Adviser

302A Roberts, Box 352120

(206) 543-2600

mse@uw.edu

The Department of Materials Science and Engineering offers the following programs of study:

- The Bachelor of Science in Materials Science and Engineering degree
- The Bachelor of Science in Materials Science and Engineering degree with an option in nanoscience and molecular engineering
- A minor in materials science and engineering

Bachelor of Science in Materials Science and Engineering

Suggested First- and Second-Year College Courses: MATH 124, MATH 125, MATH 126; PHYS 121, PHYS 122, PHYS 123; CHEM 142, CHEM 152; English composition; CSE 142 or AMATH 301; MSE 170.

Department Admission Requirements

Applicants are considered in three groups - Direct Freshman Admission, Early Admission, and Upper-Division Admission. Admission is competitive. Completion of minimum requirements described below does not guarantee admission. Applicants not admitted under one admission group may subsequently apply to another admission group after completing more coursework. All applicants have the right to appeal the department's admission decision.

Nanoscience and Molecular Engineering Option (NME): Admission to the NME option for MSE majors is by self-selection and normally occurs upon completion of NME 220, all MSE prerequisites, and formal admission to the MSE Department. A small number of advanced students may be admitted into the NME option upon application to the department. Admission is based on the student's academic record, including grades in NME 220 and any MSE courses already taken and on prior experience/work in the field of nanoscience and/or molecular engineering. Students applying for the NME option should indicate that interest in the Materials Science and Engineering application and discuss their interests and background in the essay.

Direct Freshman Admission

1. Open to freshman students formally admitted to the UW
2. High school GPA of 3.70 or higher; SAT (or equivalent) scores of 1300 or higher
3. Indication on the application that Materials Science and Engineering is the first choice for the major

Early Admission

1. *Course Requirements:* MATH 124, MATH 125, MATH 126; 10 credits of physical science at the level of PHYS 121, PHYS 122, PHYS 123, or CHEM 142, CHEM 152, or above; 5 credits of English composition. All courses must be completed prior to the July 1 application deadline.
2. Applicants must be currently enrolled at the UW and must have completed a minimum of 15 credits taken in residence at the UW. Applications are accepted for autumn quarter only. Application deadline is July 1.
3. *Grade Requirements:* Minimum 2.0 grade in each course required for admission and minimum 2.50 cumulative GPA for all courses required for admission

Upper-Division Admission

1. *Course Requirements:* MATH 124, MATH 125, MATH 126, MATH 307; PHYS 121, PHYS 122; CHEM 142, CHEM 152; CSE 142 or AMATH 301; MSE 170; 5 credits of English composition
2. 64 credits completed by application deadline. Applications are accepted for autumn quarter only. Application deadline is July 1.
3. *Grade Requirements:* Minimum 2.0 grade in each course required for admission and minimum 2.50 cumulative GPA for all courses required for admission.

Graduation Requirements

Minimum 180 credits to include:

General Education Requirements (87-92 credits)

1. *Written and Oral Communications:* 8 credits, to include one 5-credit English composition course from the University list; HCDE 231. University-required 4 additional writing credits are met by major core courses.
2. *Visual, Literary, & Performing Arts (VLPA), and Individuals & Societies (I&S) (24 credits):* Minimum 10 credits required in each area.
3. *Natural World (55-60 credits):*
 - a. *Mathematics (24-25 credits):* MATH 124, MATH 125, MATH 126, MATH 307, MATH 308 (or MATH 318); one from MATH 309, MATH 324, IND E 315, or STAT 390
 - b. *Science (31-35 credits):* CHEM 142, CHEM 152; PHYS 121, PHYS 122, PHYS 123; two additional natural science courses from the department's approved list

Major Requirements (93credits)

1. *Engineering Fundamentals (24 credits):* CSE 142 or AMATH 301, MSE 170, A A 210, CEE 220; two of the following: E E 215, M E 123, A A 260 or CHEM E 325, IND E 250, CHEM E 220
2. *Materials Science and Engineering Core (53 credits):* MSE 310, MSE 311, MSE 312, MSE 313, MSE 321, MSE 322, MSE 331, MSE 333, MSE 342, MSE 351, MSE 352, MSE 362, MSE 399, MSE 431, MSE 442, MSE 491, MSE 492, MSE 499
3. *Technical Electives (16 credits):* See department advising office for list of acceptable courses.
4. *Grade Requirement:* Minimum 2.00 departmental cumulative GPA

Major Requirements for Nanoscience and Molecular Engineering Option (97 credits)

1. *Engineering Fundamentals (24 credits):* CSE 142 or AMATH 301, MSE 170, A A 210, CEE 220; two of the following: E E 215, M E 123, A A 260 or CHEM E 325, IND E 250, CHEM E 220
2. *Materials Sciences and Engineering Core (53 credits):* MSE 310, MSE 311, MSE 312, MSE 313, MSE 321, MSE 322, MSE 331, MSE 333, MSE 342, MSE 351, MSE 352, MSE 362, MSE 399, MSE 431, MSE 442, MSE

- 491, MSE 492, MSE 499. The senior project (MSE 499) must be in an NME area.
3. *Nanoscience and Molecular Engineering Courses* (20 credits): NME 220, NME 221, NME 321, NME 421; additional approved nanoscience and molecular engineering electives to reach 20 credits. See adviser for list of approved electives.
4. *Grade Requirements*: Minimum 2.00 departmental cumulative GPA

Minor

Minor Requirements

30 credits as follows: MSE 170, MSE 321, MSE 322, MSE 331, MSE 333, MSE 342, MSE 351, MSE 352, MSE 362. Minimum 2.0 grade of 2.0 required for each course.

The following courses serve as prerequisites for the departmental courses in the minor: MATH 124, MATH 125, MATH 126, MATH 307, and MATH 308 or MATH 318; CHEM 142 or CHEM 145, CHEM 152 or CHEM 155; PHYS 121, PHYS 122, PHYS 123; MSE 170; English composition. Students should take these courses before beginning the minor program.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: Undergraduate students are offered both broad core and in-depth courses. The broad core provides the needed background and understanding of all types of engineering materials, including metals, ceramics, polymers, electronic materials, and composites. The curriculum provides an opportunity to use basic knowledge in science and engineering fundamentals to synthesize and design materials for engineering applications. The undergraduate curriculum emphasizes hands-on experience, oral and written communication, and teamwork, and encourages participation in research. Graduates with a degree in materials science and engineering find employment in a broad range of industries including aerospace, biomedical, electronic manufacturing, materials processing, and transportation.

The Bachelor of Science in Materials Science and Engineering program is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700, and the department has adopted the following student outcomes:

- An ability to apply knowledge of mathematics, science and engineering
 - An ability to design and conduct experiments, as well as to analyze and interpret data
 - An ability to design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability
 - An ability to function on multi-disciplinary teams
 - An ability to identify, formulate and solve engineering problems
 - An understanding of professional and ethical responsibilities
 - An ability to communicate effectively
 - The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
 - A recognition of the need for, and an ability to engage in life-long learning
 - Knowledge of contemporary issues
 - An ability to use the techniques, skills and modern engineering tools necessary for engineering practice
- An ability to apply advanced science (such as chemistry and physics) and engineering principles to ceramics, metals, polymers and composite materials systems
 - An integrated understanding of the scientific and engineering principles underlying the four major elements of the field: structure, properties, processing and performance related to material systems
 - An ability to apply and integrate knowledge from each of the four major elements of the field to solve materials selection and design problems
 - An ability to utilize experimental, statistical and computational methods consistent with the goals of the program
 - Experience in laboratory work and in research and/or design problem solving
 - Preparation, as appropriate to the student and the area of interest, to enter graduate degree programs.
- *Instructional and Research Facilities*: Facilities include equipment for electron and optical microscopy, x-ray diffraction, high-temperature heat treatment and mechanical testing, specialized processing equipment, including hot and cold isostatic presses, nitrogen reaction furnaces, and automated TGA, DTA analysis systems. Equipment for analyses of particle size, surface areas, and pore size is also available. Students have liberal access to University computing facilities.
 - *Honors Options Available*: With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
 - *Research, Internships, and Service Learning*: Materials Science and Engineering students interested in paid internship experiences should contact the Engineering Co-op and Internship Program, 301 Loew Hall, Box 352180, (206) 543-8711, coop@engr.washington.edu.
 - *Department Scholarships*: In addition to need-based aid provided through the University's Office of Student Financial Aid, companies and individuals with interest in developing materials science and engineering students have provided scholarships for students admitted to the program. Specific information and application forms are available from the academic counselor in 302 Roberts.
 - *Student Organizations/Associations*: Keramos (materials honor society); American Ceramic Society (ACerS); ASM/TMS (the joint student chapter of ASM International and TMS); Society for the Advancement of Materials and Process Engineering (SAMPE).
 - *Of Special Note*: Combined BS/MS Degree Program. The goal of the combined BS/MS program in Materials Science and Engineering is to provide a more direct route to the master's degree for well-qualified undergraduate students who wish for more in-depth graduate-level work in preparation for work in industry or for a PhD program. The combined program creates a more efficient and continuous academic experience that leads directly to the Master of Science degree. Students earn both the BS and MS degrees in five years. This program is available to students after they are admitted to the department. Information is available below.

GRADUATE PROGRAM

Graduate Program Coordinator
302 Roberts, Box 352120
(206) 543-2600
mse@uw.edu

The Department of Materials Science and Engineering offers programs of study leading to the Master of Science in

Materials Science and Engineering (MSMSE) and the Doctor of Philosophy in either materials science and engineering or materials science and engineering/nanotechnology.

In addition, the degree of Master of Science (without designation) is offered through the College of Engineering. This degree is intended to accommodate students with undergraduate majors outside physical science or engineering who desire a special graduate program to encompass a broad range of materials science studies.

The primary goals of the master's and doctoral programs are to prepare students for industrial employment and research/development careers and to generate new knowledge. The specific objectives are as follows:

- Deepen knowledge and capabilities broadly and in a chosen specialty area: A student's knowledge, attained through coursework and scholarly investigation of literature relevant to thesis project, should be commensurate with that of leading researchers in the field.
- Master and develop state-of-the-art research techniques appropriate to specialty: Analytical, computational, and experimental tools are learned via instruction by adviser(s) and peers in conjunction with maintaining currency with literature.
- Contribute new knowledge of lasting value to the field by creative and independent research: A student's thesis research must demonstrate originality and high quality, as judged by faculty committee.
- Broaden candidate's knowledge of field and societal issues: Through coursework, department and group seminars, and attendance at professional meetings, a student learns to appreciate context of specialty within materials science and engineering and gain ability to apply knowledge and methods to a spectrum of engineering and scientific challenges.
- Learn to work effectively with colleagues and contribute to professional community: Attained by cooperation in team research projects, presentation of research and professional meetings.

Combined Bachelor of Science/Master of Science

Admission Requirements

Students may apply to enter the combined BS/MS program any time after they are accepted into the MSE department as an undergraduate major. Requirements for application include:

1. Overall minimum 3.20 GPA in the last 90 credits before application
2. At least 15 credits of MSE courses completed with a minimum 3.40 GPA
3. Statement of interest in and goals for the MS degree
4. Interview with admissions committee

Students accepted into the combined BS/MS program by the department apply to the Graduate School in December of their senior year. These students normally enroll in the materials science option for the MS degree.

Degree Requirements

216 credits.

Requirements are the same as for the current BS and MS programs. However, up to 7 credits of 400- or 500-level courses taken as an undergraduate over and above the BS requirement may be counted towards the MS degree. These credits transfer to the graduate program when the student enters as a graduate student, subject to approval of the MSE Graduate Program Committee. The Graduate School waives the restrictions on transfer credits for this purpose.

Students admitted into the BS/MS program combine their BS senior project requirement (MSE 499) with the MS the-

sis requirement (MSE 700) and begin research starting summer or autumn quarter of their senior year. The student receives 4 credits of MSE 499 for the undergraduate portion of the research program, then registers for 9 or more credits of MSE 700 for the thesis. Written and oral reports are required to complete the MSE 499 credits, to be submitted before the end of the senior year. The thesis is required for completion of the MS degree.

Master of Science in Materials Science and Engineering

Admission Requirements

The applicant must have a minimum 3.00 undergraduate GPA in the last 90 graded quarter hours or the last 60 graded semester hours. Graduate Record Examination (GRE) results are also required for the general test.

Students with backgrounds in engineering and the physical sciences are admitted into the MSMSE program. After admission, students with a minimum three years' industrial experience in an engineering position may apply for the engineering materials (practice-oriented, non-thesis) option.

Specific program pre-requisites, which may be satisfied after entry into the program, are as follows:

1. Knowledge of fundamentals of Materials Science and Engineering equivalent to MSE 170
2. Knowledge of crystallography equivalent to MSE 331
3. Background in materials properties equivalent to MSE 362 and MSE 351
4. Knowledge of kinetics equivalent to MSE 322
5. Understanding of thermodynamics equivalent to the level of MSE 421

Degree Requirements

36 credits, as follows:

At least 27 credits must be for coursework, including 3 credits of MSE 520 seminar (see below). Of these 27 credits, 18 must be in courses numbered in the 500 series (these 18 may include the 3 seminar credits). Numerical grades from approved 400-level and all 500-level courses must be received for at least 18 quarter credits of coursework taken at the UW. A minimum 3.00 cumulative GPA is required for a graduate degree at the University. Required courses may not be taken on the S/NS grading option. The S/NS grading option in other courses must have the approval of the student's faculty adviser.

Thesis Option

1. Three required core courses (9 credits): MSE 510, MSE 525, MSE 541
2. Three optional core courses
3. 3 credits of seminar (MSE 520)
4. 9 credits of thesis work (MSE 700)
5. 6 credits of electives (400- or 500-level physical science or engineering courses) to meet the 36-credit requirement

Non-thesis Option

1. Three required core courses (9 credits): MSE 510, MSE 525, MSE 541
2. Four practice-oriented materials or related engineering courses, 12 credits minimum, chosen to complement the student's program
3. Materials engineering project, MSE 598, 4 credits, taken during the last quarter of the master's program
4. Electives to meet the 36 credit requirement.
5. Of the above credits, all must be at the 400 or 500 level, with a minimum of 18 at the 500 level, and other Graduate School requirements must be met. Numerical grades are also required for at least 18 credits of 400- or 500-level coursework.

Doctor of Philosophy

Admission Requirements

The applicant must have a minimum 3.00 GPA in the last 90 graded quarter hours or the last 60 graded semester hours. Graduate Record Examination (GRE) results are also required for the general test.

In general, entering graduate students with only the BS degree are required to enroll as MS students.

Prerequisite:

1. Knowledge of fundamentals of materials science and engineering equivalent to MSE 170
2. Knowledge of crystallography equivalent to MSE 331
3. Background in materials properties equivalent to MSE 362 and MSE 351
4. Knowledge of kinetics equivalent to MSE 322

The department also requires that all entering graduate students have an understanding of thermodynamics equivalent to the level of MSE 421. If the student does not have two undergraduate thermodynamics courses upon entry to the graduate program, then MSE 421 is required for the PhD degree.

Students interested in materials science and engineering with the nanotechnology option must make formal application to the UW's Center for Nanotechnology after being admitted to the MSE graduate program.

Degree Requirements

90 credits as follows:

1. 30 credits from MSMSE degree or equivalent
2. Three required core courses (9 credits): MSE 510, MSE 525, MSE 541
3. 6 credits of seminar (MSE 520)
4. 9 credits of elective MSE courses
5. 36 credits of MSE 800
6. Qualifying examination
7. General examination
8. Portfolio review
9. Dissertation
10. Final examination

Advising and Progress to Degree

The graduate coursework is designed to provide a higher level expertise than a BS in both core topics and specialty areas chosen by the student. Thus, all students must take three required core courses (MSE 510, MSE 525, and MSE 541) and a series of elective courses. Students are also required to enroll for the department seminar series.

Graduate students are advised by their Supervisory/Thesis Committee chair, members of the Supervisory/Thesis Committee, and the academic counselor, each with a specific advising role. The department also maintains a Graduate Student Handbook, given to each graduate student upon entry. Graduate students work closely with their committee chairs. Through this interaction, students develop a professional identity which includes learning how to do research, defining research problems, research supervision, data analysis and synthesis, presentation and participation in professional meetings, writing papers and reports, writing research proposals, and receiving information and advice regarding career options and help with placement.

Financial Support

Graduate students are eligible for a variety of competitive financial awards while they pursue their MSE degrees. Awards include teaching and research assistantships and a broad spectrum of internal and external fellowships. Almost all graduate students receive some financial support.

Further details are on the departmental website and in the Graduate Student Handbook.

Engineering Materials Option for the Master of Science

The Engineering Materials option for an MS in Materials Science and Engineering is a non-thesis program designed for students with substantive industrial experience who want a master's degree to further their career goals or to meet work requirements. Students selecting this degree option should be practicing materials engineers with a bachelor of science degree. This program contains practice-oriented courses in addition to the usual graduate core courses. In place of a research-oriented thesis, students carry out a complete analysis and develop recommended solutions to an engineering materials problem. This project is industrially oriented, undertaken at an industrial site and supervised by an experienced engineer in industry and an MSE faculty member. Written and oral final project reports are required. The engineering materials option is designed to be completed in one year (four quarters) for on-campus students; it is also available for part-time students through the Education at a Distance for Growth and Excellence (EDGE) program.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

MSE 170 Fundamentals of Materials Science (4) NW Fundamental principles of structure and properties of materials utilized in practice of engineering. Properties of materials are related to atomic, molecular, crystalline structure. Metals, ceramics, multiphase systems, and polymeric materials. Relationships between structure and electrical, mechanical, thermal, chemical properties. For advanced freshmen and sophomores. Prerequisite: either CHEM 152, CHEM 154, or CHEM 155. Offered: AWPSS.

MSE 273 Introduction to Molecular Engineering of Interfaces and Surfaces (2) NW Covers interfaces and surfaces critical in every field of science, engineering, and medicine from catalytic reactions, drug delivery systems, biocompatibility, carbon fiber composites, semiconductor design, and global warming. Combines active learning, case studies, and hands-on laboratory exploration in nanotechnology. Offered: W.

MSE 298 Introduction to Modern Materials (1) Materials and advances in materials are at the core of a large number of significant technological advances. Seminar format highlights processing, properties, and uses of a broad class of materials for a variety of applications, each introduced by a faculty member from the department. Offered: ASp.

MSE 310 Introduction to Materials Science and Engineering (3) Introduces the materials field to new department majors. Examples are drawn from ceramics, metals, polymers, electronic materials, and composites. Structure-properties-manufacturing-design relationships are emphasized. Materials selection design project. Introduction to research. Offered: A.

MSE 311 Integrated Junior Laboratory I (3) Laboratory experimental techniques including writing, literature search, research planning, and computer applications. Optical microscopy experiments, sample preparations, X-ray equipment, and X-ray diffraction analysis of materials. Prerequisite: MSE 170. Offered: A.

MSE 312 Integrated Junior Laboratory II (3) Materials processing related laboratory experiments, including powder synthesis, redox reactions of particulate materials, grain growth, recrystallization, phase transformation, green tape processing, particle interaction and rheology, slip and tape casting and dry processing, sol-gel processing, polymer

processing, sintering behavior, metal welding, and heat treatment. Prerequisite: MSE 311. Offered: W.

MSE 313 Integrated Junior Laboratory III (3) Kinetics and phase transformation related laboratory experiments, including solidification. Mechanical properties related laboratory experiments, including stress-strain behavior of materials and elastic modulus of materials, effect of work hardening on stress strain behavior, and effect of surface condition of the strength of glass. Prerequisite: MSE 312. Offered: Sp.

MSE 321 Thermodynamics and Phase Equilibrium (4) Phase equilibria in materials systems of one, two, and three components. Determination of phase diagrams. Quantitative applications of thermodynamics to systems of interest to materials scientists; detained review of thermodynamic laws and principles. Offered: A.

MSE 322 Kinetics and Microstructural Evolution (4) Applications of thermodynamic and kinetic principles to the study of transport processes, transformations and reactions in engineering materials. Thermal activation and rates of processes, nucleation and growth, phase transformations, grain growth, sintering, among other processes. Prerequisite: MSE 321. Offered: W.

MSE 331 Crystallography and Structure (3) Theory and practice of x-ray diffraction with applications to materials sitemaps. Principles of crystal symmetry, lattice systems, and stereographic projections. Bragg's law of diffraction, Laue conditions, diffraction by X-rays, single crystal and powder diffraction techniques and their applications to lattice, phase, strain, and texture analyses. Prerequisite: MSE 170. Offered: A.

MSE 333 Materials Characterization (3) Principles and applications of analytical techniques, imaging, diffraction and spectroscopy for materials characterization including crystal structures, texture formation, phase analysis. Nano- and micro-structures of materials including defects and second phases, chemistry, bonding, compositions of materials. Demonstrations and lab experiments involving light scattering and diffraction techniques. Prerequisite: MSE 170; MSE 331; MSE 351. Offered: Sp.

MSE 342 Materials Processing I (3) Provides students with the fundamentals and applications of metal and alloy processing techniques. Focuses on relationships between the processing fundamentals and practice, and between processing, microstructure, and properties. Ferrous and non-ferrous metal and alloy processing discussed. Prerequisite: MSE 170; MSE 322. Offered: W.

MSE 351 Electronic Properties of Materials (3) Introduction to elementary solid-state concepts in materials, free electrons, and band theories. Principles to conduction in metals, insulators, semiconductors, and applications of semiconductors and devices. Prerequisite: MSE, 170, MSE 331. Offered: W.

MSE 352 Functional Properties of Materials I (3) Introduction to thermal properties, electrical (ionic and polaron) conduction and optical properties, including origins of color, interaction of light wave with materials, lasers and optoelectronics. Focuses on the relations between physical properties and chemical composition, crystal structure, and microstructure. Prerequisite: MSE 351. Offered: Sp.

MSE 362 Mechanical Behavior of Materials I (3) Influence of structure on the mechanical properties materials. Definition of different mechanical properties and experimental techniques to measure them. Elastic, viscoelastic, and plastic deformation. Introduction to fracture. Prerequisite: MSE 170. Offered: Sp.

MSE 399 Undergraduate Research Seminar (1) Introduces MSE majors to various research projects available to MSE faculty laboratories. Credit/no-credit only. Offered: W.

MSE 421 Case Studies in Thermodynamics (3) Applications of thermodynamics to the steady state. Statistical interpretation of entropy. Heterogeneous equilibria. Thermodynam-

ics of solutions. Defects in solids and thermodynamics of surfaces. Prerequisite: MSE 321, MSE 322. Offered: W.

MSE 431 Failure Analysis and Durability of Materials (3) Treats the areas of failure analysis and durability in a wide range of materials applications. Reviews concepts in mechanical and environmental behavior of materials. Includes instruments available to engineers, both destructive and nondestructive, and case studies. Prerequisite: MSE 333; MSE 342; MSE 362. Offered: W.

MSE 442 Materials Processing II (3) Develops a basic understanding of both engineering and science aspects of ceramic processing. Fundamentals of powder processing and characterization, green body formation, sintering, microstructural development and properties. Prerequisite: MSE 342. Offered: A.

MSE 443 Process Principles in Ferrous and Non-Ferrous Materials Production (3) Ironmaking and steelmaking processes analyzed by methods of material and heat balances, computational thermodynamics, and process kinetics. Hydrometallurgical and electrometallurgical operations. Process optimization. Prerequisite: MSE 321. Offered: Sp.

MSE 450 Magnetism, Magnetic Materials, and Related Technologies (3) Introduces magnetism, magnetic materials, and related applications. Discusses intrinsic and phenomenological concepts of magnetism, ordered magnetism materials, structure-sensitive properties, magnetic phenomena, small particles, thin films, and applications (magnetic recording, permanent magnets, and spin-electronics).

MSE 452 Functional Properties of Materials II (4) Dielectric materials including ferroelectrics, piezoelectrics and pyroelectrics, magnetic properties, high temperature superconductivity, shape memory materials. Detained discussion on relations of these properties with atomic and crystal structures, and applications. Prerequisite: MSE 351, MSE 352. Offered: W.

MSE 462 Mechanical Behavior of Materials II (4) Influence of structure on the mechanical properties of materials. Stress-strain tensors and response of materials to multiaxial loads. Effect of symmetry on elastic properties; spring dashpot analogs for viscoelasticity; strengthening mechanisms and continuum plasticity; failure probability and toughening mechanisms; creep, fatigue, and stress corrosion cracking. Prerequisite: AA 210; CEE 220; MSE 362. Offered: Sp.

MSE 463 Corrosion and Wear of Materials (4) Mechanisms of corrosion, thermodynamics, kinetics of corrosion. Passivity; Pourbaix diagrams; corrosion rate testing and measurements; forms of corrosion; effects of alloy and environmental variables; corrosion testing. Wear mechanisms: adhesive, abrasive, erosive. Fretting; surface roughness, wear testing. Coatings for corrosion and wear protection. Offered: Sp.

MSE 471 Introduction to Polymer Science and Engineering (3) Introduction of preparative methods of polymers; physical chemistry of polymeric molecules in solution, liquid and solid phase; thermodynamics of polymers; methods of characterization; mechanical properties; fabrication techniques; properties of commercial polymers. Offered: A.

MSE 473 Noncrystalline State (4) Chemistry and physics of inorganic glass and amorphous semiconductors; structure, properties, and processing of vitreous materials. Prerequisite: MSE 170; MSE 321; MSE 331. Offered: Sp.

MSE 475 Introduction to Composite Materials (4) Microstructural design and processing of composite materials; polymeric, metallic, and ceramic matrices; fibers and fiber-reinforced composites, thermal, mechanical, and electrical properties. Offered: A.

MSE 477 High Temperature Materials (4) Chemical and mineralogical composition; processing methods; thermal, physical, and chemical properties and tests; application in high-temperature processes. Prerequisite: MSE 310, MSE 321. Offered: Sp.

MSE 481 Science and Technology of Nanostructures (3)

Comprehensive introduction to the developing field of nanoscience and nanotechnology. Includes materials properties as a function of length-scale and dimensionality, applications in medicine/biology, electronics, magnetism, and electro-mechanical systems. Cooperative learning approaches involving student participation with team assignments, class activities, lectures, and laboratory visits. Offered: W.

MSE 482 Biomaterials/Nanomaterials in Tissue Engineering (3)

Provides fundamental understanding of biomaterials, implant applications, and their design consideration. Includes the fundamentals of synthesis, properties, and biocompatibility of metallic, ceramic, polymeric, composite, and biological materials and their applications for both hard and soft tissue replacement, and controlled drug delivery.

MSE 483 Nanomedicine (3) Covers methods of synthesis and characterization of nano-sized materials and specific considerations for use in biological systems.

MSE 484 Materials Chemistry (3) NW Overview of basic principles, techniques, and applications associated with solid materials. Topics include description of crystals, examples of crystal structures, structural analysis, band structures of solid materials, preparation of materials, materials for microelectronics, and materials for information technology. Prerequisite: CHEM 453 or CHEM 455. Offered: jointly with CHEM 484; ASp.

MSE 485 Introduction to Electronic Packaging and Materials (3)

Taya The governing equations of transport phenomena: mechanical, thermal, and electromagnetic behavior, thermomechanical and electromagnetic properties of packaging materials, electromagnetic characteristics of circuit and transmission lines, thermal management and reliability analysis of packaging, interconnect and material processing technology. Prerequisite: MSE 170. Offered: jointly with M E 485; AW.

MSE 486 Fundamentals of Integrated Circuit Technology (3)

Processing physics, chemistry, and technology, including evaporation, sputtering, epitaxial growth, diffusion, ion implantation, laser annealing, oxidation, chemical vapor deposition, photoresists. Design considerations for bipolar and MOS devices, materials and process characterization. Future trends. Prerequisite: either both E E 331 and E E 361 or MSE 351. Offered: jointly with E E 486; AW.

MSE 487 Laboratory in Electronic Packaging and Materials (1)

Taya, Stoebe Laboratory course to accompany M E 485 Experiments related to design, processing and reliability of electronic packaging used in consumer electronics. Co-requisite: M E 485. Offered: jointly with M E 487.

MSE 491 Design in Materials Engineering I (2)

Integration of technical materials engineering concepts with professional components related to materials engineering. Reviews materials design, teamwork, leadership, engineering economics, and ethics. Reports on the professional components important to the senior thesis and begins a two-quarter, team design project on materials engineering. Prerequisite: MSE 313. Offered: A.

MSE 492 Design in Materials Engineering II (2)

Integration of technical materials engineering concepts with professional components related to materials engineering. Reviews process design, manufacturability, and quality control. Completes the two-quarter team design project on materials engineering. Prerequisite: MSE 491. Offered: W.

MSE 497 Undergraduate Research (1-5, max. 12)

Research in materials under faculty supervision other than the MSE senior project. Cannot be used toward the technical elective requirements in the MSE major. Credit/no-credit only. Offered: AWSpS.

MSE 498 Special Topics (1-5, max. 15)

Special topics in materials science and engineering offered as a course with lectures, conferences, or laboratory. Offered: AWSpS.

MSE 499 Special Project (*-, max. 5) Materials science and engineering field or laboratory investigations in group or individual setting. Written report required. Offered: AWSpS.

MSE 501 Advanced Processing of Inorganic Materials (3) Discusses advanced processes of inorganic materials including metals, ceramics, and electronic materials, such as high temperature processing, sintering, solidification, single crystal growth from liquid, and vapor phase deposition. Emphasizes both the fundamentals and practical approaches of these processing techniques. Offered: A, even years.

MSE 502 Sol-Gel Processing (3) Fundamentals of colloid science and the physics and chemistry of the sol-gel process. Emphasizes the synthesis and applications of various materials, such as multi-component oxides, nanocomposites, meso- and microporous materials, organic/inorganic hybrids, and biomaterials that have important applications in both leading technologies and modern industries. Offered: A, odd years.

MSE 504 Introduction to Microelectro Mechanical Systems (4) Theoretical and practical aspects in design, analysis, and fabrication of MEMS devices. Fabrication processes, including bulk and surface micromachining. MEMS design and layout. MEMS CAD tools. Mechanical and electrical design. Applications such as micro sensors and actuators, or chemical and thermal transducers, recent advances. Offered: jointly with E E 502/M E 504.

MSE 510 Bonding, Crystallography, and Symmetry-Related Properties of Materials (3) Rigorous introduction to the fundamentals of bonding, symmetry, crystallography, and related properties. Quantum mechanical foundation of cohesion and properties of solids. Geometric approach to understanding symmetry elements in 2-D and 3-D, including point groups, space groups, stereographic projections, and bravais lattices. Tensor properties of crystals related to crystallography and symmetry. Offered: A.

MSE 512 Experimental Transmission Electron Microscopy (3) Fundamentals of electron optics as applied to microscopy; applications of contrast theories and electron diffraction with emphasis on defects and multiphase structures in crystalline solids. Prerequisite: MSE 510. Offered: W, odd years.

MSE 513 Transmission Electron Microscopy Laboratory (2) One four-hour laboratory and one two-hour discussion/demonstration per week; metallic, ceramic, electronic biological sample preparation techniques; diffraction, imaging, and spectroscopy techniques in electron microscopy. Prerequisite: MSE 512 which may be taken concurrently. Offered: W, odd years.

MSE 515 Advanced Transmission Electron Microscopy (3) Principles of image formation in crystalline and amorphous materials at the atomic resolution level; high spatial resolution electron diffraction with emphasis on convergent beam electron diffraction; quantitative elemental compositional and chemical analysis with energy dispersive X-ray spectroscopy and electron energy loss spectroscopy; high voltage electron microscopy. Prerequisite: MSE 512 and MSE 513.

MSE 518 Advanced Mineralogy (3) Crystal symmetry: point groups, space groups. Mathematical description of crystal structures; group theory, irreducible representations; tensor description of physical properties: stress, strain, piezoelectricity, elasticity; structural and magnetic phase transitions, Landau theory, deformation and creep crystals; elasto-viscous properties of Earth's mantle, crystal chemistry, solid state reactions. Offered: jointly with ESS 537; A.

MSE 520 Seminar (1, max. 6) Review of research problems in recent literature. Registration required for all graduate students. Credit/no-credit only. Offered: AWSpS.

MSE 524 Applied Rate Phenomena (3) Introduction to rate theory and transport processes. The principal thrust is on applications in ceramics and metallurgy. Prerequisite:

basic course in transport phenomena or permission of instructor. Offered: W.

MSE 525 Kinetics and Phase Transformations (3) Thermodynamic basis for kinetic processes, including diffusion and phase transformation kinetics. Diffusion problems and solution methodologies, statistical treatment of diffusion, solid-liquid and solid-solid transformations, ordering transitions. Special topics related to grain growth, sintering, martensitic transformations. Prerequisite: MSE 322 and MSE 421 or equivalent. Offered: Sp.

MSE 528 Physics and Modeling of VLSI Fabrication (4) Physics of VLSI fabrication, emphasizing processing modeling and simulation. CMOS process, sequences, point defects and diffusion, ion implantation and annealing, film growth kinetics, deposition and etching, advanced photolithography. Process interactions and process integration. Extensive use of process simulation software. Prerequisite: either E E 486/MSE 467, E E 520/M E 504/MSE 504, or E E 527. Offered: jointly with E E 528.

MSE 541 Defects in Materials (3) Detailed study of the general properties and effects of point, line, and planar defects in crystalline solids. Prerequisite: MSE 331 or equivalent. Offered: W.

MSE 550 Magnetism, Magnetic Materials, and Related Technologies (3) Introduce magnetism, magnetic materials, and related applications. Discusses intrinsic and phenomenological concepts of magnetism, ordered magnetic materials, magnetic phenomena, small particles, thin films, and applications (magnetic recording, permanent magnets, and spin-electronic). Offered: Sp.

MSE 555 Biomimetics: Bioinspired Design and Processing of Materials (4) How biological organisms produce materials with controlled structure, chemistry, and hierarchy to attain physical properties far superior to traditional engineering materials. Fundamental biological building materials, their synthesis, and their self-assembly with emphasis on examples of soft and hard tissues. Offered: W, even years.

MSE 560 Organic Electronic and Photonic Materials/Polymers (3) Physical and material concepts determining properties of organic electronic and photonic materials. Discusses electronic structure, physico-chemical characterization, and device application. Includes introduction of electronic band structure of polymers, electrically conducting polymers; organic nonlinear optical electroluminescent materials; polymer optical fibers; tow-photon absorption materials for 3-D microfabrication. Offered: jointly with CHEM 564; W.

MSE 562 Introduction to Electronic Composites (3) Taya Fundamentals of microstructure-macro-property relation of electronic composites. This course covers applications (computers, laser packages, medical devices, MEMS, avionics), functions (mechanical, thermal, electromagnetic, and optical), microstructure-macro-property relations, processing issues, and modeling of electronic composites. Offered: jointly with M E 562; Sp.

MSE 563 Advanced Composites: Design and Manufacturing (3) Manufacturing and processing techniques of metal-, polymer-, and ceramic-matrix composites; design considerations related to manufacturing techniques; non-destructive testing of composite structures. Fiber-matrix interfacial features and interactions. Interfacial thermodynamics applied to selection of fiber-matrix combinations. Prerequisite: MSE 475 or M E 450 or equivalent by permission of instructor. Offered: jointly with M E 563; Sp.

MSE 565 Electron Theory of Materials (3) Solid-state concepts of materials. Atomic bonding, statistical mechanics, Brillouin zone theory. Applications to conduction, optical, and magnetic properties of metals, semiconductors, and insulators. Offered: W, odd years.

MSE 568 Active and Sensing Materials (3) Taya Fundamental knowledge of the nano-structure property relations of active and sensing materials, and their devices. Exam-

ples of the active and sensing materials include: shape memory alloys (SMAs), ferromagnetic SMAs, ferroelectric, pyroelectric and piezoelectric materials, thermoelectrics, electroactive and conducting polymers, photoactive polymers, photovoltaics, and electrochromic materials. Offered: jointly with M E 568; Sp.

MSE 570 Graduate Tutorial in Materials Science and Engineering (3) A materials science and engineering tutorial for beginning graduate students who did not major in the field as an undergraduate, or who wish to broaden their knowledge of materials science and engineering. Focuses on materials' physical and chemical structures, and their relationship to mechanical, electrical, dielectric, optical, magnetic, and thermal properties.

MSE 582 Biomaterials/Nanomaterials in Tissue Engineering (3) Provides fundamental understanding of biomaterials, implant applications, and their design consideration. Includes the fundamentals of synthesis, properties, and biocompatibility of metallic, ceramic, polymeric, composite, and biological materials and their applications for both hard and soft tissue replacement, and controlled drug delivery.

MSE 583 Nanomedicine (3) Covers methods of synthesis and characterization of nano-sized materials and specific considerations for use in biological systems.

MSE 598 Engineering Materials Problems (4) Involves a concentrated project which may include the design of a system or process, or analysis of a set of data related to the materials engineering area. Requires a professional quality report and an oral presentation of the results. Offered: AWSpS.

MSE 599 Special Topics in Materials Science (1-5, max. 15) Studies of special advanced topics in materials science. Prerequisite: permission of instructor. Offered: AWSpS.

MSE 600 Independent Study or Research (*-) Offered: AWSpS.

MSE 700 Master's Thesis (*-) Offered: AWSpS.

MSE 800 Doctoral Dissertation (*-) Offered: AWSpS.

Mechanical Engineering

143 Mechanical Engineering Building

Mechanical engineering is one of the broadest and oldest of the engineering disciplines and therefore provides some of the strongest interdisciplinary opportunities in the engineering profession. Power utilization (and power generation) is often used to describe the focus of mechanical engineering. Within this focus are such diverse topics as thermodynamics, heat transfer, fluid mechanics, machine design, mechanics of materials, manufacturing, stress analysis, system dynamics, numerical modeling, vibrations, turbomachinery, combustion, heating, ventilating, and air conditioning. Degrees in mechanical engineering open doors to careers not only in the engineering profession but also in business, law, medicine, finance, and other non-technical professions.

UNDERGRADUATE PROGRAM

Adviser

143 Mechanical Engineering Bldg., Box 352600

(206) 543-5090

meadvise@uw.edu

The Department of Mechanical Engineering offers the following program of study:

- The Bachelor of Science in Mechanical Engineering (BSME) degree
- The Bachelor of Science in Mechanical Engineering (BSME) degree with an option in mechatronics
- The Bachelor of Science in Mechanical Engineering (BSME) degree with an option in nanoscience and molecular engineering

Bachelor of Science in Mechanical Engineering

Department Admission Requirements

Applicants are considered in two groups -- Early Admission and Upper-Division Admission. Admission is competitive. Completion of minimum requirements described below does not guarantee admission. All applicants have the right to petition and appeal the department's admission decision. Applications are accepted for autumn quarter only.

Nanoscience and Molecular Engineering Option (NME)

Admission to the NME option for mechanical engineering majors is by self-selection and normally occurs upon completion of NME 220, all mechanical engineering prerequisites, and formal admission to the mechanical engineering major. A small number of advanced students (either UW or transfer) may be admitted into the NME option upon application to the department. Admission is based on the student's academic record, including grades in NME 220 and any mechanical engineering courses already taken and on prior experience/work in the field of nanoscience or molecular engineering. Students applying for the NME option should indicate that interest on their mechanical engineering application and discuss their interests and background in the essay.

Early Admission

1. *Course Requirements:* MATH 124, MATH 125, MATH 126; 10 credits of physical science at the level of PHYS 121, PHYS 122, PHYS 123, or CHEM 142, CHEM 152, or higher; 5 credits of English composition. All courses must be completed prior to the July 1 application deadline
2. Applicants must be currently enrolled at the UW and must have completed a minimum of 15 credits taken in residence at the UW.
3. *Grade Requirements:* Minimum 2.0 grade in each course required for admission and minimum 2.50 cumulative GPA for all courses required for admission

Upper-Division Admission

1. *Course Requirements:* MATH 124, MATH 125, MATH 126, PHYS 121, PHYS 122; CHEM 142, CHEM 152; A A 210; CEE 220; M E 230; 5 credits of English composition
2. 65 credits completed by July 1 application deadline
3. *Grade Requirements:* Minimum 2.0 grade in each course required for admission and minimum 2.50 cumulative GPA for all courses required for admission

Graduation Requirements

180 credits as follows:

General Education Requirements (85 credits)

1. *Written and Oral Communication:* 12 credits, to include one 5-credit English composition course from the University list; HCDE 333 (or department-approved alternative).
2. *Visual, Literary, & Performing Arts (VLPA), and Individuals & Societies (I&S) (24 credits):* Minimum 10 credits in each area
3. *Natural World (49 credits):*

- a. *Mathematics (24 credits):* MATH 124, MATH 125, MATH 126, MATH 307 (or AMATH 351), MATH 308 (or AMATH 352), MATH 309 (or AMATH 353 or MATH 324)
- b. *Science (25 credits):* CHEM 142, CHEM 152; PHYS 121, PHYS 122, PHYS 123

Major Requirements (95-102 credits)

1. *Engineering Fundamentals (31 credits):* A A 210; AMATH 301; CEE 220; E E 215; IND E 315 (or MATH 390/STAT 390); M E 123; M E 230; MSE 170
2. *Mechanical Engineering Core Courses (45 credits):* M E 323, M E 331, M E 333, M E 354, M E 355, M E 356, M E 373, M E 374, M E 395, M E 495
3. *Mechanical Engineering Option Courses (19-26 credits)*
 - a. *Standard Option (19 credits):* See department for approved list of engineering electives.
 - b. *Mechatronics Option (19-21 credits):* ME 471, M E 473, M E 477, M E 494; two of M E 469, M E 470, M E 478, M E 480, PHYS 334, PHYS 335
 - c. *Nanoscience and Molecular Engineering Option (26 credits):* NME 221, NME 321, and NME 421; M E 410, M E 411; 13 credits of approved nanoscience and molecular engineering electives. See department for approved list.
4. Minimum 2.00 cumulative GPA

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:*
 - *Success in the Profession.* The department's goal is success for its graduates in industry, research, and academic careers by virtue of skills and attributes learned in the program. Graduates succeed in their professional and academic positions by using fundamental science and analysis to solve engineering problems, successfully executing engineering designs, and performing effectively in design teams, in the use of management tools, and through effective oral, written, and graphical communication.
 - *Contribution to Society.* Graduates should be critical thinkers in the tradition of the broad liberal arts education. They succeed in this goal by being able to think critically, in the sense of broadly educated individuals (i.e., be informed evaluators/consumers of information); perform independent, informed analysis on issues inside and outside of technology; and continue lifelong learning.

The BSME program is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700, and the department has adopted the following student outcomes:

- a. An ability to apply knowledge of mathematics, science, and engineering
- b. An ability to design and conduct experiments, as well as to analyze and interpret data
- c. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- d. An ability to function on multi-disciplinary teams
- e. An ability to identify, formulate, and solve engineering problems
- f. An understanding of professional and ethical responsibilities
- g. An ability to communicate effectively
- h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

- i. A recognition of the need for, and an ability to engage in, life-long learning
 - j. Knowledge of contemporary issues
 - k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
- Each student's success is measured by demonstration of the following learning outcomes:

- a. Ability to apply this knowledge to the formulation and solution of mechanical engineering problems
 - b. Ability to design thermal and mechanical components to achieve a desired goal. Ability to develop, conduct, and analyze experiments or tests that may aid in this design process.
 - c. An understanding of the necessary professional abilities of a practicing engineer including ethical conduct, teamwork in the pursuit of a goal, and effective communication
 - d. Ability to conduct computer-based design and analysis in engineering applications
 - e. Exposure to a general education program that aids in the understanding of and increases the appreciation for the "non-technical" world
 - f. Realization of the business environment in which engineering is practiced.
 - g. Awareness and necessity of continuing education, graduate study, and other lifelong learning experiences
 - h. Interest groups within the faculty provide instruction in four areas: design; energy and fluids; mechanics, materials and manufacturing; and systems and dynamics. Departmental thrust areas for graduate and undergraduate research include: environment; healthcare; information technology; and manufacturing. Several on-going senior capstone design projects provide both undergraduate and graduate students with hands-on, interdisciplinary, team-driven opportunities that encompass such diverse topics as Formula SAE car; human-powered submarine, mechatronics, and fuel cell technology.
- *Instructional and Research Facilities:* The department has well-equipped laboratories for pursuing research in various disciplinary fields in mechanical engineering and for fabricating specialized research equipment. These include experimental stress analysis; materials testing/characterization; synthesis and simulation of electromechanical control systems; foundry, welding, and other metal fabrication operations; computer facilities for CAD/CAM/CIM and CFD research; wind tunnels for boundary-layer and high-speed flow analysis; combustion systems performance, exhaust emissions control, and combustion engines; acoustics, vibration, and dynamic testing and measurements and modal analysis; radiation, conduction, and convection (including multiphase) heat-transfer analysis, and a bioengineering flow facility. Visit the department website to view faculty research areas.
 - *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
 - *Research, Internships, and Service Learning:* The department participates in the College of Engineering Co-op Program. The Center for Career Services also lists internship opportunities.
 - *Department Scholarships:* The department offers approximately forty scholarships each year. Scholarship applications are available on the College of Engineering Website. The deadline for scholarship applications is April 1. Sophomores may apply for scholarship consideration before being admitted to the department.

• *Student Organizations/Associations:*

- American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE)
- American Society of Mechanical Engineers (ASME)
- Pi Tau Sigma - Mechanical Engineering Honor Society (PTS)
- Society of Automotive Engineers (SAE)
- Society of Manufacturing Engineers (SME)
- Society of Naval Architects and Marine Engineers (SNAME)
- Society of Women Engineers (SWE)

GRADUATE PROGRAM

Graduate Program Coordinator

143 Mechanical Engineering Bldg, Box 352600

(206) 543-5090

megrad@uw.edu

The Department of Mechanical Engineering offers graduate programs leading to the degrees of Master of Science in Mechanical Engineering (MSME) and Doctor of Philosophy (PhD). The department also provides authorized options leading to the College-wide Master of Science in Engineering (MSE) degree. These degrees provide balanced combinations of formal instruction and independent research or design experience. Although there are thesis and non-thesis options for the MSME, completion of a thesis is highly recommended.

Individual projects may be drawn from a wide spectrum of topics, which include mechanical and energy conservation systems, heat transfer, combustion, fluid mechanics, applied mechanics, computational mechanics, computer-aided design and manufacturing, production systems, materials behavior, robotics, controls, vibrations, and applications of mechanical engineering science to a variety of such interdisciplinary fields as bioengineering, ocean engineering, environmental engineering, nanotechnology, micro electro-mechanical systems, and acoustics. Flexible requirements for coursework provide opportunities both for a broad scientific and professional background and for specialty training.

Master of Science in Mechanical Engineering

Admission Requirements

1. *Grade Point Average:* The Graduate School requires a minimum 3.00 GPA for the last 90 quarter hours or 60 semester hours of graded undergraduate coursework to receive consideration. The department prefers an minimum overall 3.20 undergraduate GPA. In addition, the department prefers that PhD applicants have a minimum 3.5 MS GPA.
2. Quality and difficulty of courses taken and universities and colleges attended.
3. *GRE General Test:* Minimum GRE scores of 450 Verbal (350 if English is not a native language), 650 Quantitative, and 4.0 Analytical Writing
4. Three letters of recommendation
5. Statement of purpose
6. Official transcripts from all colleges/universities attended
7. Professional experience, if applicable
8. *English Requirements for Foreign Nationals:* TOEFL scores for foreign nationals whose native language is not English, with a minimum score of 580 for the paper examination and 237 for the computer-based examination

Degree Requirements

42 credits, as follows:

1. Thesis-option students must register for 12 credits of thesis research and 30 credits of related numerically graded coursework. Non-thesis option students must take all 42 credits in numerically graded courses.
2. Course grades must be 2.7 or above
3. At least 12 credits for the thesis option and 18 credits for the non-thesis option must be taken in 500-level mechanical engineering courses, including 6 credits of mathematical and engineering analysis requirements: M E 564 and M E 565.
4. At least 3 credits of computational or numerical analysis must be taken from the following list of approved courses (or from an approved plan of individual study conducted as part of thesis research): M E 535, AA 543, A A 540, CEE 504, E E 578, AMATH 581, and AMATH 584.
5. The remaining credits (18 for thesis-option students and 24 for non-thesis option students) may be from other departments, and may include a maximum of 9 credits (12 credits for non-thesis) at the 400 course level (excluding M E 498 and M E 499).
6. Non-thesis option students may substitute up to 6 credits of M E 599 Special Projects (not to be confused with the class M E 599) for 6 credits of classroom courses. Permission forms for project proposals can be obtained from the Mechanical Engineering Student Services Office. The student must write a research paper under the supervision of a faculty member and the credits must be taken for a numerical grade.

For thesis-option students, special projects courses such as M E 599 and M E 600 do not count toward the 42-credit total unless the project is recommended by the student's faculty supervisor and pre-approved by the Graduate Program Coordinator. Seminar requirement: All full-time students must register for a seminar course every quarter while in the master's program. Quarterly registration for seminars is necessary for satisfactory progress in the program, but does not count toward the 42 credits of numerically graded coursework and thesis research required for graduation.

Doctor of Philosophy

Admission Requirements

1. *Grade Point Average:* The Graduate School requires a minimum 3.00 GPA for the last 90 quarter hours or 60 semester hours of graded undergraduate coursework for admission. The department prefers an overall minimum 3.20 undergraduate GPA. In addition, the department prefers that PhD applicants have a minimum 3.50 MS GPA.
2. Quality and difficulty of courses taken and universities and colleges attended
3. *GRE General Test:* The department requires the following minimum GRE scores: 450 Verbal (350 if English is not a native language), 650 Quantitative, and 4.0 Analytical Writing.
4. Three letters of recommendation
5. Statement of purpose
6. Official transcripts from all colleges/universities attended
7. Professional experience, if applicable
8. *English Requirements for Foreign Nationals:* TOEFL scores for foreign nationals whose native language is not English, with a minimum score of 580 for the paper exam and 237 for the computer-based exam

Degree Requirements

90 credits, to include:

1. *Advisory Committee:* During the first year of post-master's study, the student should select a two- to three-person advisory committee from the Mechanical Engineering Department.
2. *Coursework:* All new post-master's students must successfully complete two to three graduate courses per quarter in their first year of study, as approved by the advisory committee. Normally this includes a sequence in advanced applied mathematics.
3. *Seminar Requirement:* Post-master's students register for the mechanical engineering seminar (M E 520), in the autumn quarter of their matriculation year. Otherwise, students are encouraged to register for engineering seminar courses offered by other UW engineering programs, i.e., M E 518, M E 523, M E 591, AMATH 501, IND E 591, IND E 592, IND E 593, MSE 520. Seminar must be taken on a quarterly basis throughout the entire PhD program.
4. *Research:* Post-master's students must conduct initial research in their first year of study under the direction of the advisory committee. This requirement applies even if the student holds a teaching assistantship.
5. *Qualifying Examination:* Every full-time student in the department's PhD program is required to take the examination within one calendar after entry into the program.
6. *Supervisory Committee:* A graduate student is not considered a doctoral student until a Supervisory Committee has been appointed by the Dean of the Graduate School. Students need to provide the name of the committee chair, Graduate School Representative (GSR), and at least two mechanical engineering faculty for approval to the Graduate Program Coordinator (GPC). The department requires that at least three members of the committee be Mechanical Engineering faculty, two of whom must be core Mechanical Engineering faculty. This committee, established before the end of the second year of PhD study and no less than four months prior to scheduling the general examination, replaces the first-year Advisory Committee.
7. *Dissertation Proposal:* Prepared after the student has conducted one or two quarters of in-depth research, during which time the student should meet frequently with the committee chair. Submit copies of the proposal to all members of the Supervisory Committee prior to the examination. The proposal must be approved by the committee chair before the general examination is scheduled.
8. *Dissertation Research:* Registration for a minimum of 27 credits of dissertation research over a period of at least three quarters -- and at least two quarters after the general examination.
9. *Reading Committee:* The reading committee, consisting of three members drawn from the Supervisory Committee, must include at least two core Mechanical Engineering faculty.
10. *Final Examination*
11. *Dissertation Defense*

Research Facilities

The department has well-equipped laboratories for pursuing research in various disciplinary fields in mechanical engineering and for fabricating specialized research equipment. These include experimental stress analysis; materials testing/characterization; synthesis and simulation of electromechanical control systems; foundry, welding, and other metal fabrication operations; computer facilities for CAD/CAM/CIM and CFD research; wind tunnels for boundary-layer and high-speed flow analysis; combustion systems performance, exhaust emissions control, and combustion engines; acoustics, vibration, and dynamic testing and measurements and modal analysis; radiation, conduction, and convection (including multiphase) heat-

transfer analysis, and a bioengineering flow facility. Visit the department website to view faculty research areas.

Financial Aid

Financial aid is offered to full-time graduate students as funds permit. Funds, however, are limited and the assignment of assistantships and fellowships is highly competitive. Aid may be in the form of a research assistantship for sponsored programs, a fellowship provided by the University or industry, or a teaching assistantship.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at uw.edu/students/crscat/

M E 123 Introduction to Visualization and Computer-Aided Design (4) VLPA/NW Adee Methods of depicting three-dimensional objects and communicating design information. Development of three-dimensional skills through freehand sketching and computer-aided design using parametric solid modeling. Offered: AWSpS.

M E 124 Visualization and Computer-Aided Design Laboratory (2) VLPA/NW Adee Methods of depicting three-dimensional objects and communicating design information. Development of three-dimensional visualization skills through computer-aided design using parametric solid modeling. Offered: AWSpS.

M E 230 Kinematics and Dynamics (4) NW Fabien Kinematics of particles, systems of particles, and rigid bodies; moving reference frames; kinetics of particles, systems of particles, and rigid bodies; equilibrium, energy, linear momentum, angular momentum. Prerequisite: A A 210.

M E 323 Engineering Thermodynamics (5) Kramlich Engineering thermodynamics, including thermodynamic concepts and properties, the first and second laws of thermodynamics, energy conversion, refrigeration, humidification, and combustion. Engineering design applications. Prerequisite: either CHEM 142 or CHEM 144; MATH 126; PHYS 121.

M E 331 Introduction to Heat Transfer (4) Emery Study of heat transfer by conduction, radiation, and convection; elementary heat-exchanger design. Prerequisite: either M E 333 or CEE 342.

M E 333 Introduction to Fluid Mechanics (5) Riley Introduction to the basic fluid laws and their application. Conservation equations, dynamic similarity, potential flow, boundary-layer concepts, effects of friction, compressible flow, fluid machinery, measurement techniques. Prerequisite: AMATH 301; M E 323; either MATH 307 or AMATH 351.

M E 341 Energy and Environment (3) NW Energy use. Fossil energy conversion. Oil, gas, coal resources. Air impacts. Nuclear energy principles, reactors, fuel cycle. Prerequisite: either MATH 112, MATH 124, or Q SCI 291; either CHEM 120, CHEM 142, CHEM 144, PHYS 114, or PHYS 121. Offered: jointly with CHEM E 341/ENVIR 341; A.

M E 354 Mechanics of Materials Laboratory (5) Tuttle Properties and behavior of engineering materials including stress-strain relations, strength, deformation mechanisms, strength, deformation, fracture, creep, and cyclic fatigue. Introduces experimental techniques common to structural engineering, interpretation of experimental data, comparison of measurements to numerical/analytical predictions, and formal, engineering report writing. Lecture and laboratory. Prerequisite: MSE 170, CEE 220.

M E 355 Introduction to Manufacturing Processes (4) Ramulu Study of manufacturing processes, including interrelationships between the properties of the material, the manufacturing process, and the design of components. Interpretation of experimental data, comparison of measurements to numerical/analytical predictions, and formal, engineering report writing. Prerequisite: M E 354.

M E 356 Machine Design Analysis (4) Chung Analysis, design, and selection of mechanical and electromechanical subsystems and elements, such as gears, linkages, cams, motors, and bearings. Prerequisite: M E 354.

M E 373 Introduction to System Dynamics (5) Garbini Mathematical modeling, analysis, and design of physical dynamic systems involving energy storage and transfer by lumped-parameter linear elements. Time-domain response by analytical methods and numeric simulation. Laboratory experiments. Prerequisite: either AMATH 351 or MATH 307; either AMATH 352 or MATH 308; E E 215; M E 230.

M E 374 Systems Dynamic Analysis and Design (5) Garbini Extension of M E 373. Frequency response analysis, generalized impedance concepts and applications, Fourier series analysis and Laplace transform techniques. Modeling and analysis of electromechanical actuators and rotating machinery. Laboratory experiments and design projects. Prerequisite: AMATH 301; M E 373.

M E 395 Introduction to Mechanical Design (4) Cooper Design process and methodology; decision making; optimization techniques; project planning; engineering economics; probabilistic and statistical aspects of mechanical design; ethical and legal issues. Prerequisite: M E 123; M E 323; IND E 315 or MATH 390/STAT 390 either of which may be taken concurrently.

M E 406 Corrosion and Surface Treatment of Materials (3) Sandwith Corrosion fundamentals and forms (galvanic, crevice, pitting, stress corrosion, erosion, hydrogen, and leaching). Principles of design, materials selection, cathodic protection and surface treatments (coatings, carburizing, nitriding, and plating) applied to reduce corrosion. Failure analysis applied to case studies.

M E 409 Introduction to Numerical Control and Computer-Aided Manufacturing (3) Ramulu Control system fundamentals, numerical control (NC) machine control systems, and the design aspect of NC machine tools, programming methods of NC machines, computer-aided manufacturing, CNC, DNC, and process optimization. Prerequisite: M E 355 which may be taken concurrently.

M E 410 Nanodevices: Design and Manufacture (3) Chung Examines design, fabrication, and manufacture of nano devices with state-of-the-art nanotechnology. Covers classification and selection of nanoscale materials and manufacturing methods: Includes nanodevice design projects. Offered: A.

M E 411 Biological Frameworks for Engineers (3) Sniadecki Introduces the fundamentals of biology for an engineer. Covers mechanisms and biomechanics of DNA, proteins, cells, connective tissue, musculoskeletal tissue, and cardiovascular tissue, integration principles of living systems, structure-function relationships, and techniques to study biology and medicine, and tissue engineering. Offered: A.

M E 414 Engineering Innovation in Medicine (3) J. POSNER, P. REINHALL Introduces the role of innovation and engineering in the design of medical devices and healthcare technologies, applicable both to medical practice and healthcare-focused engineering. Discusses medical practice, clinical needs finding, FDA regulation, insurance reimbursement, intellectual property, and the medical device design process. Offered: A.

M E 415 Sustainability and Design for Environment (3) Cooper Analysis and design of technology systems within the context of the environment, economy, and society. Applies the concepts of resource conservation, pollution prevention, life cycle assessment, and extended product responsibility. Examines the practice, opportunities, and role of engineering, management, and public policy. Offered: jointly with CEE 495/ENVIR 415.

M E 425 HVAC Engineering (4) Emery Heating, ventilating, and air conditioning of built environment. Human comfort, psychometric processes, load computations, fluid distribution, and controls. Design analysis of HVAC system is

taught in the lectures and applied in the class project. Prerequisite: M E 323; M E 331.

M E 426 Sustainable Energy Design (3) Malte Energy systems with renewable energy and efficient use of energy. Project-based learning: analysis, systems engineering, design, component characteristics, and environmental impacts. Prerequisite: M E 333.

M E 430 Advanced Energy Conversion Systems (4) Kramlich Advanced and renewable energy conversion systems and technologies are treated. Included are high efficiency combined cycles; renewable energy conversion involving solar, wind, and biomass; direct energy conversion and fuel cells; and nuclear energy. Environmental consequences of energy conversion and environmental control are discussed. Prerequisite: M E 323.

M E 431 Advanced Fluid Mechanics (4) Mescher Advanced topics in fluid mechanics, including kinematics, potential theory and vortex dynamics, viscous flow, turbulence, experimental and numerical methods, and design. Prerequisite: M E 333.

M E 433 Turbomachinery (4) Aliseda Thermodynamics, gas dynamics, and fluid mechanics of axial and centrifugal compressors, pumps, and turbines. Selection of components for engineering applications. Design problems and/or laboratory experiments to illustrate operating characteristics of turbomachines.

M E 440 Advanced Mechanics of Materials and Solids (3) Study of mechanics of deformable bodies, including three-dimensional stress and strain tensors and their transformations. Equations of compatibility, continuity and equilibrium. Elastic constants. Failure criteria including fracture, yield, and instability. Deflection relations for complex loading and shapes. Indeterminate problems. Design applications and numerical methods. Prerequisite: M E 354.

M E 442 Renewable Energy (4) NW P. MALTE Introduction to renewable energy. Principles and practices: solar, wind, water, and biomass energy conversion. Prerequisite: either M E 323, CHEM E 325, A A 260, or E E 351. Offered: jointly with CHEM E 442; W.

M E 445 Introduction to Biomechanics (4) J. SANDERS Presents the mechanical behavior of tissues in the body and the application to design of prostheses. Tissues studies include bone, skin, fascia, ligaments, tendons, heart valves, and blood vessels. Discussion of the structure of these tissues and their mechanical response to different loading configurations. An important part of the class is a final project. Offered: jointly with BIOEN 440; Sp.

M E 450 Introduction to Composite Materials and Design (3) Tuttle Stress and strain analysis of continuous fiber composite materials. Orthotropic elasticity, lamination theory, failure criterion, and design philosophies, as applied to structural polymeric composites.

M E 459 Introduction to Fracture Mechanics (3) Ramulu Deformation processes leading to fracture, and linear elastic fracture mechanics. Fatigue crack propagation. Fracture control and failure analysis. Prerequisite: M E 354; M E 356.

M E 460 Kinematics and Linkage Design (3) Ganter Synthesis of linkage-type mechanisms using graphical and computer methods.

M E 461 Mechanics of Thin Films (3) Wang Provides an overview of the thin film deposition processes; the stress and microstructure development during film growth; the mechanisms of adhesion; delamination and fracture; and the state-of-the-art characterization techniques for the microstructure and mechanical properties of thin films, coatings, and nanomaterials. Offered: A.

M E 468 Air-Pollution Control Equipment Design (3) Designs to control air pollutants from stationary sources. Procedures for calculating design and operating parameters. Fundamental mechanisms and processes of gaseous and particulate control equipment for absorption and adsorption.

tion of gaseous pollutants; electrostatic precipitation and filtration of particulate pollutants. Actual case studies. Offered: jointly with CEE 494/CHEM E 468.

M E 469 Applications of Dynamics in Engineering (4) *Storti* Application of the principles of dynamics to selected engineering problems, such as suspension systems, gyroscopes, electromechanical devices. Includes introduction to energy methods, Hamilton's principle and Lagrange equations, and the design of dynamic system. Prerequisite: M E 374.

M E 470 Mechanical Vibrations (3) *Reinhal* Single-degree-of-freedom linear systems techniques. Matrix techniques for multi-degree-of-freedom linear systems. Applications in vibration isolation, transmission, and absorption problems and instrumentation. Prerequisite: M E 373.

M E 471 Automatic Control (4) *Berg* Dynamic system modeling; control system stability and performance analysis; compensator design by Bode and root-locus methods. Prerequisite: M E 374.

M E 473 Instrumentation (4) *Garbini* Principles and practice of industrial and laboratory measurement. Dynamics of instrument response; generalized performance analysis of sensor systems; theory of transducers for motion, force, pressure, flow, and other measurements. Lecture and laboratory. Prerequisite: M E 374.

M E 477 Embedded Computing in Mechanical Systems (4) *Garbini* Analysis of electromechanical systems employing microcomputers for control or data acquisition. Microcomputer architecture, memory organization, C language programming, interfaces, and communications. Particular emphasis on design of hardware and software interfaces for real-time interaction with mechanical systems. Weekly laboratory. Prerequisite: M E 374.

M E 478 Finite Element Analysis (4) *Reinhal* Development of theory and concepts of finite element analysis. Applications in all areas of mechanical engineering, including mechanics of solids, heat transfer, and design of dynamical systems. Weekly computer exercises. Prerequisite: M E 123; M E 374; either MATH 308 or AMATH 352.

M E 480 Introduction to Computer-Aided Technology (4) *Ganter* Principles of computer-aided technology. Computer-aided design, engineering, drafting, and manufacturing; computer-aided design systems, geometry, computer graphics, hardware, computer-aided vehicle/system design synthesis. System demonstrations, laboratories, and site visits. Prerequisite: M E 123; AMATH 301.

M E 481 Internal Combustion Engines (4) *Kramlich, Malte* Internal combustion engines including spark and compression ignition piston engines, with focus on engine performance and the thermodynamics, combustion, emissions, and efficiency of engines. Impact of greenhouse gas constraints on engines. Prerequisite: either M E 323, A A 260, or CHEM E 325.

M E 485 Introduction to Electronic Packaging and Materials (3) *Taya* The governing equations of transport phenomena: mechanical, thermal, and electromagnetic behavior, thermomechanical and electromagnetic properties of packaging materials, electromagnetic characteristics of circuit and transmission lines, thermal management and reliability analysis of packaging, interconnect and material processing technology. Prerequisite: MSE 170. Offered: jointly with MSE 485; AW.

M E 487 Laboratory in Electronic Packaging and Materials (1) *Taya, Stoebe* Laboratory course to accompany M E 485 Experiments related to design, processing and reliability of electronic packaging used in consumer electronics. Co-requisite: M E 485. Offered: jointly with MSE 487.

M E 494 Mechatronics Design Preparation (1) *Garbini* Design laboratory preparation. Covers the development of functional specifications; exploration of prior art; static and dynamic modeling. Prerequisite: M E 471; M E 473. Offered: W.

M E 495 Mechanical Engineering Design (4) *Cooper* Design laboratory involving the identification and synthesis of engineering factors to plan and achieve specific project goals. Current literature and prerequisite texts used as reference sources. Prerequisite: M E 395.

M E 496 Technology-Based Entrepreneurship (3) *Furness* Concentrates on hands-on aspects of innovation and entrepreneurial enterprise development. Examines relationships between innovation, iterative prototyping, and marketing testing. Students identify market opportunities, create new technology-based products and services to satisfy customer needs, and construct and test prototypes. Offered: jointly with IND E 496.

M E 498 Special Topics in Mechanical Engineering (1-5, max. 6) Lecture and/or laboratory. Maximum of 6 credits may be applied toward an undergraduate degree.

M E 499 Special Projects (2-5, max. 6) Written report required.

M E 500 Advanced Composite Structural Analysis (3) Covers advanced stress analysis methods for composite structures made of beams, laminates, sandwich plates, and thin shells; stress and buckling analyses of solid and thin-walled composite beams; shear deformable theory for bending of thick laminated plates; and stress and fracture mechanics analysis of bonded joints. Prerequisite: A A 532. Offered: jointly with A A 535; Sp, odd years.

M E 501 Modern Manufacturing Processes (3) *Ramulu* General survey and introduction to modern manufacturing engineering processes. Fundamental principles and practices of modern manufacturing processes. Case studies and exercises relating the course material directly to modern industrial practice. Offered: A.

M E 503 Continuum Mechanics (3) Reviews concepts of motion, stress, energy for a general continuum; conservation of mass, momentum, and energy; and the second law; constitutive equations for linear/nonlinear elastic, viscous/inviscid fluids, and general materials; and examples/solutions for solid/fluid materials. Offered: jointly with A A 503; A.

M E 504 Introduction to Microelectro Mechanical Systems (4) Theoretical and practical aspects in design, analysis, and fabrication of MEMS devices. Fabrication processes, including bulk and surface micromachining. MEMS design and layout. MEMS CAD tools. Mechanical and electrical design. Applications such as micro sensors and actuators, or chemical and thermal transducers, recent advances. Offered: jointly with E E 502/MSE 504.

M E 505 Computer Integrated Manufacturing (3) Design and analysis of advanced manufacturing systems from a strategic as well as technological perspective. Focus on information generation, management, and coordination aspects of complex manufacturing organizations. Examination of system integration alternatives and consequences for relationships with customers and suppliers. Prerequisite: IND E 431 or equivalent. Offered: jointly with IND E 531.

M E 507 Fluid Mechanics (3) Covers inviscid and viscous incompressible flows, exact solutions of laminar flows, creeping flows, boundary layers, free-shear flows, vorticity equation, and introduction to vortex dynamics. Offered: jointly with A A 507; W.

M E 508 Theory and Design for Mechanical Measurements (3) Fundamental concepts of mechanical measurements, principles of sensors and transducers, signal conditioning and data acquisition, advanced experiment planning and analysis, and applications in mechanical engineering.

M E 510 Mathematical Foundations of Systems Theory (4) Mathematical foundations for system theory presented from an engineering viewpoint. Includes set theory; functions, inverse functions; metric spaces; finite dimensional linear spaces; linear operators on finite dimensional spaces; projections on Hilbert spaces. Applications to engineer-

ing systems stressed. Offered: jointly with A A 510/CHEM E 510/E E 510.

M E 511 Biological Frameworks for Engineers (3) *Sniadecki* Introduces the fundamentals of biology for an engineer. Covers mechanisms and biomechanics of DNA, proteins, cells, connective tissue, musculoskeletal tissue, and cardiovascular tissue, integration principles of living systems, structure-function relationships, and techniques to study biology and medicine, and tissue engineering. Offered: A.

M E 515 Life Cycle Assessment (3) *Cooper* Presents and discusses the computation structure and data sources for environmental Life Cycle Assessment. Uses Life Cycle Assessment to analyze materials, products, and services. The analysis either identifies opportunities for improvements or selects a superior alternative on the basis of pollution prevention and resource conservation. Offered: W.

M E 520 Seminar (-1, max. 6) Credit/no-credit only. Offered: AWSp.

M E 521 Thermodynamics (3) *Kramlich* Fundamental concepts of temperature, thermodynamic properties, and systems. The first, second, and combined laws. Development of the relations of classical thermodynamics. Introduction to statistical thermodynamics. Prerequisite: M E 323 and graduate standing in mechanical engineering or permission of instructor. Offered: A.

M E 522 Thermodynamics (3) *Malte* Topics from statistical thermodynamics, including the Boltzmann, Bose-Einstein, and Fermi-Dirac statistics. Solutions of the Schrodinger wave equation and evaluation of the partition function for translation, rotation, and vibration. Prerequisite: M E 521 or permission of instructor.

M E 523 Energy and Environment Seminar (1, max. 20) *Malte* Student discussions of topics in combustion science and technology, alternative fuels, renewable energy, environmental consequences of energy conversion, and design for environment. Also, presentations by outside experts. May be repeated for credit. Credit/no-credit only. Offered: AWSp.

M E 524 Combustion (3) *Kramlich* Chemical and physical processes of combustion with applications to design of combustors, fuel selection, and consideration of environmental effects. Prerequisite: graduate standing in mechanical engineering or permission of instructor. Offered: Sp, odd years.

M E 525 Applied Acoustics I (3) *Dahl, Reinhal* Introduces acoustics through various applications such as medical ultrasound, underwater sound, noise control and vibrations. Includes linear acoustics, wave equation, planewave solutions, acoustics scales; reflection, refraction, scattering and diffraction, acoustic sources, radiation from transmission through plates. Prerequisite: graduate standing in Engineering, allied field, or permission of instructor. Offered: Sp.

M E 526 Special Topics in Acoustics (3) *Dahl, Reinhal* Advanced study of special topics in acoustics, such as medical ultrasound, underwater sound, noise control and vibrations. Prerequisite: ME 525, or permission of instructor. Offered: A.

M E 527 Musculoskeletal Biomechanics (4) *R. CHING* Engineering principles and mechanics applied to the musculoskeletal system including structure-function property relationships of musculoskeletal tissues, the biomechanics of joint systems, and applications of biomechanics in industry and research. Offered: jointly with BIOEN 520; W.

M E 528 Acoustics of Environmental Noise (4) Offered: jointly with CEE 554.

M E 529 Advanced Energy Conservation Systems (4) *Kramlich* Covers advanced energy conversion systems and technologies, including high efficiency combined cycles, advanced rankine, integrated gasification combined cycle, nuclear, biomass thermal conversion, and fuels cells. Discusses environmental consequences. Offered: A.

M E 530 Radiative Heat Transfer (3) *Mescher* Covers black and gray body radiation, radiative material properties, radiation exchange between surfaces, radiation in participating media, and combined radiation with conduction or convection. Offered: W.

M E 531 Conductive Heat Transfer (3) Analysis of steady-state and transient heat conduction in single- and multidimensional systems by mathematical, graphical, numerical, and analogical methods. Prerequisite: graduate standing in mechanical engineering or permission of instructor.

M E 532 Convective Heat Transfer (3) *Kramlich* Introduction to fluid flow and boundary-layer theory as applicable to forced- and natural-convection heat transfer. Condensation and boiling heat transfer. Prerequisite: graduate standing or permission of instructor. Offered: Sp.

M E 534 Fluid Mechanics II (3) *Riley* Review of basic principles, some exact solutions and their interpretation, waves (water waves, sound waves, shock waves), boundary layers, jets and wakes, flow stability, turbulence, applications. Prerequisite: M E 507 or permission of instructor. Offered: W.

M E 535 Computational Techniques in Mechanical Engineering (3) *Emery* Advanced heat transfer studies of interest to mechanical engineers. Subject coverage varies from year to year. Prerequisite: permission of instructor. Offered: Sp.

M E 536 Micro and Nanoscale Fluid Transport Phenomena (3) *Posner, Shen* Focuses on fundamental fluid transport physics at the micro/ and nanometer scale for applications in micro/nanofluidic devices. Presents the core concepts of low-Reynolds number Newtonian fluid mechanics; mass transfer; charged double layers; electrokinetically driven flow and transport; and surface tension. Discusses state of the art micro and nanoscale total analytical devices. Offered: WSp.

M E 537 Topics in Fluid Mechanics (3) Selected fluid mechanics relevant to current advances in research and application. Topics selected vary with faculty and student interest, but have included flow stability, special topics in turbulence, and turbulent reacting flows.

M E 538 Advanced Fluid Mechanics (4) *J. RILEY* Advanced topics in fluid mechanics, including kinematics; potential theory and vortex dynamics; viscous flow; turbulence; numerical methods; and design. Offered: A.

M E 539 Renewable Energy I (4) *Malte* Renewable energy, principles and practices of energy conversion, with focus on solar energy and bio-energy. Offered: W.

M E 540 Renewable Energy II (3) *Malte* Explores renewable energy, principles and practices of energy conversion, focusing on wind and hydrokinetic energy. Offered: Sp.

M E 541 Fatigue of Materials (3) *Ramulu* Macro and micro aspects of fatigue of metals and fatigue mechanisms. Analytical methods for fatigue and life assessment in advanced materials. Offered: W.

M E 543 Fluid Turbulence (3) Methods of characterizing fluid turbulence; probability concepts; spatial and temporal velocity correlations; spectral energy transfer; turbulent diffusion; isotropic turbulence and Kolmogoroff's hypothesis; Taylor's hypothesis; hot-wire measurement techniques. Prerequisite: 3 credits of graduate level fluid mechanics or permission of instructor. Offered: W, even years.

M E 544 Advanced Turbulence Modeling Techniques (3) *Riley* The Reynolds stress transport equations; plane homogeneous shear flow; modeling the pressure-strain, diffusion, and dissipation rate correlation tensors; one and two-equation turbulence models; near-wall turbulence and wall functions; limitations of length scale and eddy viscosity modeling. Prerequisite: 3 credits of turbulence-related coursework. Offered: Sp, even years.

M E 546 Micro-Scale Heat Transfer (3) *Mescher* Covers advanced heat conduction and radiation principles, emphasizing micro-scale applications. Offered: Sp, odd years.

M E 547 Linear Systems Theory (4) Linearity, linearization, finite dimensionality, time-varying vs. time-invariant linear systems, interconnection of linear systems, functional/structural descriptions of linear systems, system zeros and invertibility, linear system stability, system norms, state transition, matrix exponentials, controllability and observability, realization theory. Offered: jointly with A A 547/E E 547.

M E 548 Linear Multivariable Control (3) Introduction to MIMO systems, successive single loop design comparison, Lyapunov stability theorem, full state feedback controller design, observer design, LQR problem statement, design, stability analysis, and tracking design. LQG design, separation principle, stability robustness. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with A A 548/E E 548.

M E 549 Estimation and System Identification (3) Fundamentals of state estimation for linear and nonlinear systems. Discrete and continuous systems. Probability and stochastic systems theory. Models with noise. Kalman-Bucy filters, extended Kalman filters, recursive estimation. Numerical issues in filter design and implementation. Prerequisite: either A A 547, E E 547, or M E 547. Offered: jointly with A A 549/E E 549.

M E 550 Nonlinear Optimal Control (3) Calculus of variations for dynamical systems, definition of the dynamic optimization problem, constraints and Lagrange multipliers, the Pontryagin Maximum Principle, necessary conditions for optimality, the Hamilton-Jacobi-Bellman equation, singular arc problems, computational techniques for solution of the necessary conditions. Offered: jointly with A A 550/E E 550.

M E 551 Elasticity I: Elastostatics (3) *Taya* Elastostatics, including general formulations of 2D and 3D elastostatic problems (stress function method, complex variable method, displacement potential method). Eshelby's method is emphasized and used to solve 2D and 3D problems with special application to composite materials. Offered: W.

M E 552 Viscoelasticity and Plasticity (3) *Taya* Covers viscoelasticity, including the stress-strain equations in terms of convolution integral, Fourier transform, and Laplace transform modes. Plasticity focuses on generalized plastic behavior.

M E 553 Adhesion Mechanics (3) *Tuttle* Introduction to adhesive systems and test/evaluation techniques. Stress/strain analysis methods used with adhesive joints. Examples of practical applications. Prerequisite: graduate student status or permission of instructor. Offered: Sp, even years.

M E 555 Thermoelasticity (3) *Emery* Basic equations of thermoelasticity for isotropic elastic solids. Analysis of disks, cylinders, spheres, beams, and plates under steady temperature and sudden and slow heating and cooling. Introduction to thermoelastic stability. Prerequisite: M E 551 or permission of instructor.

M E 556 Experimental Stress Analysis I (3) *Tuttle* Theory and practice of experimental techniques including strain gages and strain gage-based devices, thermocouples, LVDTs, and transducer design. Lecture and laboratory. Prerequisite: graduate standing or permission of instructor. Offered: A.

M E 557 Experimental Stress Analysis II (3) *Tuttle* Theory and practice of optical mechanics, including interferometric techniques (moiré and holographic), geometric moiré methods, and photoelasticity. Lecture and laboratory. Prerequisite: graduate standing or permission of instructor. Offered: W, even years.

M E 559 Introduction to Fracture Mechanics (3) *Ramulu* Applications of linear fracture mechanics to failure analysis and fracture control based on actual case studies. Fracture toughness and fatigue testing techniques, crack initiation, and propagation fatigue life prediction of mechanical components subjected to environmental effects. Offered: W.

M E 561 Mechanics of Thin Films (3) *Wang* Provides an overview of the thin film deposition processes; the stress and microstructure development during film growth; the mechanisms of adhesion; delamination and fracture; and the state-of-the-art characterization techniques for the microstructure and mechanical properties of thin films, coatings, and nanomaterials. Offered: A.

M E 562 Introduction to Electronic Composites (3) *Taya* Fundamentals of microstructure-macro-property relation of electronic composites. This course covers applications (computers, laser packages, medical devices, MEMS, avionics), functions (mechanical, thermal, electromagnetic, and optical), microstructure-macro-property relations, processing issues, and modeling of electronic composites. Offered: jointly with MSE 562; Sp.

M E 563 Advanced Composites: Design and Manufacturing (3) Manufacturing and processing techniques of metal-, polymer-, and ceramic-matrix composites; design considerations related to manufacturing techniques; non-destructive testing of composite structures. Fiber-matrix interfacial features and interactions. Interfacial thermodynamics applied to selection of fiber-matrix combinations. Prerequisite: MSE 475 or M E 450 or equivalent by permission of instructor. Offered: jointly with MSE 563; Sp.

M E 564 Mechanical Engineering Analysis (3) *Storti* Application of mathematical methods to the description and analysis of systems in mechanical engineering. Analogies in heat transfer, fluid flow, stress distribution, dynamics, and feedback control. Prerequisite: graduate standing in mechanical engineering or permission of instructor. Offered: A.

M E 565 Mechanical Engineering Analysis (3) *Storti* Applications of vectors, matrices, and partial differential equations to mechanical engineering systems, including computational techniques and analogies. Prerequisite: graduate standing in mechanical engineering or permission of instructor. Offered: W.

M E 568 Active and Sensing Materials (3) *Taya* Fundamental knowledge of the nano-structure property relations of active and sensing materials, and their devices. Examples of the active and sensing materials include: shape memory alloys (SMAs), ferromagnetic SMAs, ferroelectric, piezoelectric and piezoelectric materials, thermoelectrics, electroactive and conducting polymers, photoactive polymers, photovoltaics, and electrochromic materials. Offered: jointly with MSE 568; Sp.

M E 570 Manifolds and Geometry for Systems and Control (3) Introduction to fundamentals of calculus on manifolds and group theory with applications in robotics and control theory. Topics include: manifolds, tangent spaces and bundles, Lie groups and algebras, coordinate vs. coordinate-free representations. Applications from physics, robotics, and control theory. Offered: jointly with A A 570/E E 570; W, even years.

M E 572 Methodologies for Engineering Design: Conceptual Design (3) *Kumar* Methodologies particularly useful in the conceptual or preliminary phase of a design. The design process. Impact of formulating independent functional requirements. Physical and functional coupling in design. Case studies in conceptual design of products and processes. Prerequisite: graduate standing or permission of instructor. Offered: W, even years.

M E 578 Optimization in System Sciences (3) Covers convex sets, separation theorems, theorem of alternatives and their applications, convex analysis, convex functions, conjugation, subgradients, convex optimization, duality and applications, linear and semi-definite programming. Linear matrix inequalities, optimization algorithms, applications in system theory and control, bilinear, rank minimization, optimization software. Offered: jointly with A A 578/E E 578; W.

M E 580 Geometric Methods for Non-Linear Control Systems (3) Analysis and design of nonlinear control systems

focusing on differential geometric methods. Topics include controllability, observability, feedback linearization, invariant distributions, and local coordinate transformations. Emphasis on systems evolving on Lie groups and linearly uncontrollable systems Prerequisite: A A 570/E E 570/M E 570. Offered: jointly with A A 580/E E 580; Sp, even years.

M E 581 Digital Control (3) *Chizeck* Sampled-data systems, and z-transform. Frequency domain properties. Sampling D/A and A/D conversion. Controller design via discrete-time equivalents, direct methods, state feedback and observers. Quantization effects. LQR control and introduction to LQG optimal control. Prerequisite: E E 548/A A 548/ M E 548. Offered: jointly with A A 581/E E 581; W.

M E 582 Introduction to Discrete Event Systems (3) *Berg* Modeling DES with automata and Petri nets. Languages. State estimation and diagnostics. Control specifications. Feedback control. Dealing with uncontrollability and unobservability. Dealing with blocking. Timed automata and Petri nets. Prerequisite: A A 447/E E 447/ M E 471. Offered: jointly with A A 582/E E 582; Sp, even years.

M E 583 Nonlinear Control Systems (3) Analysis of nonlinear systems and nonlinear control system design. Phase plane analysis. Lyapunov stability analysis. Describing functions. Feedback linearization. Introduction to variable structure control. Prerequisite: A A 447/E E 447/M E 471. Offered: jointly with A A 583/E E 583.

M E 585 System Identification and Adaptive Control (3) Theory and methods of system identification and adaptive control. Identification of linear-in-parameter systems, using recursive LS and extended LS methods; model order selection. Indirect and direct adaptive control. Controller synthesis, transient and stability properties. Offered: jointly with A A 585/E E 585.

M E 588 Dynamics and Vibrations (3) *Shen* Variational techniques, Hamilton's principle, Lagrange's equations applied to dynamics of particles and rigid bodies. Vibration analysis of multi-degree-of-freedom and continuous systems. Prerequisite: graduate standing in engineering or permission of instructor. Offered: A.

M E 589 Vibrations (3) *Storti* Study of systems with nonlinear damping and restoring forces excited by deterministic or random inputs. Applications in measurement, testing, and design of mechanical systems. Nonlinear systems are emphasized. Prerequisite: M E 588 or permission of instructor. Offered: W, even years.

M E 591 Robotics and Control Systems Colloquium (1, max. 30) Colloquium on current topics in robotics and control systems analysis and design. Topics presented by invited speakers as well as on-campus speakers. Emphasis on the cross-disciplinary nature of robotics and control systems. Credit/no-credit only. Offered: jointly with A A 591/CHEM E 591/E E 591.

M E 593 Feedforward Control (3) *Devasia* Design feedforward controllers for precision output tracking; inversion-based control of non-minimum-phase systems; effect of plant uncertainty on feedforward control; design of feedforward controllers for applications such as vertical take off and landing aircraft, flexible structures and piezo-actuators. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with A A 593/E E 593; Sp, even years.

M E 594 Robust Control (3) Basic foundations of linear analysis and control theory, model realization and reduction, balanced realization and truncation, stabilization problem, coprime factorizations, Youla parameterization, matrix inequalities, H-infinity and H2 control, KYP lemma, uncertain systems, robust H2, integral quadratic constraints, linear parameter varying synthesis, applications of robust control. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with A A 594/E E 594; Sp, odd years.

M E 597 Networked Dynamics Systems (3) Provides an overview of graph-theoretic techniques that are instrumental for studying dynamic systems that coordinate their states over a signal-exchange network. Topics include net-

work models, network properties, dynamics over networks, formation control, biological networks, observability, controllability, and performance measures over networks. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with A A 597/E E 597.

M E 598 Topics in Research (1) Doctoral seminar. Credit/no-credit only. Offered: AWSp.

M E 599 Special Projects (1-5, max. 9) Written report required. Prerequisite: permission of department chairperson. Offered: AWSpS.

M E 600 Independent Study or Research (*-) Written report required. Offered: AWSpS.

M E 700 Master's Thesis (*-) Offered: AWSpS.

M E 800 Doctoral Dissertation (*-) Offered: AWSpS.

College of the Environment

Dean

Lisa Graumlich
209 Ocean Sciences

Associate Deans

Bruce Nelson, Research

Julia Parrish, Academic Affairs and Diversity

Rapidly changing interactions between the Earth's environment and human activities drive the research and teaching at the College of the Environment. By connecting some of the world's leading educators and researchers with students, practitioners, and citizens, the College cultivates communities that work with and learn from each other as they tackle the environmental challenges of the twenty-first century.

For decades the UW has been recognized as home to one of the strongest constellations of environmental and intellectual talent in the world. In fulfillment of a vision for a bold, resourced, enduring, and effective environmental hub, the UW launched the College of the Environment in July 2009. The College fosters existing and new collaborations between faculty, staff, and students who are engaged in the study of the Earth's dynamic land, water, and atmosphere systems; the development and application of engineering and technological advances; and the impact of policy and human dimensions on the environment and the management of natural resources.

Offering more than 20 degree programs, ranging from bachelor to doctoral, and granting more than 450 degrees annually, the College is comprised of the following core units:

- School of Aquatic and Fishery Sciences
- Department of Atmospheric Sciences
- Department of Earth and Space Sciences
- Program on the Environment
- School of Environmental and Forest Sciences
- School of Marine and Environmental Affairs
- School of Oceanography
- Friday Harbor Laboratories
- Joint Institute for the Study of the Atmosphere and Ocean
- Washington NASA Space Grant Consortium
- Washington Sea Grant Program

COLLEGE FACILITIES

The College of the Environment main office is in the Ocean Sciences Building, Suite 200, located at 1492 NE Boat Street. For locations of all College of the Environment buildings, see the Academics-at-a-Glance page for links to campus maps showing the College's school and departmental buildings.

The College's facilities and field stations include the following, among others: Center for Sustainable Forestry at Pack Forest, Friday Harbor Laboratories, Pacific Northwest Seismic Network, Research Vessel Thomas G. Thompson, and Wind River Crane Canopy Research Center.

UNDERGRADUATE PROGRAM

The College of the Environment offers the following undergraduate degree options:

Bachelor Degree Programs

Bachelor of Science

- Aquatic and Fishery Sciences
- Atmospheric Sciences
- Bioresource Science and Engineering
- Earth and Space Sciences (degree options areas: biology, environmental, geology, and physics)
- Environmental Science and Resource Management (degree option areas: landscape ecology and conservation, restoration ecology and environmental horticulture, sustainable forest management, and wildlife conservation)
- Oceanography

Bachelor of Arts

- Environmental Studies

Minors

- Aquatic and Fishery Sciences
- Arctic Studies
- Atmospheric Sciences
- Climate Science
- Earth and Space Sciences
- Environmental Science and Resource Management
- Environmental Studies
- Oceanography
- Restoration Ecology

Admission

The College does not have admission requirements beyond those required for admission to the University of Washington. Most of the majors within the College are open admission and can be declared at any time by students in good academic standing, except for the major in Bioresource Science and Engineering within the School of Environmental and Forest Sciences, which has a competitive admission process.

General Education Requirements

Minimum 85 credits as follows:

1. *Written and Oral Communication*: One 5-credit English composition (C) course from the approved University list with a minimum 2.0 grade; 10 additional writing credits.
2. *Quantitative & Symbolic Reasoning (QSR)*: 10 credits. See departmental lists for specific quantitative and symbolic reasoning requirements.
3. *Areas of Knowledge*
 - a. *Visual, Literary, & Performing Arts*: 10 credits. Visual, Literary, & Performing Arts (VLPA) includes courses such as literature, art, music, and drama which stress the essential qualities of individual forms of expression. First- and second-quarter language courses may not be counted toward the VLPA requirement. (May substitute first-year language courses for VLPA requirements by completing a third quarter of a three-course sequence. Language courses at the second-year level and beyond may be counted toward the VLPA requirement.)
 - b. *Individuals & Societies (I&S)*: 20 credits, with at least 10 credits out of major*. Individuals & Societies includes courses in subjects such as history, economics, psychology, and sociology which stress the social nature of mankind, and the development and analysis of societies and social institutions.
 - c. *Natural World (NW)*: 20 credits, with at least 10 credits out of major*. See departmental list for specific natural world requirements.
 - d. *Additional Areas of Knowledge*: 10 credits

* Definition of "out of major": Course must have an out-of-major prefix and may not overlap with courses required for the major. This includes cross-listed courses.

GRADUATE PROGRAM

The College of the Environment offers the following graduate degree options:

Master's Degree Programs

Master of Science

- Aquatic and Fishery Sciences
- Atmospheric Sciences
- Earth and Space Sciences
- Forest Resources
- Oceanography
- Science for Teachers
- Other Master's Degrees:
 - Master of Environmental Horticulture
 - Master of Forest Resources
 - Master of Marine Affairs

Doctoral Degree Programs

Doctor of Philosophy

- Aquatic and Fishery Sciences
- Atmospheric Sciences
- Earth and Space Sciences
- Forest Resources
- Geologic Sciences
- Geophysics
- Oceanography
- Graduate Certificate Programs
- Astrobiology
- Climate Sciences
- Environmental Management

Science for Teachers Program Overview

The Master of Science in Science for Teachers (MSST) is a graduate degree in science developed specifically for teachers and administered by the College of the Environment. Because science is moving at ever-increasing speeds, with new breakthroughs, innovations and technologies, keeping pace requires science educators to engage in hands-on, high-level, real-life science. The MSST program has three core components: practicing science through an independently-designed research project, deepened disciplinary content knowledge, and the development of an interdisciplinary skill set. These components work together to give teachers the opportunity to experience directly how the three dimensions of the Next Generation Science Standards (cross-cutting concepts, science and engineering practices, core disciplinary ideas) are integrated and realized in cutting-edge contemporary science.

Master of Science (Science for Teachers)

Adviser

Ocean Sciences Building, Room 506

1492 NE Boat Street, Box 355355

(206) 221-4879, (206) 543-4558

uwsst@uw.edu

coenv.washington.edu/students/graduate-students/prospective-students/degree-programs-advisers/master-of-science-for-teachers/

The College of the Environment offers the Master of Science in Science for Teachers (MSST), a graduate degree in science developed specifically for teachers. The MSST program provides a unique opportunity to conduct scientific research with world-renowned UW faculty and research professionals as a mechanism to strengthen and broaden content knowledge and scientific skill sets. This degree is designed to:

- Move science teachers through the skills that are fundamental to today's scientific practice – experimental design, data manipulation, data visualization, and science communication
- Create a flexible and personally-tailored elective set within the student's discipline of choice
- Culminate in the design and implementation of an individualized and independent scientific research project

The flexible course structure is especially designed to fit the needs of K-12 teachers. Course work can be taken throughout the UW, and faculty research mentors range across Colleges of the Environment, Arts and Sciences, Public Health, and Medicine. MSST is intended to be completed in two years and may be compatible with part-time work or teaching. Students may take additional time to complete their degree if needed.

The Master of Science in Science for Teachers does not lead to teacher certification.

Admission Requirements

Admission to the Master of Science (Science for Teachers) degree program is based on evaluation of required application materials in competition with other applicants. Required materials include Graduate Record Examination general test scores, three letters of recommendation, official academic transcripts, minimum GPA of 3.0 required for last two years of study, a bachelor's degree in a science field (or demonstrated equivalency), and experience working in an educational setting. Applicants must apply directly to, and be accepted by, the University's Graduate School. Applications are accepted for Autumn Quarter only.

Degree Requirements

36 total credits as follows:

1. 18 credits at the 500-level or higher
2. Minimum 2.7 grade in 18 credits at the 400-level or higher
3. Minimum 3.00 GPA
4. Core courses based on shared skills sets, with a secondary focus on developing student cohorts: SCI T 501; SCI T 502; SCI T 503; SCI T 600 (9-10 credits)
5. Statistics course (5 credits) at the 300-500 level
6. An elective pathway that the student and Graduate Program Coordinator develop based on the disciplinary needs of the student.

Financial Aid

The Master of Science (Science for Teachers) program does not provide funding to students. Applicants in need of support are encouraged to contact the UW Office of Student Financial Aid to explore options for grants, loans, scholarships, and work-study; to apply for College of the Environment Scholarships; and to investigate outside sources of funding.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

C ENV 110 Introduction to Food and the Environment (5) I&S/NW Hilborn Relates the production and consumption

of food to the major areas of environmental science including energy use, water consumption, biodiversity loss, soil loss, pollution, nutrient cycles, and climate change. Studies the basic science and how food production impacts the key processes.

C ENV 190 Introductory Topics in Environment (1-5, max. 15) Covers topics related to all areas of the environment.

C ENV 410 MESA Introductory Tutor Training Workshop (1) Tutor skills and cultural competence training designed to prepare tutors to work in small groups with Seattle middle and high school students in math and science. Credit/no-credit only. Offered: ASp.

C ENV 420 MESA Introductory Tutor Training Seminar (1-2) Second course in the tutor training program. Continued development of tutoring skills and cultural competence training designed to prepare tutors to work in small groups with Seattle middle and high school students in math and science. Credit/no-credit only. Offered: AW.

C ENV 425 MESA Tutoring Practicum (1-3, max. 15) Trained MESA tutors work in small groups with Seattle middle and high school students in math and science. Develop tutoring skills, share best practices, and problem solve through online interactions with the MESA tutoring program. Credit/no-credit only. Offered: AWSp.

C ENV 430 MESA Advanced Tutor Training Seminar (1-2) Advanced tutor training program. Continued development of tutoring skills and cultural competence training designed to prepare tutors to work in small groups with Seattle middle and high school students in math and science. Credit/no-credit only. Offered: A.

C ENV 490 Special Topics in Environment (1-5, max. 15) Covers topics related to all areas of the environment depending on curricular needs and interests of students and faculty.

C ENV 500 Communicating Science to the Public Effectively (3) Teaches emerging scientists how to effectively communicate their research to the public. Uses lessons and tools such as group discussion, feedback, and practice. Credit/no-credit only. Offered: W.

C ENV 590 Special Topics in Environment (1-5, max. 15) Covers topics related to all areas of the environment depending on curricular needs and interests of students and faculty.

Friday Harbor Labs

FHL 305 Biology of Fishes (5) NW N. GIDMARK Covers the morphological, physiological, behavioral, and ecological diversity of fishes worldwide; provides a basic foundation for advanced courses in all areas of aquatic sciences. Participants engage in field-based collecting, copious dissection/illustration laboratories, and delve into scientific literature on this fascinating group's biology. Recommended: Recommended: 10 credits biological science. Offered: ASp.

FHL 430 Marine Zoology (5) NW Survey of groups of invertebrate animals represented in the San Juan Archipelago; natural history, functional morphology, ecology, distribution, habitat, adaptation, trophic interrelationships, and evolution. Prerequisite: BIOL 445, which must be taken concurrently; permission of Friday Harbor director. Offered: jointly with BIOL 430.

FHL 432 Marine Invertebrate Zoology (9) NW Comparative morphology and biology of marine invertebrates with emphasis on field and laboratory studies. Representatives of all major and most minor phyla are collected, observed live, and studied in detail. Taken at Friday Harbor Laboratories. Not open for credit to students who have taken BIOL 434. Offered: jointly with BIOL 432; S.

FHL 435 Research Apprenticeship in Marine Science (15) NW Immersive quarter in research in close collaboration with one-three faculty mentors on a specific topic that varies with the apprenticeship. Students engage in laboratory or field research in marine science, involving gathering,

analyzing, and communicating results as part of a research team. Offered: jointly with BIOL 435/MARBIO 435; ASpS.

FHL 440 Marine Botany (5) NW Survey of plants represented in marine environments; natural history; ecology, distribution, habitat, adaptation, and trophic interrelationships. Taken at Friday Harbor laboratories. Prerequisite: either BIOL 220, B BIO 220, or TESC 140; BIOL 430, which must be taken concurrently. Offered: jointly with BIOL 445.

FHL 450 Nearshore Ecology Research Experience (6) NW M. DETHIER A hands-on introduction of "doing science" in close collaboration with a faculty member. Students engage in research around a thematic focus of ecology of nearshore marine ecosystems, with lab experiments and field work. Students gather, analyze, write up, and present their own data. Offered: jointly with MARBIO 450; ASp.

FHL 460 Aquatic Animals Research Experience (6) NW P. DITSCHKE-KURU A hands-on introduction of "doing science" in close collaboration with a faculty member. Students engage in research around a thematic focus of aquatic animals, with lab experiments and field work. Students gather, analyze, write up, and present their own data. Offered: jointly with MARBIO 460; ASp.

FHL 470 Research in Marine Biology (1-15, max. 15) NW B. SWALLA A hands-on introduction of "doing science" in close collaboration with a faculty member. Students engage in research in marine biology; credits vary with the scale of the project with may include lab experiments and field work. Students gather, analyze, write up, and present their own data. Offered: jointly with MARBIO 470; ASp.

FHL 490 Marine Sciences Seminar (1, max. 3) NW P. DITSCHKE-KURU, N. GIDMARK Students attend seminars by marine scientists each week and ask questions about their seminars. Offered: ASpS.

FHL 492 Ecology and Conservation of Marine Birds and Mammals (9/15) NW An intensive, field-based course that offers motivated students the opportunity to learn about these ecologically and culturally important marine animals and the conservation problems they face. Emphasizes first-hand learning and individual research projects. Offered: jointly with FISH 492/MARBIO 492; S.

FHL 528 Advanced Topics in Fish Biology (9, max. 27) Focuses on various aspects of fish biology, such as functional morphology, sensory biology, or swimming mechanics. Taught at Friday Harbor Laboratories. Offered: S.

FHL 536 Comparative Invertebrate Embryology (9) Studies diversity in developmental patterns in major marine taxa. Analyzes evolutionary changes in development, with emphasis on observation of live embryos and larvae. Offered: jointly with BIOL 536; S.

FHL 539 Marine Algae (9) Field and laboratory studies of marine algae of the San Juan Archipelago with emphasis on seaweed diversity, identification, and the role of algae in marine ecosystems. Offered at Friday Harbor Laboratories. Offered: jointly with BIOL 539.

FHL 548 Advanced Topics in Evolution and Development (9, max. 27) Focuses on various aspects of evolution and development of marine organisms, such as larval biology or evolution and development of metazoans. Students work on individual projects during the course. Taught at Friday Harbor Laboratories. Offered: S.

FHL 568 Advanced Topics in Ecology and Biomechanics (9, max. 27) Focuses on various aspects of ecology and biomechanics of marine organisms, such as experimental ecology, ocean acidification, deep sea biodiversity, or biomechanics. Taught at Friday Harbor Laboratories. Offered: S.

FHL 585 Advanced Topics in Neurobiology and Physiology (9, max. 27) Focuses on various aspects of neurobiology or physiology of marine organisms, such as neurobiology, ethology, or marine chemosensory biology. Taught at Friday Harbor Laboratories. Offered: S.

Science Teaching

SCI T 501 Observational Science and Experimental Design for Teachers (2) Students consider the nature of scientific exploration; practice using observations, evidence, and explanation to make hypotheses; and explore case studies demonstrating various experimental designs. Combines on-line activities, readings, hands-on activities, presentations, and discussions. Offered: A.

SCI T 502 Data Analysis and Visualization for Teachers (2) Students gain experience analyzing and visualizing data sets, evaluate the use of common data visualization tools, and create graphs of their own data sets. Combines on-line activities, readings, hands-on activities, presentations, and discussions. Offered: W.

SCI T 503 Science Communication for Teachers (2) Students examine effective communication of scientific research. Students critically evaluate example presentation from on-campus departmental seminars, practice communicating their own scientific research to mentors and peers, and deliver a formal oral presentation. Offered: Sp.

Aquatic and Fishery Sciences

116 Fishery Sciences

The School of Aquatic and Fishery Sciences (SAFS) encompasses multi-disciplinary programs at the interface between the traditional fields of natural history, environmental biology, and natural resource management. Primary foci are the management of sustainable fisheries of commercially important species; biocomplexity and ecosystem-based management; and sustainable aquaculture. In addition, human-induced effects on natural ecosystems (including habitat change and restoration, impacts of climate change, emerging diseases, the effects of invasive species, and processes affecting endangered species and declining populations) are major areas of research. In pursuit of these objectives, a variety of basic sciences are used, including ecology and evolution, population biology, behavior, physiology, microbiology, and genetics. The scope of aquatic systems ranges from watersheds, rivers and lakes, to estuarine and near-shore shelf, open ocean systems and culture facilities. Graduates of the School of Aquatic and Fishery Sciences are uniquely qualified for careers in universities as well as other educational settings, natural resources management agencies at the local to international levels, environmental consulting, and non-profit organizations with an environmental focus.

UNDERGRADUATE PROGRAM

Adviser

116 Fishery Sciences, Box 355020

(206) 543-7457

safsadv@uw.edu

The School of Aquatic and Fishery Sciences (SAFS) offers the following programs of study:

- The Bachelor of Science, with a major in aquatic and fishery sciences
- A minor in aquatic and fishery sciences
- An interdisciplinary minor in marine biology
- An interdisciplinary minor in quantitative science

The School's undergraduate program has been substantially modified in recent years to reflect student and faculty interests in ecology and conservation biology, as well as more traditional fields such as stock assessment and

fishery management. Faculty dedication to teaching, substantial benefit gained in close faculty contact within a relatively small program, and significant experiential training and research have made SAFS an appealing major that has doubled in recent years. The Bachelor of Science degree provides an underpinning in sciences such as biology, chemistry, and mathematics/statistics, then adds a core curriculum within aquatic sciences. Students study within areas of individual interest, grouped in three primary areas: aquatic ecology, conservation and management of aquatic resources, and biology and culture of aquatic animals.

Bachelor of Science

Suggested First- and Second-Year College Courses: Recommended courses for first year students: English composition; calculus; CHEM 120 or CHEM 142, and CHEM 220; BIOL 180; and FISH 250 and/or FISH 101. Recommended courses for second year students: BIOL 200 and BIOL 220; Q SCI 381; FISH 310 and/or FISH 311; and any additional courses that meet the College general education requirements. Students should start FISH core courses as soon as they meet the appropriate prerequisites.

Department Admission Requirements

Students in good academic standing may declare this major at any time, including on their application for admission to the UW. After notification of admission and before registration, new students should visit or email the Student Services Office for help in planning their programs.

Graduation Requirements

180 credits, as follows:

Students must complete the College of the Environment general education and the Aquatic and Fishery Sciences major requirements outlined below. Many courses may overlap in both categories unless otherwise noted. Courses taken to meet the degree requirements outlined below may not be taken on the satisfactory/not-satisfactory grading option. Remaining credits to bring the total to 180 are general electives.

- 1. General Education Requirements (85 credits):** May and do overlap with major requirements unless otherwise noted.
 - a. Written Communication (15 credits):** 5 credits English composition (ENGL 131 preferred); 10 additional credits, satisfied by departmental courses, shown below.
 - b. Quantitative and Symbolic Reasoning (10 credits):** Met by departmental requirements, shown below.
 - c. Natural World (20 credits):** 10 credits must be taken "out of major," defined as courses that count neither toward major requirements nor have the prefix of the department from which the student is earning his or her degree (includes cross-listed courses).
 - d. Visual, Literary, & Performing Arts (VLPA) (10 credits):** May overlap with major requirements. No specific courses required.
 - e. Individuals & Societies (I & S) (20 credits):** 10 credits must be taken "out-of-major," defined as courses that count neither toward major requirements nor have the prefix of the department from which the student is earning his or her degree (includes cross-listed courses).
 - f. Additional Areas of Knowledge (10 credits)**

2. Major Requirements

- a. Foundational Courses (50+ credits):** MATH 124 and MATH 125, or Q SCI 291 and Q SCI 292; Q SCI 381; general chemistry (CHEM 120 or CHEM 142); organic chemistry (CHEM 220 or CHEM 223); BIOL 180, BIOL 200, BIOL 220; PHYS 114 or PHYS 121; two courses counting for "physical world" requirement. See adviser or website for acceptable courses in this category.

- b. Scientific Writing and Communication (3 credits):** FISH 290
 - c. Natural History Courses (10 credits):** FISH 310 and FISH 311.
 - d. Core Courses (15 credits minimum):** FISH 312; FISH 323; FISH 324; FISH 340.
 - e. 400-Level FISH Electives (minimum 16 credits, 4 courses):** 400-level courses from within the School of Aquatic and Fishery Sciences for the major, excluding FISH 453, FISH 479, and FISH 492.
 - f. Capstone (7-13 credits):** FISH 493, FISH 494, FISH 495
- 3. GPA Requirement:** Minimum 2.00 cumulative GPA in all courses counted in each of the following categories: natural history, core courses, and 400-level electives.

Continuation Policy

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

Minor

Aquatic and Fishery Sciences

Minor Requirements: Minimum 28 credits to include three courses (two of which must be at least at the 300 level) from FISH 101, FISH 250, FISH 310, FISH 311, FISH 312, FISH 323, and FISH 324; Q SCI 381 or Q SCI 482; minimum two upper-division FISH courses totaling at least 8 credits.

Marine Biology

The minor in marine biology is sponsored jointly by the School of Aquatic and Fishery Sciences, the School of Oceanography, and the College of Arts and Sciences, and is designed to immerse students in the study of marine organisms and ecosystems, starting in the freshman year. Because the experience of marine sciences cannot be taught entirely within the classroom, the minor is structured to provide ample opportunity for fieldwork and research within the coursework. A description of the minor can be found under the Interdisciplinary Undergraduate Program section of the catalog.

Quantitative Science

Students interested in quantitative skills applied to biological and ecological fields should consider minoring in quantitative science, an interdisciplinary minor supported by the School of Aquatic and Fishery Sciences and the School of Environmental and Forest Sciences. More information may be found on the Center for Quantitative Science website.

Student Outcomes and Opportunities

- **Learning Objectives and Expected Outcomes:** Aquatic and fishery sciences is a life science major designed to provide students a broad framework of knowledge and sets of skills for employment in a variety of areas (e.g., natural resource management, environmental consulting, fish or aquatic wildlife biology, aquaculture). In addition, students receive excellent preparation for graduate study in a number of life science fields. Expected student outcomes include:
 - Skills in written and oral communication, data analysis, field and laboratory skills. Skill sets have been integrated into all core and flagship courses.
 - Exposure to career paths in the field and interaction with professionals. Skills gained allow students to obtain an entry-level aquatic scientist position or admission to graduate school.
 - Emphasis in one of three focus areas (aquatic ecology, conservation and management, aquatic biology)

and culture); students get a broad overview, then may specialize in one of the three areas.

- Strong encouragement to pursue multiple internship and research experiences, including opportunities like FHL research apprenticeships and Alaska Ecological Research Program.
- Understanding not only of the science, but also the socio-political-economic environment and its impact on the field of aquatic and fishery sciences.
- All students participate in a capstone experience that requires them to demonstrate acquired skill sets (including public presentation in an undergraduate research symposium).

SAFS graduates pursue careers in the private sector (environmental consulting firms, private companies), the public sector (state and federal agencies, non-profit organizations, non-governmental agencies, education), and many continue into graduate programs in either research or policy. The undergraduate degree prepares students for either direct employment in a number of fields within public and private sectors, or for competitive entry into applicable graduate programs worldwide.

- **Instructional and Research Facilities:** The School of Aquatic and Fishery Sciences is housed in several buildings on the University of Washington campus. In addition, the School maintains various facilities off campus, including field research stations in Washington State and Alaska.
- **Honors Options Available:** With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major).
- **Research, Internships, and Service Learning:** SAFS scientists work closely with employers in both the public and private sectors, leading to opportunities for undergraduates to receive both internship and research experience. Scientists from area agencies (NOAA, National Marine Fisheries, Alaska Fisheries Sciences Center, National Marine Mammal Lab, the U.S. Forest Service, the Student Conservation Association, and the Seattle Aquarium) come to the school to attend weekly SAFS departmental seminars; undergraduates are encouraged to attend. The School of Aquatic and Fishery Sciences is second only to the UW Medical School in federal research dollars brought to the UW campus, providing many paid hourly student positions within the department.
- **Department Scholarships:** Scholarships are awarded on the basis of academic merit, financial need, and other factors. The annual application process for continuing students begins in spring; check with the Office of Student Services for applications and deadlines. All undergraduates, both freshmen and transfers, are considered for recruitment scholarships if they have declared AFS as their major on their application to the University of Washington.
- **Student Organizations/Associations:** SURF (Society for Undergraduate Resources in Fisheries) organizes social, career, and educational activities for undergraduates in aquatic and fishery sciences. SURF also prints t-shirts, welcomes new students to the program, represents the program at events, and collaborates with student groups in other related departments on events.
- **Of Special Note:** The School of Aquatic and Fishery Sciences has sent a small group of students and three faculty members to two Alaska Salmon Field Stations for a six-week course in aquatic ecology. These students receive education in ecology, limnology, population modeling, field techniques, scientific writing, and presentation skills.

GRADUATE PROGRAM

Graduate Program Coordinator

116 Fishery Sciences, Box 355020

(206) 616-5893

safs@uw.edu

The School of Aquatic and Fishery Sciences, established in 1919, offers courses and conducts research on the conservation, management, and effective use of natural resources. Education and research in the School include studies of aquatic ecology; ichthyology; population dynamics; management of free-ranging stocks; restoration ecology; and effects of human activities on freshwater and marine ecosystems. SAFS is recognized internationally for its graduate programs, especially in the area of quantitative fisheries management, all research programs are well respected.

Students may apply for admission into programs leading to the Master of Science or Doctor of Philosophy. Students who apply for the PhD program must hold a master's degree prior to beginning their doctoral studies. All students who receive a master's degree from the School and wish to pursue a PhD are reviewed by the Recruitment, Admissions, and Scholarship Committee before being accepted into the PhD program.

Master of Science

Admission Requirements

1. A bachelor's degree from an institution of recognized standing with a minimum 3.00 GPA in the last two years (90 quarter credits or 60 semester credits) of college work
2. Typically at least a 500 on both the verbal and quantitative portions of the GRE and a 5 on the analytic portion (a 500 if taken before October 2002)
3. If an international student, a minimum TOEFL score of 580 on written exam or 237 on computerized exam, or 70 on Internet-based exam

Degree Requirements

45 credits as follows:

1. **School of Aquatic and Fishery Sciences Core Courses:**
 - a. Q SCI 482
 - b. At least two of the following, for 2 credits each: FISH 510, FISH 511, FISH 512, FISH 513, FISH 514, FISH 578, or QERM 597
 - c. FISH 521
 - d. FISH 522
 - e. 18 credits of thesis research: FISH 700
2. **Additional Course Requirements:** At least 12 credits of coursework at the 400 or 500 level are required in addition to the SAFS core courses listed above. 4 of the 12 credits must be in 500-level courses. At least 9 of the additional 12 credits must be numerically graded.

Doctor of Philosophy

Admission Requirements

1. Minimum 3.00 GPA for last two years (90 quarter credits or 60 semester credits) of graded college work
2. GRE scores of 500 on the verbal and quantitative sections and 5 on the analytical section (500 if before October 2002)
3. If an international student, a minimum TOEFL score of 580 on written exam or 237 on computerized exam, or 70 on Internet-based exam

Admission to the PhD Program after Receiving an MS Degree from the School of Aquatic and Fishery Sciences

Students who wish to continue study toward the doctoral degree after receiving a master's from the School must apply to the Graduate Program Coordinator by way of the Student Services Office; the application is considered by the Recruitment, Admissions, and Scholarship Committee and a recommendation is then sent to the director for concurrence or denial. Applications must be submitted by the sixth week of the quarter in which the master's degree is conferred. For more information, refer to the SAFS website.

Bypassing the Master's Degree

Students admitted to the School at the pre-master's level may, under exceptional circumstances, proceed directly to post-master's study. Application should be made to the Graduate Program Coordinator via the Student Services Office for consideration by the Recruitment, Admissions and Scholarship Committee. More information is available on the SAFS website.

Students who bypass the master's degree must complete all PhD requirements within ten years of beginning graduate study, including MS coursework if used to fulfill any PhD requirements.

Degree Requirements

Minimum 90 credits, as follows:

1. **SAFS Core Courses:** Same as those required of MS students. Must be taken as part of the doctoral program if they or their equivalents have not been taken during an MS program.
 - a. Q SCI 482
 - b. At least two of the following, for 2 credits each: FISH 510, FISH 511, FISH 512, FISH 513, FISH 514, FISH 578, or QERM 597
 - c. FISH 521
 - d. FISH 522
 - e. 27 credits of doctoral dissertation: FISH 800 (a maximum of 10 dissertation credits may be taken in any one academic quarter)
2. **Additional Course Requirements:** At least 48 credits of coursework at the 400 level or above, including dissertation credits, are required in addition to the required core courses listed above. Of those, at least 9 credits must be numerically graded.

Financial Aid

General information on graduate student support is available from the Office of Student Financial Aid, 105 Schmitz. The majority of first-year graduate students are offered research assistantships by appropriate faculty members, depending on the availability of research funding. The School of Aquatic and Fishery Sciences also has a limited number of fellowship opportunities for outstanding entering students. Other students may have their studies supported by the agency for which they work or they may be international students with scholarships from their home countries.

Graduate applicants are urged to discuss their financial needs with professors in their potential major fields during the early stages of the graduate application process. The graduate applicant is automatically considered for any fellowships, research assistantships, or teaching assistantships available from the School of Aquatic and Fishery Sciences when the admission application is submitted.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at uw.edu/students/crsat/

FISH 101 Water and Society (5) I&S/NW Examines ecological and social issues associated with water resources as human populations increase and climate warms. Offered: W.

FISH 230 Economics of Fisheries and Oceans (5) I&S/NW, QSR C. ANDERSON Examines how and why people and businesses make choices that lead to over-fishing, hypoxic zones, and oil spills in aquatic environments. Applies economic principles to understand how alternative policies might change these decisions, and how distributional effects influence politically feasible solutions. Offered: jointly with ECON 230; Sp.

FISH 250 Marine Biology (3/5) I&S/NW Lecture-laboratory course in marine biology focusing on physical, biological, and social aspects of the marine environment. Topics include oceanography, ecology, physiology, behavior, conservation, fisheries, exploration, and activism. Weekend field trip. Honors section research project. Offered: jointly with BIOL 250/OCEAN 250; AS.

FISH 260 Recreational Fisheries: Science, Management, and Policy (3/5) I&S/NW Grue Provides an overview of Washington's recreational fisheries emphasizing science, management, and policy. Optional laboratory focuses on science and technology behind fishing tactics, tackle, and equipment, ways to minimize impacts and enhance conservation, and politics associated with opportunities for recreational anglers. Suitable for students with or without a strong science background. Offered: Sp.

FISH 270 Aquatic Ecophysiology (5) NW Focuses on fundamental physiology, with an emphasis on processes relevant to living in a variety of aquatic environments. Includes a broad survey of taxa, from prokaryotes to mammals, and a variety of aquatic habitats. Prerequisite: BIOL 200. Offered: jointly with MARBIO 270/OCEAN 270.

FISH 290 Scientific Writing and Communication (3) Designed to teach undergraduate students how to gather information on scientific questions; critically read scientific writing; learn the structure and functions of scientific papers to effectively communicate; learn techniques for effective communication of science in oral and poster presentations; and understand the ethical boundaries associated with scientific communication. Offered: AW.

FISH 296 Study Abroad: Aquatic and Fishery Sciences (1-15, max. 30) NW For participants in UW study abroad program. Specific content varies and must be individually evaluated. Credit not does not apply to major requirements without approval.

FISH 300 Exploring Opportunities in Marine Science (1) Explores academic, research, and career opportunities in the field of marine science and helps prepare students for graduation. Intended for junior and transfer students studying marine science. Credit/no-credit only. Offered: jointly with MARBIO 300/OCEAN 300; A.

FISH 310 Biology of Shellfishes (5) NW Aquatic invertebrates with emphasis on taxa with economic and cultural significance. Dramatic diversity, adaptation to environment, and evolutionary forces highlighted. Laboratories, field trips. Offered: Sp.

FISH 311 Biology of Fishes (3/5) NW Covers morphological, physiological, behavioral, and ecological diversity of fishes of the world; designed to provide a basic foundation for advanced courses in all areas of aquatic sciences. 3-credit option does not include laboratory. Offered: jointly with BIOL 311; W.

FISH 312 Fisheries Ecology (3/5) NW Ecological characteristics of fishes and shellfishes in the important freshwater and marine habitats of North America. Relationship between physical aspects of the habitats and community structure. Impacts of human activities on diversity and abundance. Prerequisite: BIOL 220. Offered: Sp.

FISH 323 Conservation and Management of Aquatic Resources (5) NW Topics include population dynamics, extinction risk, meta-populations, marine reserves, bioeco-

nomics, protection of endangered species, sustainable harvesting, and management institutions. Examines case studies such as salmon, albatross, and whales as representative of conservation issues in aquatic sciences. Sampling, experimental design, computer skills, and research writing. Offered: A.

FISH 324 Aquatic Animal Physiology and Reproduction (3/5) NW Adaptations of aquatic animals to environmental challenges. Energy pathways from feeding and digestion through maintenance (metabolism, movement, repair), homeostasis (respiration, osmoregulation, thermoregulation), growth and reproduction (sex determination, manipulation, sex change). Roles of sensory, nervous, and endocrine systems in mediating environmental information. Hands-on laboratory. Prerequisite: BIOL 220. Offered: W.

FISH 328 Forestry-Fisheries Interactions (4) NW Offered: jointly with ESRM 328.

FISH 330 Climate Change Impacts on Marine Ecosystems (5) NW Links the physics of climate to marine ecosystem processes, exploring both observed climate impacts from the past and projected ecosystem changes due to human-caused climate change in the future. Case studies include polar, sub-arctic, temperate, tropical, and upwelling ecosystems, and ocean-acidification and its projected impacts. Required: high school or college physics and algebra with a basic understanding of Newton's Laws and the ability to comprehend and construct vector diagrams. Offered: jointly with ENVIR 330; Sp.

FISH 340 Genetics and Molecular Ecology (5) NW Application of molecular markers to ecology, evolution, and the management of living resources. Emphasis on understanding the strengths and weaknesses of the approach based on case studies. Prerequisite: BIOL 200. Offered: jointly with BIOL 340; A.

FISH 370 Marine Evolutionary Biology (5) NW Emphasizes geobiological patterns of marine evolutionary biology environment; processes of evolution; marine prokaryote and eukaryote diversity; and applications of evolutionary principles to ocean change, and conservation and management of marine biodiversity. Prerequisite: either FISH 270/OCEAN 270/MARBIO 270 or BIOL 220. Offered: jointly with MARBIO 370/OCEAN 370; Sp.

FISH 404 Diseases of Aquatic Animals (5) NW Overview of communicable and noncommunicable diseases that affect fish and shellfish. Major pathogens of free-ranging as well as captive animals discussed. Students learn to recognize, prevent, and control economically and ecologically important disease syndromes. Offered: Sp, even years.

FISH 423 Aquatic Invasion Ecology (4) QSR Explores the patterns, drivers, and consequences of species invasions in freshwater, estuary, and marine ecosystems. Focuses on the science and management needs for preventing, controlling, and eradicating invasive species. Topics illustrated with cases from the Pacific Northwest and the world. Prerequisite: either BIOL 462 or BIOL 180.

FISH 424 Biology and Culture of Aquatic Organisms (5) NW Explores the concept of sustainability and the interrelationship between environment, aquatic species, and culture of aquatic animal and plant species globally. Current practices, animal biology and health, near-shore ecosystem conservation, water quality, and strategies to improve the sustainability of aquaculture for food production and species conservation. Offered: Sp, odd years.

FISH 428 Stream and Watershed Restoration (5) NW Overview of restoration principles and techniques with specific application to freshwater aquatic systems. Develops knowledge and skills to assess ecosystems conditions, identify and prioritize restoration opportunities, and evaluate them from a scientific and economic perspective. Prerequisite: either BIOL 356, ESRM 304, or FISH 312. Offered: Sp, even years.

FISH 437 Fisheries Oceanography (4) Investigates how the environment influences distributions and abundances of

marine vertebrate and invertebrate species. Uses studies to understand fish and zooplankton life histories, predict trends in populations, reduce uncertainty in resource management, and to decouple anthropogenic from natural effects on aquatic populations. Offered: W.

FISH 441 Integrative Environmental Physiology (3/5) NW Comparative advanced aquatic physiology focusing on the functional response of organisms to natural and human-associated environmental stress. Offered: A.

FISH 444 Conservation Genetics (5) NW Advanced genetic concepts and methods related to species' conservation and management. Includes genetic diversity and evolution, small populations and fragmentation, genetic viability, management of wild and captive populations, reintroductions, hatchery-wild interactions and forensics. Labs include molecular techniques. Offered: W.

FISH 447 River Ecology and Watershed Management (3) NW Investigation of stream and river ecosystems from a watershed perspective. Emphasis on fundamental processes affecting the structure and dynamics of flowing aquatic ecosystems and the riparian zone. Case studies explore human interactions with rivers and approaches to river management.

FISH 450 Salmonid Behavior and Life History (3/5) NW Behavior, ecology, life history, and conservation of salmon and trout, including their distribution, homing migration, reproduction, ecology of juveniles in different freshwater habitats, seaward migration, and the ecological and evolutionary factors affecting them. Offered: A.

FISH 452 Spatial Information Technology in Ecosystem Sciences (3) NW Logsdon Introduces the use of Geographic Information Systems (GIS), remote sensing, and spatial analysis in the ecosystem sciences. Emphasizes sampling and analysis of spatially-referenced data about the coastal and marine environments, integrating these technologies in an applied research setting. Offered: jointly with OCEAN 452; A.

FISH 453 Geospatial Pattern Analysis and Geostatistics (3) NW Logsdon Focuses on the application of geospatial pattern analysis and geostatistics in earth science research. Develops understanding in detecting, describing, and estimating spatial pattern and trends. Prerequisite: either Q SCI 381 or Q SCI 482; OCEAN 452. Offered: jointly with OCEAN 453; W.

FISH 454 Ecological Modeling (5) NW T. ESSINGTON Examines concepts in ecological modeling focusing on the rationale, interpretation, and motivation for modeling in ecological sciences. Explores individual, population, and ecosystem-based models. Excel-based computer exercises, model building and interpretation, readings. Offered: jointly with Q SCI 454; W.

FISH 455 Fish and Wildlife Toxicology (3/5) NW Overview of fish/wildlife toxicology: history of the field; regulations; methods used to assess risks contaminants pose to fish/wildlife; classes of contaminants and their direct, sublethal and indirect effects; and contemporary threats of contaminants to fish/wildlife, their habitats and prey. Includes laboratory. Offered: jointly with ESRM 457; W.

FISH 458 Modeling and Estimation in Conservation and Resource Management (4) NW T. BRANCH Explores the use of models in the evaluation of alternative management policies for natural resources, including modeling approaches, fitting models to data, and evaluating alternative management policies. Emphasizes calculating risk of extinction, and design of biological reserves. Offered: jointly with Q SCI 458; Sp.

FISH 461 Resource Economics for Management and Policy (4) I&S, DIV Examines how and why resource users make decisions leading to over fishing and pollution. Introduces market and non-market economic tools that support the natural resource management process. Evaluates incentives presented by alternative policies, with an emphasis on regional and global fishery management case studies.

Prerequisite: either FISH 230/ECON 230, ENVIR 235/ESRM 235/ECON 235, or a 300-level FISH course. Offered: A.

FISH 464 Arctic Marine Vertebrate Ecology (4) NW Explores the structure and function of Arctic ecosystems, life history, and adaptations of vertebrates, and how species are affected by climate warming. Emphasizes upper-level trophic interactions, evolutionary drivers, food chains, energy transport paths, and influence of sea ice. Case studies provide background on Arctic conservation and management. Prerequisite: BIOL 180. Offered: W, odd years.

FISH 473 Limnology (3) NW Ecology, conservation, and management of inland aquatic ecosystems. Explores interactions among biological, chemical, and physical features of lakes and other aquatic habitats. Prerequisite: BIOL 180. Offered: jointly with BIOL 473; A.

FISH 474 Limnology Laboratory (2) NW Examination of biota of fresh waters, survey of limnological methods, analysis of data, and writing of scientific papers. Prerequisite: BIOL 473/FISH 473/CEE 462, which may be taken concurrently. Offered: jointly with BIOL 474/CEE 463; A.

FISH 475 Marine Mammalogy (3/5) NW Evolution, taxonomy, physiology, life history, and behavior of marine mammals; the techniques of studying and the management and conservation of them. Offered: Sp.

FISH 477 Seminar in Marine Biology (3) NW Roccap Reviews current research in marine biology. Emphasizes critical readings and discussion of primary literature. Prerequisite: FISH 250, OCEAN 250, or BIOL 250; Q SCI 381, STAT 220, or STAT 311. Offered: jointly with BIOL 477/OCEAN 477; W.

FISH 478 Topics in Sustainable Fisheries (3, max. 9) I&S/NW Seminar series featuring local, national, and internationally known speakers in fisheries management and conservation. Conservation/restoration in practice. Pre-seminar discussion section focusing on select readings. Topics may include harvest management, whaling, by-catch, salmon, marine protected areas, introduced species, citizen action, co-management, and marine ethics. Offered: jointly with BIOL 478/ENVIR 478.

FISH 479 Research in Marine Biology (1-15, max. 15) Individual research on topics in marine biology. Research projects supervised by an individual faculty member. Projects may include laboratory work, fieldwork, and literature surveys. Prerequisite: BIOL 250/FISH 250/OCEAN 250; Q SCI 381. Offered: jointly with BIOL 479/OCEAN 479; AWSpS.

FISH 480 Human Dimensions of Fishery Management (3) I&S/NW Techniques and philosophy for conservation, management, and development of harvested marine populations. Emphasis on integration of ecological, sociological, and economic dimensions of institutional decision making for policy formation in uncertain environments. Offered: jointly with SMEA 480.

FISH 489 Peer Teaching Assistants in Aquatic and Fishery Sciences (1-5, max. 10) Designed to prepare graduate and public school teaching by developing mentoring and communication skills through direct experience. Skills gained through attending lectures and weekly preparation sessions, directed discussions with faculty and TAs, and teaching course lab or discussion sections. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

FISH 491 Aquatic Ecological Research in Alaska (12) NW Intensive, full-time research training experience where a team of students works on focused research problems guided by a group of faculty, postdoctoral, and graduate student mentors. Examines behavioral ecology, limnology, and population dynamics. Students also choose specific research questions for their own exploration. Course location: Alaska. Offered: S, even years.

FISH 492 Ecology and Conservation of Marine Birds and Mammals (9/15) NW An intensive, field-based course that offers motivated students the opportunity to learn about these ecologically and culturally important marine animals

and the conservation problems they face. Emphasizes field learning and individual research projects. Offered: jointly with FHL 492/MARBIO 492; S.

FISH 493 Capstone Preparation (1) Includes defining a capstone research question, conducting a literature review, preparing a project proposal and budget, reviewing peer proposals, and attending/critiquing the quarterly capstone symposium. Prerequisite: FISH 290. Offered: ASp.

FISH 494 Capstone Project I ([1-9]-, max. 9) Self-directed research or project under direction of a faculty member. Includes defining research question, determining methodology, data collection and analysis, writing a paper, and presenting findings. Required for graduation for majors. May be taken concurrently with FISH 495. Prerequisite: either FISH 290 or FISH 493; Q SCI 381.

FISH 495 Capstone Project II (-[3/4]) Self-directed research project under direction of a faculty member. Typically includes defining a research question, determining methodology, data collection and analysis, writing a paper, and presenting findings. May be taken concurrently with FISH 494 with permission of instructor.

FISH 496 Study Abroad: Aquatic and Fishery Sciences (1-15, max. 30) NW For participants in UW study abroad program. Specific content varies and must be individually evaluated. Credit not does not apply to major requirements without approval.

FISH 497 Special Topics in Aquatic and Fishery Sciences (1-15, max. 15) NW One-time offerings of topics in fisheries by resident or visiting faculty.

FISH 498 Internship/Experiential Learning (1-15, max. 15) Structured, practical training in the fishing industry, government agencies, and other areas utilizing fisheries, food science, or quantitative science expertise. Experiences are supervised and evaluated. Written reports required. Credit/no-credit only. Offered: AWSpS.

FISH 499 Undergraduate Research (1-15, max. 15) Individual research within the School of Aquatic and Fishery Sciences. Each project supervised by an individual faculty member. Written reports required. Offered: AWSpS.

FISH 502 Spatial Information Technology in Ecosystem Sciences (3) Logsdon Introduces the use of Geographic Information Systems (GIS), remote sensing, and spatial analysis in the ecosystem sciences. Emphasizes sampling and analysis of spatially-referenced data about the coastal and marine environments, integrating these technologies in an applied research setting. Offered: jointly with OCEAN 502; A.

FISH 503 Geospatial Pattern Analysis and Geostatistics (3) Logsdon Focuses on the application of geospatial pattern analysis and geostatistics in earth science research. Develops understanding in detecting, describing, and estimating spatial pattern and trends. Offered: jointly with OCEAN 503; W.

FISH 507 Special Topics in Fisheries (1-15, max. 15)

FISH 510 Current Topics in Genetics and Physiology (1-5, max. 15) Contemporary problems and issues in genetics and physiology as they relate to aquatic and fisheries sciences.

FISH 511 Current Topics in Evolution, Ecology, and Behavior (1-5, max. 15) Contemporary problems and issues in evolution, ecology, and behavior as they relate to aquatic and fisheries sciences.

FISH 512 Current Topics in Quantitative Science (1-5, max. 15) Contemporary problems and issues in quantitative science as they relate to aquatic and fisheries sciences.

FISH 513 Current Topics in Management, Conservation, and Restoration (1-5, max. 15) Contemporary problems and issues in management, conservation, and restoration as they relate to aquatic and fisheries sciences.

FISH 514 Current Topics Aquaculture, Utilization, and Pathology (1-5, max. 15) Contemporary problems and issues

in aquaculture, utilization, and pathology as they relate to aquatic and fisheries sciences.

FISH 520 Advanced Ecology of Marine Fishes (4) Focuses on the unique ecological challenges facing marine fishes, including individual, population, community, and ecosystem-scale processes. In-depth discussions of issues based on extensive reading of primary literature and analysis.

FISH 521 Research Proposal Writing for Graduate Students (4) Practice in reading, writing, critiquing, and evaluating research grant and contract proposals. Lecture and discussion of funding resources, structure of proposals, proposal review, evaluation criteria, and agency feedback. Examples of successful and unsuccessful grant applications. Preparing proposals and critiquing others' efforts. Offered: W.

FISH 522 Hot Topics in Aquatic and Fishery Sciences (2) Discussion of the primary literature of aquatic and fishery sciences. All readings are current, high profile papers which spark a new avenue of investigation, set out a new paradigm, or define a central problem, etc. Credit/no-credit only. Offered: A.

FISH 526 Ecology of Aquatic Ecosystems (3) Explores natural and human-driven processes regulating the structure and functioning of freshwater and marine ecosystems. Topics include biogeochemistry, energy, and material flows among habitats, evolution in ecological time, commonality of marine and freshwater habitats, and the issues of scale in understanding ecosystem dynamics.

FISH 530 Application of Bioenergetics Models to Aquatic Food Webs (4) Modeling framework quantifying bioenergetics, including consumption, growth, nutrient recycling and contaminant bioaccumulation; links physiology and behavior of individual organisms to ecological processes within populations and aquatic food webs. Common applications include estimating predation, carrying capacity, or growth potential in different habitats. Offered: Sp, odd years.

FISH 531 Aquatic Food Web Processes (4) Examines how temporal-spatial variability in environmental conditions, nutrient, food supply, predation, and competition among species and life stages regulate species in freshwater and marine food webs. Demonstrates how behavior and physiology of individuals are mechanistically linked to distribution, trophic interactions, and processes relevant to ecosystem-based management. Offered: Sp, even years.

FISH 538 Fisheries Acoustics (3-5) Horne Studies the use of sound as an aquatic sampling tool and application of acoustic technologies to resource management and aquatic research. Topics include: sonar equation, survey design, equipment use, and abundance estimates. Uses case studies in bio-acoustic predation, habit evaluation, ocean observatories, and marine renewable energy. Offered: A.

FISH 539 U.S. Fisheries Management and Policy (3) Examination of basic laws and policies in the US that govern fisheries management and their implementation by managers at federal, tribal, state, and international levels. Includes lectures, guest speakers, and field trips. Offered: jointly with SMEA 539.

FISH 541 Integrative Environmental Physiology (3/5) Comparative advanced aquatic physiology focusing on the functional response of organisms to natural and human-associated environmental stress. Includes lecture, laboratory work, and team-based research project.

FISH 545 Applied Population Genetics (3) Collection, analysis, and interpretation of genetic data (allele frequencies, microsatellite data, DNA sequences) for detection of population structure, population assignment, estimation of population size, and phylogenography. Includes discussion of scientific papers and analysis of example data sets.

FISH 546 Bioinformatics for Environmental Sciences (3) Examines how to incorporate molecular information into environmental and conservation sciences, with an emphasis on analysis of DNA and RNA sequence information.

Prerequisite: introductory biology, genetics, and statistics courses.

FISH 547 River Ecology and Watershed Management (3) Investigation of stream and river ecosystems from a watershed perspective. Emphasis on fundamental processes affecting the structure and dynamics of flowing aquatic ecosystems and the riparian zone. Case studies explore human interactions with rivers and approaches to river management.

FISH 552 Introduction to R Programming for Natural Scientists (2) Introduces R, a freely available and widely used platform for statistical analysis. Covers reading, storing, and manipulating data; introductory graphics; basic statistical analyses; and fitting linear models. Credit/no-credit only. Offered: A.

FISH 553 Advanced R Programming for Natural Scientists (2) Covers the use of maximum likelihood estimation and programming in R. Uses R functions to estimate parameters of models and to quantify uncertainty. Prerequisite: FISH 552; Q SCI 381 or Q SCI 482, or permission of instructor. Credit/no-credit only. Offered: A.

FISH 554 Beautiful Graphics in R (2) Branch Explores how to create beautiful scientific graphics in the open-source language R. Covers the theory of visualization, critically examines elements of good and bad graphics, and teaches students how to translate data in their graduate theses into publication-quality graphics. Offered: W.

FISH 557 Estimation of Population Parameters (4) Statistical analysis of population data; design and analysis of mark-recapture experiments on natural populations; laboratory work on computers. Offered: W, even years.

FISH 558 Decision Analysis in Natural Resource Management (4) Focuses on age and size-structured population models; Bayesian methods; Sample Importance Resample algorithm; Markov chain Monte Carlo algorithm; policy evaluation; and risk analysis and uncertainty in fisheries management. Offered: A, odd years.

FISH 559 Numerical Computing for the Natural Resources (5) Focuses on generalized linear and mixed effects models; numerical integrator and differentiation; Bayesian and maximum likelihood parameter estimation; root finding; ADMB and WinBUGS coding; and risk analysis. Offered: A, even years.

FISH 560 Applied Multivariate Statistics for Ecologists (4) Use and interpretation of multivariate analysis, including the majority of approaches in common use by ecologists. Emphasizes the conceptual understanding and practical use of the methods, illustrated with ecological case studies. Prerequisite: Q SCI 482 or equivalent.

FISH 561 Resource Economics for Management and Policy (4) Examines how and why resource users make decisions leading to over fishing and pollution. Introduces market and non-market economic tools that support the natural resource management process. Evaluates incentives presented by alternative policies, with an emphasis on regional and global fishery management case studies. Offered: A.

FISH 562 Ecosystem Based Fisheries Management (2) Theory and practice of ecosystem based fisheries management. Areas of emphasis includes by-catch avoidance, the interaction between physical and biotic habitat and fish productivity, trophic ecosystem models, area based management and dynamics of fishing fleets. Offered: Sp, odd years.

FISH 563 Ecosystem Based Fisheries Management Laboratory (2) Laboratory covering the theory and practice of ecosystem based fisheries management. Areas of emphasis includes by-catch avoidance, the interaction between physical and biotic habitat and fish productivity, trophic ecosystem models, area based management and dynamics of fishing fleets. Recommended: either Fish 454, Fish 458, or Fish 558; R programming experience. Offered: Sp, odd years.

FISH 567 Topics in Advanced Ecology (3, max. 6) Discusses literature on active research areas or controversies in different branches of ecology. Offered: jointly with BIOL 567/SEFS 567; W.

FISH 578 Graduate Topics in Sustainable Fisheries (2, max. 6) Seminar series featuring local, national, and internationally known speakers in fisheries management and conservation. Case studies. Conservation/restoration in practice. Post-seminar discussion section led by speaker on topics covered in lecture. Topics may include harvest management, whaling, by-catch, salmon, marine protected areas, introduced species, citizen action, co-management, and marine ethics. Credit/no-credit only.

FISH 581 Case Study Research: Design and Methods (3) Provides in-depth training in case study theory, design, and methods. Designed for exploring prospectus ideas or beginning analysis of thesis research. Through readings, discussions, exercises, and lectures, students learn how to select units of analysis, control data quality, and collect, analysis, and report data. Offered: jointly with SMEA 581.

FISH 600 Independent Study or Research (*) Credit/no-credit only.

FISH 700 Master's Thesis (*) Credit/no-credit only.

FISH 800 Doctoral Dissertation (*) Credit/no-credit only.

Atmospheric Sciences

416 Atmospheric Sciences-Geophysics Building

Atmospheric sciences is a wide-ranging discipline that includes topics as diverse as weather forecasting, global warming, air quality, Pacific Northwest weather and climate, mountain weather, marine weather, El Nino, the ozone hole, ice ages, and the weather of Mars. It considers problems that are both scientifically challenging and critical for the welfare of modern society. These problems are addressed with theory, measurements, and computer simulations.

UNDERGRADUATE PROGRAM

Adviser

416 Atmospheric Sciences-Geophysics Building, Box 351640

(206) 543-4576

advise@atmos.washington.edu

The Department of Atmospheric Sciences offers the following programs of study:

- The Bachelor of Science degree with a major in atmospheric sciences
- A minor in atmospheric sciences
- The minor in Climate Science is offered jointly with the Department of Atmospheric Sciences, the Department of Earth and Space Sciences, and the School of Oceanography.

Bachelor of Science

Suggested First- and Second-Year Courses: ATM S 220; MATH 124, MATH 125, MATH 126; PHYS 121, PHYS 122, PHYS 123; CSE 142. The first required atmospheric sciences course is ATM S 301, which is offered autumn quarter only. Any lower-division atmospheric sciences courses except ATM S 220 count as electives and not as part of the major.

Department Admission Requirements

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

Major Requirements

Minimum 97-117 credits as follows:

1. *Core Requirements (58-59 credits):* MATH 124, MATH 125, MATH 126; PHYS 121, PHYS 122, PHYS 123; either STAT 390/MATH 390, or Q SCI 381; ATM S 220, ATM S 301, ATM S 321, ATM S 340, ATM S 341, ATM S 370, ATM S 431.
2. *Options (39 to 58 credits):*
 - a. *Meteorology (42-45 credits)*
 - i. *Core (33 credits):* AMATH 301; ATM S 358, ATM S 441, ATM S 442, ATM S 444, ATM S 451, ATM S 452; CSE 142
 - ii. *Advanced Mathematics (9-12 credits):* MATH 324; either AMATH 351 and AMATH 353 or MATH 307, MATH 308, and MATH 309
 - b. *Climate (39-49 credits)*
 - i. *Core (27-29 credits):* AMATH 301; ATM S 358, ATM S 380, ATM S 460, ATM S 487; CSE 142; either ESS 431 or ESS 433; either OCEAN 423 or OCEAN 450
 - ii. *Electives (12-20 credits):* Minimum four courses from an approved list. See adviser for approved list of electives.
 - c. *Chemistry (52-58 credits)*
 - i. *Core (52-58 credits):* ATM S 451, ATM S 458, ATM S 480; CHEM 142, CHEM 152, CHEM 162, CHEM 223, CHEM 224, CHEM 321
 - ii. *Electives (12-18 credits):* Minimum four courses from an approved list. See adviser for approved list of electives.
3. Minimum 2.0 grade in courses applied to the major

Pre-graduate Program for Physical Science, Mathematics, and Engineering Majors

The following elective course sequence is suitable preparation for students interested in pursuing graduate study in atmospheric sciences: ATM S 301, ATM S 340, ATM S 441.

Minor

Minor Requirements: 25 credits to include ATM S 301 plus other approved courses. The minor may include a maximum of 6 independent study credits. Prerequisites include MATH 126 or MATH 136, and PHYS 123. Some courses may require further math or chemistry experience.

Minor in Climate Science

See description in the Climate Science listing in the Undergraduate Interdisciplinary Programs section of the General Catalog.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The degree program qualifies students for professional employment in weather forecasting, air-quality control and monitoring, and other areas of atmospheric sciences and related fields. The baccalaureate degree also is appropriate preparation for graduate study in atmospheric sciences.
- *Instructional and Research Facilities:* Extensive computer resources are available in the departmental computer laboratory. The department also maintains an extensive collection of weather data in graphical and numerical electronic format. A study area is provided for undergraduates. An instrument laboratory is maintained with a wide range of observing and data collection systems. Students also have access to a machine shop and an electronics laboratory.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors)

requirements in the major). See adviser for requirements.

- **Research, Internships, and Service Learning:** Internships are available either within the department or with outside organizations, providing a valuable opportunity to test a student's interests in various meteorological career paths and to extend the student's knowledge. A limited number of departmental scholarships are available each year, based on academic excellence or financial need. Employment opportunities are often available in one of the many departmental research groups, and some internships are paid.

Students majoring in atmospheric sciences may take advantage of a variety of opportunities to enhance their education. Undergraduate students are welcome at the department's many seminars and colloquia and are encouraged to join in the annual forecast contest. They may work on independent research projects under the guidance of a faculty member, or be an active participant in a field program.

- **Department Scholarships:** The Bruce Caldwell Memorial Scholarship and the Anonymous Donor Atmospheric Sciences Scholarship are both awarded annually, based on both academic excellence and financial need.
- **Student Organizations/Associations:** Student Chapter of American Meteorological Society, Puget Sound American Meteorological Society Chapter, Weekly Weather Discussion for all majors.

GRADUATE PROGRAM

Graduate Program Coordinator

416 Atmospheric Sciences-Geophysics, Box 351640

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advise@atmos.washington.edu

Rapid growth of research in atmospheric sciences began in the late 1940s in response to needs and opportunities in weather forecasting. Extensive research is now underway to extend the time scale over which useful forecasts can be made and to increase the amount of regional and temporal detail in short-range forecasts. In addition, the atmospheric sciences now address a broad range of other problems of fundamental interest and importance. Examples include changes in climate that could result from increases in atmospheric CO₂ and other greenhouse gases, and the application of remote-sensing techniques to the monitoring and understanding of weather and climate.

Graduate students in the atmospheric sciences come from a variety of disciplines: Physics, chemistry, engineering, atmospheric, or geophysical sciences, and applied mathematics. Opportunities are broad enough that each of these backgrounds is valuable for specific subfields within the atmospheric sciences. However, students of atmospheric sciences should have in common a sound background in the fundamentals of physics and applied mathematics and an interest in complex natural phenomena. Research projects and graduate courses in the Department of Atmospheric Sciences are closely related, and the well-prepared graduate student may expect to begin research work rather quickly.

Master of Science

Admission Requirements

1. Complete Graduate School application (a copy must be sent to the department)
2. Official copy of transcripts
3. Statement of interests: one page essay, must address the reasons why the student wishes to pursue a graduate program in atmospheric sciences

4. GRE General Examination scores sent from the Educational Testing Service
5. Three letters of recommendation, either submitted online or, using the appropriate forms, sent directly to the department by the evaluators
6. For international applicants: TOEFL scores, sent by the testing service
7. **Deadline:** January 15. Autumn is the only quarter for which the department accepts applications.

Degree Requirements

45 credits, to include

1. **Core Classes (25-28 credits):** ATM S 501, ATM S 502, ATM S 532, ATM S 535, ATM S 558. One of the following sequences: ATM S 505, ATM S 509, ATM S 542; or ATM S 503, ATM S 504
2. The two-course dynamics sequence (ATM S 503, ATM S 504) is intended for those whose research specialty is outside the realm of dynamic meteorology. Most students are encouraged to take the three-course sequence in dynamics (ATM S 505, ATM S 509, ATM S 542).
3. Master's students need 36 credits to graduate (excluding seminars and colloquia); 27 of the credits presented must be from graded courses numbered 500 or above, of which at least 3 credits must be in approved applied mathematics courses and 24 must be in core atmospheric sciences courses. The remaining 9 credits are for the master's thesis. However, students intending to pursue a PhD should take all the courses required above.

Doctor of Philosophy

Admission Requirements

1. All students admitted into the Atmospheric Sciences graduate program are admitted initially to the MS track of study. Students in the MS track who seek entry into the PhD program are evaluated by the departmental committee on graduate studies.
2. A student who wishes to be considered by the committee must first write a letter to the academic counselor and also to the student's MS committee, requesting admission into the PhD program, and choosing one of the three following evaluation options:
 - a. MS thesis in atmospheric sciences or a closely related discipline, completed before entering the department, submitted the first week of autumn quarter of the student's second academic year in the department.
 - b. Draft of UW Department of Atmospheric Sciences MS thesis approved by the MS Supervisory Committee.
 - c. Manuscript of a peer-reviewed journal article on which the student is lead author.

Degree Requirements

Minimum 90 credits, to include:

1. Coursework
 - a. ATM S 501, ATM S 502
 - b. ATM S 505, ATM S 509 (Students whose anticipated research has minimal connection with atmospheric dynamics, such as laboratory or fieldwork in atmospheric chemistry or cloud microphysics, may take ATM S 503 and ATM S 504 in place of ATM S 505 and ATM S 509. See Graduate Program Coordinator before enrolling in ATM S 503.)
 - c. Either ATM S 532 or ATM S 558
 - d. ATM S 535, ATM S 542

- e. Each of the following, taken every quarter coursework is taken: ATM S 520, either ATM S 521 or ATM S 524, and ATM S 600 (up to 10 credits each quarter)
- f. **Electives:** Courses in the student's areas of interest, as determined in consultation with adviser
- g. **Applied Math:** Either AMATH 401, AMATH 567 or AMATH 581; either AMATH 402 or AMATH 568
- h. ATM S 700 (10 credits each quarter, beginning the second year of the program)

2. General Examination
3. Dissertation
4. Final Examination

Assistantships

Nearly all graduate students are supported by either research assistantships or fellowships. Students are usually a teaching assistant during at least one quarter, in the second year of study. Students are supported full-time during the summer.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsat/

ATM S 101 Weather (5) NW The earth's atmosphere, with emphasis on weather observations and forecasting. Daily weather map discussions. Highs, lows, fronts, clouds, storms, jet streams, air pollution, and other features of the atmosphere. Physical processes involved in weather phenomena. Intended for nonmajors. Offered: AWSpS.

ATM S 103 Hurricanes and Thunderstorms: Their Science and Impact (3) I&S/NW Explores the science, history, and impacts of thunderstorms and hurricanes. Includes basic processes responsible for thunderstorms and hurricanes and for the lightning, hail, high winds, and storm surges that accompany them. Presents significant historical examples, along with the impact on human activities, strategies for personal safety, and societal adaptation. Offered: Sp.

ATM S 111 Global Warming: Understanding the Issues (5) I&S/NW Ackerman, Anderson, Bitz, Fu, Jaegle, Thornton Includes a broad overview of the science of global warming. Discusses the causes, evidence, future projections, societal and environmental impacts, and potential solutions. Introduces the debate on global warming with a focus on scientific issues. Offered: AWSp.

ATM S 211 Climate and Climate Change (5) I&S/NW The nature of the global climate system. Factors influencing climate including interactions among the atmosphere, oceans, solid earth, and biosphere. Stability and sensitivity of climate system. Global warming, ozone depletion, and other human influences. Intended for nonmajors. Offered: AWSp.

ATM S 212 Air Pollution: From Urban Smog to the Ozone Hole (5) I&S/NW Alexander, Jaegle, Thornton Introduction to air pollution on local, regional, and global scales, with focus on the sources, transformation, and dispersion of pollutants responsible for urban smog, acid rain, climate change, and the ozone hole. Health and environmental effects of air pollutants, technological solutions, and international policy regulations.

ATM S 220 Exploring the Atmospheric Sciences (1, max. 2) NW Focuses on current research in the atmospheric sciences and the related implications for public health, business, and environmental policy. Credit/no-credit only.

ATM S 290 The Weather Challenge (1, max. 8) NW McMurdie Includes participation in a national weather forecast contest; weekly discussion on forecast models, forecasting methods, and unique considerations for specific forecast

locations. Prerequisite: ATM S 101. Credit/no-credit only. Offered: AW.

ATM S 301 Introduction to Atmospheric Sciences (5) NW Composition and structure of the atmosphere. Clouds and weather phenomena. Thermodynamic processes. Solar and terrestrial radiation. Air motions. Daily weather discussions and forecasts. For majors and nonmajors. Prerequisite: minimum grade of 2.0 in each of MATH 124; MATH 125; MATH 126; PHYS 121; PHYS 122; and PHYS 123. Offered: A.

ATM S 321 The Science of Climate (3) NW Evolution and present state of earth's climate. Emphasis on physical processes determining the climate of the earth's atmosphere and surface: radiative transfer, energy balance, hydrologic cycle, and atmospheric and oceanic energy transport. Factors controlling climate change. Prerequisite: minimum of grade of 2.0 each of MATH 124; MATH 125; MATH 126; PHYS 121; PHYS 122; PHYS 123. Offered: Sp.

ATM S 340 Introduction to Thermodynamics and Cloud Processes (3) NW Examines thermodynamics and hydrostatics. Studies cloud and precipitation processes with emphasis on the microphysics. Prerequisite: ATM S 301. Offered: W.

ATM S 341 Atmospheric Radiative Transfer (3) Comprehensive introduction to atmospheric radiation, including solar and infrared radiation, the earth's radiation budget, and remote sensing. Prerequisite: ATM S 301. Offered: Sp.

ATM S 358 Fundamentals of Atmospheric Chemistry (3) NW Review of basic principles of physical chemistry; evolution and chemical composition of earth's atmosphere; half-life, residence and renewal time; sources, transformation, transport and sinks of gases in the troposphere; atmospheric aerosols; chemical cycles; air pollution; stratospheric chemistry. Offered: Sp.

ATM S 370 Atmospheric Structure and Analysis (5) NW Structure and evolution of extratropical cyclones, fronts, and convective systems. Surface and upper air analysis techniques. Radar and satellite data. Real-world applications of basic dynamical principles. Introduction to operational products and forecasting. Prerequisite: ATM S 301. Offered: W.

ATM S 380 Weather and Climate Prediction (3) NW Applies weather and climate models to solve problems in atmospheric sciences. Includes visualization of atmospheric phenomena and Earth's energy and hydrologic cycles; and basics in numerical modeling and high-performance computing. Prerequisite: MATH 126; PHYS 122; either ATMS 101, ATM S 111, ATM S 211, ATM S 301, ASTR 150, ASTR 321, or ESS 201. Offered: W.

ATM S 390 Honors Tutorial in Atmospheric Sciences (*, max. 6) Review and discussion of selected problems in atmospheric sciences. Introduction to research methods. Presentation of a research paper. Offered: AWSpS.

ATM S 431 Boundary-Layer Meteorology (3) NW Introduction to boundary-layer meteorology. Surface energy budgets, structure and evolution of boundary layers, and basic ideas of turbulence theory. Prerequisite: either ATM S 340 or PHYS 224. Offered: A.

ATM S 441 Atmospheric Motions I (3) NW Basic equations governing atmospheric motions and their elementary applications; circulation and vorticity; dynamics of midlatitude disturbances. Prerequisite: either AMATH 353 or MATH 309; MATH 324. Offered: A.

ATM S 442 Atmospheric Motions II (5) NW Wave dynamics, numerical prediction, development of midlatitude synoptic systems, and general circulation. Includes laboratory exercises. Prerequisite: ATM S 441. Offered: W.

ATM S 444 Design and Application of Ensemble Prediction Systems (4) NW Covers the fundamental of chaos theory to help compare and contrast traditional, deterministic forecasting versus ensemble forecasting. Explores the various components of an ensemble prediction system. Introduces

decision science to show how to apply probabilistic weather information in optimal decision making. Prerequisite: ATM S 370; either STAT/MATH 390 or Q SCI 381; AMATH 301. Offered: Sp.

ATM S 451 Instruments and Observations (5) NW Principles of operating instruments for measuring important atmospheric parameters (e.g., temperature, humidity, aerosol concentration). Concepts of sensitivity, accuracy, representativeness, time response. Manipulation of output data including signal processing and statistical analysis. Experimental design and implementation of the design in actual field experiments is included. Prerequisite: ATM S 370; either STAT/MATH 390 or Q SCI 381. Offered: Sp.

ATM S 452 Weather Forecasting and Advanced Synoptic Meteorology (5) NW Basic forecasting techniques. Application of numerical modeling and statistical approaches. Structure, evolution, and forecasting of convective systems. Radar applications. Diurnal and topographically-forced circulations. Aviation meteorology. Laboratories include extensive practice in forecasting and surface map analysis. Prerequisite: ATM S 370; ATM S 442; either STAT/MATH 390 or Q SCI 381. Offered: Sp.

ATM S 458 Air Pollution Chemistry (4) NW Global atmosphere as a chemical system emphasizing physical factors and chemical processes that give rise to elevated surface ozone, particulate matter, and air toxics; international issues of air pollution transport and changing tropospheric background composition; and regulatory control strategies and challenges. Aimed at science and engineering majors. Offered: jointly with CHEM 458; A.

ATM S 460 Water in the Environment (3) NW Discusses the unique physical and chemical properties of the water molecule in relation to the atmospheric greenhouse effect, precipitation formation, oceanic circulations, infiltration of water through soils, geyser eruptions, and glacier and sea ice thickness. Prerequisite: either ESS 310, MATH 126, or MATH 136; PHYS 123. Offered: jointly with ESS 424/PHYS 460.

ATM S 475 Current Research in Climate Science Seminar (3, max. 6) Weekly lectures focusing on a particular aspect of climate from invited speakers, complemented by class discussion, readings, and final paper. Promotes interdisciplinary understanding of climate concepts. Prerequisite: either ESS 201, ATM S 211, or ATM S 321. Offered: jointly with ESS 475/OCEAN 475; A.

ATM S 480 Air-Quality Modeling (3) NW Evaluation of air-quality models relating air pollution emissions to environmental concentrations. Emphasis on models used for air pollution permits. Emphasizes current problems. Prerequisite: MATH 125. Offered: jointly with CEE 480; W.

ATM S 487 Fundamentals of Climate Change (3) Examines Earth's climate system; distribution of temperature, precipitation, wind ice, salinity, and ocean currents; fundamental processes determining Earth's climate; energy and constituent transport mechanisms; climate sensitivity; natural climate variability on interannual to decadal time scales; global climate models; predicting future climate. Prerequisite: ATM S 321.

ATM S 490 Current Weather Analysis (1, max. 6) NW Reviews and analyzes current weather situations and forecasts. Promotes active discussion between the leader and attendees, and provides exposure to practical aspects of forecasting, the structure of synoptic and local weather phenomena, and applications of basic meteorological concepts. Credit/no-credit only. Offered: AWSp.

ATM S 492 Readings in Meteorology or Climatology (*, max. 15) Credit/no-credit only. Offered: AWSpS.

ATM S 497 Undergraduate Internship (1-5, max. 30) Internship experience with a public agency or private company, supervised and approved by a faculty member. Requires preparation of a professional report reflecting on the experience. Credit/no-credit only. Offered: AWSpS.

ATM S 499 Undergraduate Independent Research (1-5, max. 30) Individual research supervised by a faculty member. May involve laboratory work, fieldwork, or surveys. Credit/no-credit only. Offered: AWSpS.

ATM S 501 Fundamentals of Physics and Chemistry of the Atmosphere (5) Fundamentals of hydrostatics, thermodynamics, radiation, cloud physics, and atmospheric chemistry. Offered: A.

ATM S 502 Introduction to Synoptic Meteorology (3) Overview of weather systems; atmospheric observations and data assimilation. Elementary manual and computer-aided synoptic analysis techniques. Interpretation of satellite and ground-based observations. Kinematics. Fronts and frontogenesis; life cycles of extratropical cyclones; related mesoscale phenomena. Numerical weather prediction; interpretation of forecast products. Offered: Sp.

ATM S 503 Atmospheric Motions I (3) Basic equations governing atmospheric motions and their elementary applications; circulation and vorticity; dynamics of midlatitude disturbances. Offered: A.

ATM S 504 Atmospheric Motions II (5) Wave dynamics, numerical prediction, development of midlatitude synoptic systems, and general circulation. Prerequisite: either ATM S 441 or ATM S 503. Offered: W.

ATM S 505 Introduction to Fluid Dynamics (4) Eulerian equations for mass-motion; Navier-Stokes equation for viscous fluids, Cartesian tensors, stress-strain relations; Kelvin's theorem, vortex dynamics; potential flows, flows with high-low Reynolds numbers; boundary layers, introduction to singular perturbation techniques; water waves; linear instability theory. Prerequisite: either a course in partial differential equations or permission of instructor. Offered: jointly with AMATH 505/OCEAN 511; A, odd years.

ATM S 508 Geochemical Cycles (4) Descriptive, quantitative aspects of earth as biogeochemical system. Study of equilibria, transport processes, chemical kinetics, biological processes; their application to carbon, sulfur, nitrogen, phosphorus, other elemental cycles. Stability of biogeochemical systems; nature of human perturbations of their dynamics. Prerequisite: permission of instructor. Offered: jointly with CHEM 523/OCEAN 523.

ATM S 509 Geophysical Fluid Dynamics I (4) Dynamics of rotating stratified fluid flow in the atmosphere/ocean and laboratory analogues. Equations of state, compressibility, Boussinesq approximation. Geostrophic balance, Rossby number. Poincare, Kelvin, Rossby waves, geostrophic adjustment. Ekman layers. Continuously stratified dynamics: Inertia-gravity waves, potential vorticity, quasigeostrophy. Prerequisite: OCEAN 511 or ATM S 505/AMATH 505. Offered: jointly with OCEAN 512; W.

ATM S 510 Physics of Ice (3) Structure of the water molecule. Crystallographic structures of ice. Electrical, optical, thermal, and mechanical properties of ice. Growth of ice from vapor and liquid phases. Offered: jointly with ESS 531.

ATM S 511 Snow and Ice on the Earth's Surface (3) Snow and ice climatology. Formation of the ice crystals in clouds. Snow metamorphism. Transfer of radiative, sensible, and latent heat at snow and ice surfaces. Remote sensing of snow and ice. Growth and melt of sea ice. Climatic records from ice. Prerequisite: permission of instructor. Offered: jointly with ESS 532.

ATM S 512 Dynamics of Snow and Ice Masses (3) Rheology of snow and ice. Sliding and processes at glacier beds. Thermal regime and motion of seasonal snow, glaciers, and ice sheets. Avalanches and glacier surges. Deformation and drift of sea ice. Response of natural ice masses to change in climate. Prerequisite: permission of instructor. Offered: jointly with ESS 533.

ATM S 514 Ice and Climate (3) Examines the role of ice and snow in climate. Polar climate dynamics. Polar-global interactions. Modeling snow cover, sea ice, and ice-sheet

balance, and flow in the climate system. Prerequisite: permission of instructor. Offered: jointly with ESS 535.

ATM S 519 Scientific Writing and Graphics (2) *Waddington, Warren* Covers principles of scientific writing; methods of ensuring clarity in writing for scientific journals and research proposals; principles of graph construction; and authorship, peer review, and citations. For graduate students in Earth-science related fields. Credit/no-credit only. Offered: jointly with ESS 519/OCEAN 518; Sp, odd years.

ATM S 520 Atmospheric Sciences Colloquium (1, max. 24) Seminars on current research in advanced topics related to atmospheric sciences, conducted by faculty and visiting professors/scientists. Includes presentation of doctoral dissertations by department graduate students. For Atmospheric Sciences graduate students only. Prerequisite: permission of department. Credit/no-credit only. Offered: AWP.

ATM S 521 Seminar in Atmospheric and Climate Dynamics (*, max. 24) Directed at current research in the subject. For advanced students. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWP.

ATM S 523 Seminar in Atmospheric Physics and Chemistry (*, max. 24) Directed at current research in the subject. For advanced students. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AW.

ATM S 524 Seminar in Climate Dynamics and Energy Transfer (*, max. 24) Directed at current research in the subject. For advanced students. Prerequisite: permission of instructor. Credit/no-credit only. Offered: A.

ATM S 525 Seminar - Topics in Atmospheric Chemistry (1-3, max. 6) Seminar for atmospheric scientists, chemists, engineers in problems associated with the chemical composition of the atmosphere. Covers wide variety of topics, ranging from the natural system to urban pollution and global atmospheric change. Prerequisite: ATM S 301 or permission of instructor. Offered: jointly with CEE 553.

ATM S 532 Atmospheric Radiation: Introductory (3) Fundamentals of radiative transfer; absorption and scattering by atmospheric gases; elementary applications to constraints on the thermal structure, photochemistry, and remote sensing. Prerequisite: PHYS 225 or permission of instructor. Offered: Sp.

ATM S 533 Atmospheric Radiation: Advanced (3) Optical properties and particle absorption and scattering; solutions of radiative transfer equation in multiple scattering atmospheres; applications to atmospheric and surface energy balance and remote sensing. Prerequisite: ATM S 532/ESS 571 or permission of instructor. Offered: A.

ATM S 534 Remote Sensing of the Atmosphere and Climate System (3) Satellite systems for sensing the atmosphere and climate system. Recovery of atmospheric and surface information from satellite radiance measurements. Applications to research. Prerequisite: ATM S 532 or ATM S 533.

ATM S 535 Cloud Microphysics and Dynamics (3) Basic concepts of cloud microphysics, water continuity in clouds, cloud dynamics, and cloud models. Prerequisite: ATM S 501 or permission of instructor. Offered: jointly with ESS 573; Sp.

ATM S 536 Mesoscale Storm Structure and Dynamics (3) Techniques of observing storm structure and dynamics by radar and aircraft, observed structures of precipitating cloud systems, comparison of observed structures with cloud models. Prerequisite: either ATM S 535 or ESS 573.

ATM S 542 Synoptic and Mesoscale Dynamics (3) Quasi-geostrophic theory, baroclinic instability, symmetric instability, tropical disturbances, frontogenesis, orographic disturbances, convective storms. Prerequisite: ATM S 509/OCEAN 512 and AMATH 402 or equivalents. Offered: Sp.

ATM S 544 Design and Application of Ensemble Prediction Systems (4) Covers the fundamental of chaos theory to help compare and contrast traditional, deterministic forecasting versus ensemble forecasting. Explores the various

components of an ensemble prediction system. Introduces decision science to show how to apply probabilistic weather information in optimal decision making. Prerequisite: ATM S 501; ATM S 502; and ATM S 552 or permission of instructor. Offered: Sp.

ATM S 545 General Circulation of Atmosphere (3) Requirements of the global angular momentum, heat, mass, and energy budgets upon atmospheric motions as deduced from observations. Study of the physical processes through which these budgets are satisfied. Prerequisite: ATM S 509/OCEAN 512 or permission of instructor. Offered: A.

ATM S 547 Boundary Layer Meteorology (3) Turbulence, turbulent fluxes, averaging. Convection and shear instability. Monin-Obukhov similarity theory, surface roughness. Wind profiles. Organized large eddies. Energy fluxes at ocean and land surfaces, diurnal cycle. Convective and stably stratified boundary layers. Cloud-topped boundary layers. Remote sensing. Boundary layer modeling and parameterization. Prerequisite: ATM S 505, AMATH 505, or OCEAN 511.

ATM S 551 Atmospheric Structure and Analysis I: Synoptic Scale Systems (4) Extratropical cyclones and cyclogenesis. Jet streams. Upper waves in the westerlies. Diagnosis of vertical motions. Fronts and frontogenesis. Prerequisite: ATM S 502 and ATM S 509/OCEAN 512.

ATM S 552 Objective Analysis (3) Review of objective analysis techniques commonly applied to atmospheric problems; examples from the meteorological literature and class projects. Superposed epoch analysis, cross-spectrum analysis, filtering, eigenvector analysis, and optimum interpolation techniques. Offered: W.

ATM S 554 Paleoclimate Proxies (3) *Alexander, Sachs* Provides a critical evaluation of the most commonly applied paleoclimate proxies from the ocean, land, and ice sheets. Offered: jointly with ESS 554/OCEAN 554.

ATM S 555 Planetary Atmospheres (3) Problems of origin, evolution, and structure of planetary atmospheres, emphasizing elements common to all; roles of radiation, chemistry, and dynamical processes; new results on the atmospheres of Venus, Mars, Jupiter, and other solar system objects in the context of comparative planetology. Offered: jointly with ASTR 555/ESS 581.

ATM S 556 Planetary-Scale Dynamics (3) Zonally symmetric circulations, planetary waves, equatorial waves, dynamics of the middle atmosphere, trace constituent transport, nonlinear aspects of atmospheric flows. Prerequisite: ATM S 542 or permission of instructor.

ATM S 558 Atmospheric Chemistry (3) Photochemistry of urban, rural, and marine tropospheric air, and of the natural and perturbed ozone in the middle atmosphere. Unity of the chemistries in these apparently different regimes. Prerequisite: ATM S 458 or ATM S 501 or CHEM 457 or permission of instructor. Offered: Sp.

ATM S 559 Climate Modeling (3) *Bitz, Thompson* Principles of Earth system modeling. Emphasis on atmosphere, ocean sea ice, and land-surface components. Climate forcing. Appropriate use of models. Topics of current interest including carbon cycle, atmosphere chemistry, and biogeochemistry. Prerequisite: either ATM S 587/OCEAN 587/ESS 587, ATM S 504 or ATM S 505. Offered: jointly with ESS 559/OCEAN 558.

ATM S 560 Atmosphere/Ocean Interactions (3) Observations and theory of phenomena of the coupled atmosphere-ocean system. El Nino/Southern Oscillation; decadal tropical variability; atmospheric teleconnections; midlatitude atmosphere-ocean variability. Overview of essential ocean and atmospheric dynamics, where appropriate. Prerequisite: ATM S 509/OCEAN 512. Credit/no-credit only. Offered: jointly with OCEAN 560.

ATM S 564 Atmospheric Aerosol and Multiphase Atmospheric Chemistry (3) Physics and chemistry of particles and droplets in the atmosphere. Statistics of size distribu-

tions, mechanics, optics, and physical chemistry of atmospheric aerosols. Brownian motion, sedimentation, impaction, condensation, and hydroscopic growth. Prerequisite: permission of instructor.

ATM S 571 Advanced Physical Climatology (3) Physical processes that determine the climate of Earth and its past and future changes. Greenhouse effect. Climate modeling. Radiative and dynamical feedback processes. Orbital parameter theory. Critical analysis of climate change predictions. Prerequisite: permission of instructor. Offered: A.

ATM S 575 Large Scale Dynamics of the Tropical Atmosphere (3) Observations and underlying dynamics of large-scale tropical circulations. Factors that determine regions of large-scale persistent precipitation in the tropics, thermal forcing of atmospheric circulations by these regions, and temporal variability of the forcing and response. Prerequisite: ATM S 509/OCEAN 512, ATM S 542.

ATM S 581 Numerical Analysis of Time Dependent Problems (5) Numerical methods for time-dependent differential equations, including explicit and implicit methods for hyperbolic and parabolic equations. Stability, accuracy, and convergence theory. Spectral and pseudospectral methods. Prerequisite: either AMATH 581, AMATH 584/MATH 584, AMATH 585/MATH 585, or permission of instructor. Offered: jointly with AMATH 586/MATH 586; Sp.

ATM S 582 Advanced Numerical Modeling of Geophysical Flows (3) Topics of current interest including: efficient time differencing, semi-implicit and multiple time-step techniques. Semi-lagrangian schemes. Treatment of poorly resolved gradients. Flux-corrected transport. Positive definite advection schemes. Aliasing error and nonlinear instability. Wave permeable boundary conditions. Prerequisite: ATM S 581 and AMATH 586 or MATH 586.

ATM S 585 Climate Impacts on the Pacific Northwest (4) *Mantua, Snover* Knowledge of past/future patterns of climate to improve Pacific Northwest resource management. Topics include the predictability of natural/human-caused climate changes; past societal reactions to climate impacts on water, fish, forest, and coastal resources; how climate and public policies interact to affect ecosystems and society. Offered: jointly with ENVIR 585/ESS 585/SMEA 585; Sp.

ATM S 586 Current Research in Climate Change (2, max. 20) Weekly lectures focusing on a particular aspect of climate (topic to change each year) from invited speakers (both UW and outside), plus one or two keynote speakers, followed by class discussion. Credit/no-credit only. Offered: jointly with ESS 586/OCEAN 586.

ATM S 587 Fundamentals of Climate Change (3) Examines Earth's climate system; distribution of temperature, precipitation, wind ice, salinity, and ocean currents; fundamental processes determining Earth's climate; energy and constituent transport mechanisms; climate sensitivity; natural climate variability on interannual to decadal time scales; global climate models; predicting future climate. Offered: jointly with ESS 587/OCEAN 587.

ATM S 588 The Global Carbon Cycle and Climate (3) *Emerson* Oceanic and terrestrial biogeochemical processes controlling atmospheric CO₂ and other greenhouse gases. Records of past changes in the earth's carbon cycle from geological, oceanographic, and terrestrial archives. Anthropogenic perturbations to cycles. Develop simple box models, discuss results of complex models. Offered: jointly with ESS 588/OCEAN 588; W.

ATM S 589 Paleoclimatology: Data, Modeling, and Theory (3) Evidence for past changes in land and sea surface temperature, in precipitation and atmospheric dynamics, and in ocean circulation: both long and interannual timescales. Paleoclimate modeling and theory. Time series analysis and climate noise. Rapid climate change. Statistical reconstruction of interannual variability. Offered: jointly with ESS 589/OCEAN 589.

ATM S 591 Special Topics (1-4, max. 9) Lecture series on topics of major importance in the atmospheric sciences. Prerequisite: permission of instructor.

ATM S 593 Climate Science Seminar (1) *Mote* Focuses on how to communicate climate science to many different audiences through careful construction of figures and through written and oral communication. Credit/no-credit only. Offered: jointly with ESS 593/OCEAN 593; W.

ATM S 596 Climate Science Capstone Project (1-5, max. 5) *Mote* Climate capstone directed by a mentor, may be a group effort, and may encompass curriculum development, internships, workshop organization, etc., capturing interdisciplinary aspects of climate science and effective communication of climate science. Offered: jointly with ESS 596/OCEAN 596; AWSpS.

ATM S 600 Independent Study or Research (*-) Credit/no-credit only. Offered: AWSpS.

ATM S 700 Master's Thesis (*-) Offered: AWSpS.

ATM S 800 Doctoral Dissertation (*-) Offered: AWSpS.

Earth and Space Sciences

070 Johnson Hall

Earth and space sciences seeks to further the understanding of the Earth, the solar system, and their histories. The scope extends from the center of Earth to the rim of the solar system, and activities cut across traditional disciplines of physics, chemistry, biology, geology, and mathematics. The discipline examines Earth's interior structure, chemistry, motion, and dynamics; geologic hazards; processes affecting the surface environment and climate; the surrounding space environment; planetary processes; and geobiology.

UNDERGRADUATE PROGRAM

Adviser

070 Johnson Hall, Box 351310

(206) 616-8511

advising@ess.washington.edu

The Department of Earth and Space Sciences offers the following programs of study:

- The Bachelor of Science degree with a major in earth and space sciences, with options in biology, geology, physics, and environmental earth sciences
- The Bachelor of Arts degree with a major in earth and space sciences
- A minor in earth and space sciences
- A minor in climate science (offered jointly with the Department of Atmospheric Sciences and the School of Oceanography)

The Bachelor of Science degree is designed for students interested in geology and geophysics, and a career path in graduate studies or in the private sector where field and technology experiences and problem-solving skills are an important asset. The biology option enables B.S. students interested in paleontology and paleobiology to emphasize biology courses. The physics option allows for an emphasis in physics and geophysics. The environmental earth sciences option is designed for students interested in environmentally focused courses and careers. The Bachelor of Arts degree is designed for students who wish to obtain a broad understanding of earth sciences as a background for careers such as science journalism, environmental law, K-12 teaching, or environmental policy.

Bachelor of Science

Suggested First- and Second-Year Courses: MATH 124, MATH 125, MATH 126; PHYS 121, PHYS 122, PHYS 123 or PHYS 114/PHYS 117, PHYS 115/PHYS 118, PHYS 116/PHYS 119; CHEM 142.

Department Admission Requirements

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

Major Requirements

101 credits as follows:

1. *Science Core (35 credits):*
 - a. *Basic Supporting Science (20 credits):* MATH 124, MATH 125 or equivalent; PHYS 114/PHYS 117 or PHYS 121; CHEM 142. (Students wishing to pursue the ESS Physics Option must take PHYS 121.)
 - b. *ESS Required Core Courses (15 credits):* ESS 211, ESS 212, ESS 213. (Students in the ESS Physics Option may substitute ESS 205 for one of these.)
2. One of the four ESS Options below (minimum 61-71 credits, depending on option):
 - a. *Biology Option (69 credits)*
 - i. *Supporting Science (26 credits):* CHEM 152, CHEM 162; BIOL 180, BIOL 200; and one of BIOL 220, PHYS 115/PHYS 118, PHYS 122, MATH 126, STAT 311.
 - ii. *ESS Required (31 credits):* Three of ESS 311, ESS 312, ESS 313, ESS 314; ESS 400; ESS 418.
 - iii. *ESS Electives (12 credits):* ESS 400-level courses or any ESS 311-series course not taken as a required course, above. (May not include independent study or seminar courses numbered ESS 489 through ESS 499).
 - b. *Environmental Earth Sciences Option (69-71 credits)*
 - i. *Supporting Science (15 credits):* STAT 311 or Q SCI 381; CHEM 152 or CHEM 220; and one of CHEM 162, PHYS 115/PHYS 118, or PHYS 122, MATH 126
 - ii. *ESS Required (44 to 46 credits):* ESS 201; two of ESS 311, ESS 312, ESS 313, ESS 314; ESS 326; two from ESS 315, ESS 421, ESS 426, ESS 427, ESS 454, ESS 455, ESS 456, ESS 457, ESS 459; ESS 400; ESS 418.
 - iii. *Electives (10 credits):* Additional courses chosen from any ESS 311-series course not taken as a required course above, from ESS 400-level courses (may not include independent study or seminar courses numbered ESS 489 through ESS 499), or from an approved list of courses outside ESS.
 - c. *Geology Option (67-71 credits)*
 - i. *Supporting Science (18-20 credits):* MATH 126, PHYS 115/PHYS 118 or PHYS 122 and two of PHYS 116/PHYS 119 or PHYS 123; CHEM 152, MATH 307, MATH 308, STAT 311
 - ii. *ESS Required (31 credits):* Three of ESS 311, ESS 312, ESS 313, ESS 314; ESS 400; ESS 418
 - iii. *ESS Electives (18-20 credits):* ESS 400-level courses or any ESS 311-series course not taken as a required course, above. May not include independent study or seminar courses numbered ESS 489 through ESS 499).
 - d. *Physics Option (61-67 credits)*
 - i. *Supporting Science (32-35 credits):* MATH 126, MATH 308, MATH 324 or MATH 136, MATH 324; PHYS 122, PHYS 123, PHYS 227, PHYS 228, PHYS 321, PHYS 322.
 - ii. *ESS Required (14 credits):* Two of ESS 311, ESS 312, ESS 313, ESS 314, ESS 418.

- iii. *ESS Electives (15-18 credits):* ESS 400-level courses or any ESS 311-series course not taken as a required course, above. (May not include independent study or seminar courses numbered ESS 489 through ESS 499).

3. All courses counted towards the major must be completed with a minimum grade of 2.0

Bachelor of Arts

Suggested First- and Second-Year College Courses: Q SCI 291, Q SCI 292 or MATH 124, MATH 125; PHYS 114/PHYS 117 or PHYS 121; CHEM 142.

Department Admission Requirements

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

Major Requirements

90 credits as follows:

1. *Supporting Science (35 credits):*
 - a. *Basic Supporting Science (20 credits):* CHEM 142; Q SCI 291, Q SCI 292 or MATH 124, MATH 125; PHYS 114/PHYS 117 or PHYS 121.
 - b. *Additional Courses:* 15 credits from department's approved list of courses in science and mathematics. See adviser for current list.
2. *ESS Courses (55 credits):*
 - a. *Required Courses (15 credits):* Two of ESS 211, ESS 212, ESS 213. One of ESS 311, ESS 312, ESS 313, ESS 314.
 - b. *Elective Courses:* 40 upper-division credits (300 and 400 level) with at least 10 credits at the 400 level (may not include independent study or seminar courses numbered ESS 489 through ESS 499.)
3. All courses counted towards the major must be completed with a minimum grade of 2.0

Continuation Policy

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

Minor

Minor Requirements: 30 ESS credits with at least 15 at the upper-division level (300- or 400-level) of which at least 3 credits must be at the 400-level (may not include independent study or seminar courses numbered ESS 489 through ESS 499.) All courses must be completed with a minimum grade of 2.0.

Minor in Climate Science

See description in the Climate Science listing in the Undergraduate Interdisciplinary Programs section of the General Catalog.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Students who graduate with an undergraduate degree in Earth and Space Sciences (ESS) have achieved these learning goals:
 - Have a general knowledge of the basic areas of solid earth geology and geophysics, geobiology, surface processes, space physics, and analogues of processes within the solar system.
 - Be proficient in one of the core disciplines through the completion of requirements in one of four options: standard (geology), (geo)biology, (geo)physics, or environmental.

- Think critically and obtain quantitative predictions using skill sets that involve multiple disciplines and all core sciences.
- Have obtained hands-on experience from extensive fieldwork and/or laboratory experience.
- Have the ability to communicate scientific information clearly and precisely, both orally and in writing.
- Have the ability to read, understand, and use scientific literature.
- *Instructional and Research Facilities:* See below, at end of graduate program requirements.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors in the major). See adviser or department website for requirements.
- *State Licensing Endorsement Available:* Students interested in pursuing State Licensing for Geologists can receive guidance in course selection that meets state requirements for the geologist licensing examination (see adviser for requirements or visit department website).
- *Research, Internships, and Service Learning:* Job and internship possibilities are posted in the department and forwarded by email to all undergraduate students.
- *Department Scholarships:* A limited number of departmental scholarships are available. Scholarship applications are invited from all undergraduate students in the major during spring quarter. The awards are applicable to the following academic year.
- *Student Organizations/Associations:* Geo Club organizes field trips and social gatherings. Information about meetings and events is forwarded to undergraduate majors by email.

GRADUATE PROGRAM

Graduate Program Coordinator
070 Johnson Hall , Box 351310
206-616-8511
advising@ess.washington.edu

The Department of Earth and Space Sciences offers graduate programs leading to the Master of Science (M.S.) degree and the Doctor of Philosophy (PhD) degree in both geological sciences and geophysics. The programs emphasize a rigorous quantitative approach in conjunction with detailed in-situ and/or laboratory observations to address significant problems that lead to a better understanding of the Earth and its environment.

Major areas of interest are the internal and surface structures and materials of the Earth and planets, dynamic processes within the earth, oceans, atmosphere, and space environments, their history and the interaction of life with these environments. The required curriculum is flexible to facilitate interdisciplinary research approaches. Earth and Space Sciences is also one of the core departments (with the Department of Atmospheric Sciences and the School of Oceanography) in the interdisciplinary graduate program on climate change and a participant in the astrobiology program.

Master of Science

Admission Requirements

1. Official test scores for the Graduate Record Exam (GRE)
2. Official TOEFL scores for international applicants. TSE scores are not required.
3. One copy of official transcripts for all colleges and universities attended, in sealed envelopes, if possible. International transcripts must be in the original language and accompanied by a certified English translation.

International transcripts must be in the original language and accompanied by a certified English translation.

4. Three letters of recommendation (submitted via the UW Web Application for Graduate Admission)
5. Departmental application form (submitted via the UW Web Application for Graduate Admission)
6. Personal resume and personal statement (submitted via the UW Web Application for Graduate Admission)

Degree Requirements

36-45 credits, as follows:

Since the department encourages interdisciplinary courses of study tailored to each student, there are few formal requirements for the M.S. degree beyond those specified by the Graduate School.

Departmental requirements for graduate students in Earth and Space Sciences include the following:

1. Courses determined in consultation with the student's advisory committee to insure both depth and breadth
2. ESS 594, each quarter offered in the first year
3. ESS 599, every quarter (except summer)
4. Two ESS introductory breadth courses (any 50X course)
5. An experiential learning experience
6. A data analysis course or a research project with a significant data analysis component
7. Preliminary examination (see below)
8. Draft thesis or research paper
9. Final examination

With Thesis: 36 credits, of which 18 must be in courses at the 400 level or above and up to 9 may be for thesis (ESS 700). Final examination consists of oral presentation and defense of thesis.

Without Thesis: 45 credits, of which 18 must be in courses at the 400 level or above, which includes a 5-credit research paper (ESS 600). Final examination is oral and is administered by a Supervisory Committee.

Preliminary Examination: Required for every graduate student in the department's program. Provides one component the department uses to evaluate admission to the PhD program early in the student's second year. Along with the first-year research seminar sequence, the preliminary examination encourages students to learn how to develop and present a research project, and get an early, structured start on graduate research. All entering graduate students must present and defend a research proposal before a Student Evaluation Committee (SEC) at the beginning of their second year in the department.

For the preliminary examination, a graduate student must demonstrate the ability to think critically, logically, and creatively and to communicate effectively; and must show knowledge of the disciplines that underlie the student's general area of interest (e.g., geology, geophysics, physics, math, chemistry, biology).

Doctor of Philosophy

Admission Requirements

1. Official test scores for the Graduate Record Exam (GRE)
2. Official TOEFL scores for international applicants. TSE scores are not required.
3. One copy of official transcripts for all colleges and universities attended, in sealed envelopes, if possible. International transcripts must be in the original language and accompanied by a certified English translation.
4. Three letters of recommendation (submitted via the UW Online Application for Graduate Admission)
5. Departmental application form (submitted via the UW Online Application for Graduate Admission)

6. Personal resume and personal statement (submitted via the UW Online Application for Graduate Admission)

Degree Requirements

90 credits, to include:

Since the department encourages interdisciplinary courses of study tailored to each student, there are few formal requirements for the PhD degree beyond those specified by the Graduate School.

Departmental requirements for graduate students in both geological sciences and geophysics include the following:

1. Courses determined in consultation with the student's advisory committee to insure both depth and breadth
2. ESS 594, each quarter offered in the first year
3. ESS 599, every quarter (except summer)
4. Two ESS introductory breadth courses (any 50X course)
5. An experiential learning experience
6. A data analysis course or a research project with a significant data analysis component
7. Preliminary examination (see below)
8. General examination
9. Draft dissertation
10. Dissertation defense

Preliminary Examination: An ESS requirement for every graduate student. Provides one component the department uses to evaluate admission to the PhD program early in the second year. Along with the first-year research seminar sequence, the preliminary examination encourages students to learn how to develop and present a research project, and get an early, structured start on graduate research. All entering graduate students must present and defend a research proposal before a Student Evaluation Committee (SEC) at the beginning of their second year in the department.

For the preliminary examination, a student must demonstrate the ability to think critically, logically, and creatively and to communicate effectively; and must show knowledge of the disciplines that underlie the student's general area of interest (e.g., geology, geophysics, physics, math, chemistry, biology).

Research Facilities

Extensive laboratory facilities are available for a wide range of experimental/field work. These include a wet chemistry laboratory, a JEOL 733 Superprobe with EDS/WDS and a high resolution laser Raman spectrometer for mineral analysis, a thermal-ionization mass spectrometer, a multi-collector inductively-coupled-plasma mass spectrometer and associated clean laboratories for analysis of stable and radiogenic isotopes, a computer laboratory, a remote-sensing laboratory with an image-processing system with LANDSAT tape library and spectral reflectance equipment, and high temperature controlled atmosphere furnaces. There is also field equipment for electromagnetic induction studies; a high-pressure/temperature laboratory, including a laser-induced phonon spectrometer and diamond anvil cells for studying such rock and mineral properties as compression, sound velocities, and thermal conductivity; a permanent, regional seismic network; a portable telemetered seismic network for studying volcanoes and active faults in western North America; geodetic-quality global-positioning-system receivers; a cold laboratory for studying problems in snow-cover geophysics, glaciology, and sea-ice research; a geophysical-fluids laboratory; two cloud microphysics laboratories; a space physics and aeronomy laboratory for preparing ground-based, balloon, rocket, and satellite experiments; and a laboratory for the study of advanced plasma propulsion concepts. Additional facilities are provided by the Quaternary Research Center (which houses state-of-the art cosmogenic isotope and

stable-isotope research laboratories, palynology, snow and ice research, and a periglacial laboratory) and the Burke Memorial Washington State Museum (which houses paleontological laboratories and extensive reference collections of invertebrate, vertebrate, and plant fossils, and minerals).

Financial Aid

Most graduate students receive support in the form of teaching or research assistantships, and endowed fellowships and scholarships.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsca/.

ESS 100 Dinosaurs (2) NW Biology, behavior, ecology, evolution, and extinction of dinosaurs, and a history of their exploration. With dinosaurs as focal point, course also introduces the student to how hypotheses in geological and paleobiological science are formulated and tested.

ESS 101 Introduction to Geological Sciences (5) NW Survey of the physical systems that give the earth its form. Emphasizes the dynamic nature of interior and surface processes and their relevance to mankind and stresses the value of rocks and earth forms in the understanding of past events. A course with laboratory for non-science majors. Not open for credit to students who have taken ESS 105, or ESS 210. Field trips. Offered: AWSp.

ESS 102 Space and Space Travel (5) I&S/NW Explores the sun, solar storms, observations from space and from Earth; Earth's space environment, radiation belts and hazards, plasma storms and auroras, rockets and propulsion, human exploration efforts, societal impact, planetary systems and resources, and project highlighting space and its exploration. Open to non-majors. Offered: AWSp.

ESS 103 Minerals and Gems (3) NW Introduction to the nature of minerals: composition, structure, physical properties, and origins, with emphasis on gem minerals. Focuses on topics of particular interest in gemology, such as mechanisms of color, history and lore of gems, and uses of gems. Hands-on laboratories using about one hundred representative gems and minerals.

ESS 104 Prehistoric Life (3) NW Fossils and how they are preserved. What fossils tell us about past life and environments. How the history of life unfolded and what caused the great events in biological evolution. Open to non-science majors, but also lays a foundation for higher-level geobiology courses.

ESS 105 The Earth: Its Processes and Hazards (5) NW Introduction to physical and environmental geology. Focuses on both large-scale tectonics forces that create Earth's continents and oceans, and surficial forces that shape Earth's landscapes. Emphasizes processes that endanger human populations (such as earthquakes, volcanic eruptions, and floods). Not open for credit to students who have taken ESS 101.

ESS 106 Living with Volcanoes (3) I&S/NW Explores volcanoes and volcanic eruptions on Earth and in the solar system. Examines how volcanoes work and how they affect the environment, life, and human societies. Illustrates principles using local examples of recent volcanism and ancient examples of mega-eruptions. Evaluates the possibility of predicting future eruptions.

ESS 115 Astrobiology: Life in the Universe (5) NW R. BUICK, D. CATLING, V. MEADOWS, W. SULLIVAN Introduction to the new science of astrobiology, study of the origin and evolution of life on Earth, and the search for microbial and intelligent life elsewhere in the Universe. Designed for non-science, liberal arts majors. Offered: jointly with AST-BIO 115/ASTR 115/BIOL 114/OCEAN 115.

ESS 119 Introduction to Laboratories (1, max. 3) Reviews research being performed in visited and independent research opportunities and possibilities. Includes weekly visits to labs in ESS and related fields. Credit/no-credit only.

ESS 201 The Earth System and Climate (5) NW Earth's dynamic environment, global energy balance, interplay of chemical, physical, and biological processes shaping the Earth's surface and climate. Emphasis on quantitative methods for measuring, evaluating, and understanding contemporary changes relative to the last several thousand years. Prerequisite: either MATH 124, MATH 144, or Q SCI 291.

ESS 202 Earthquakes (5) I&S/NW Earthquakes of the Pacific Northwest and around the world - their cause and relationship to plate tectonics; why, where, and when they occur. How earthquakes affect human life: shaping landscape, hazards. Laboratory explores physical processes associated with earthquakes. One field trip. Open to non-science majors.

ESS 203 Glaciers and Global Change (5) I&S/NW Explores how glaciers record climate change and human activities through bubbles of ancient air and trace impurities in the ice. Also reviews glaciers impact on societies through sea-level, coastlines, water supplies, and transportation routes. Open to non-science majors.

ESS 204 The Paleobiology and Geobiology of Mass Extinctions (3-4) NW P. WARD Covers the origin and diversification of life on Planet Earth, and abrupt die-offs in mass extinctions. Explores how new instrumentation and experimentation in biology and chemistry, and improved sampling of the fossil record in geology, combine with astrobiology and geobiology to revise out history of Earth and its life. Prerequisite: a minimum grade of 1.7 in ESS 100. Offered: W.

ESS 205 Access to Space (5) NW Group development of student experiments to the outer rim of our atmosphere and the beginning of space; investigation of stratosphere, mesosphere, thermosphere, magnetosphere, development of exploration packages; basic electronic fabrication, global positioning, radio tracking, expectations at high altitudes. Open to all disciplines. No previous experience of electronics required.

ESS 209 Interdisciplinary Earth Sciences Field Seminar (3-12, max. 12) NW Miscellaneous field-based and experiential learning activities in earth and space sciences.

ESS 210 Physical Geology (5) NW Introduction to the physical and chemical processes of the earth's surface and interior. Plate tectonics, earthquakes, volcanism, glaciation. Optional field trips to Cascades and Olympics. Background in geology not required but science background desirable. Not open for credit to students who have taken ESS 101.

ESS 211 Physical Processes of the Earth (5) NW Overview of Earth. Deformation of soil, sediment, and rock. Erosional and depositional processes and landforms. Seismicity and plate-tectonics. Structural, geomorphic, and climatic interactions in major tectonic regimes. Use of stereonet, air photos, geologic maps, and cross sections. Two one-day field excursions. Prerequisite: a minimum grade of 1.7 in either MATH 124 or Q SCI 291, either of which may be taken concurrently; a minimum grade of 1.7 in either both PHYS 114 and PHYS 117 or PHYS 121. Offered: A.

ESS 212 Earth Materials and Processes (5) NW Crystallography, crystal chemistry, and characteristics of rock-forming and ore minerals. Description, phase equilibria, origin, and associations of igneous, sedimentary, and metamorphic rocks. Laboratory study of hand specimens. Two one-day field excursions. Prerequisite: minimum grade of 1.7 in CHEM 142. Offered: W.

ESS 213 Evolution of the Earth (5) NW Introduction to paleontology, types of stratigraphy, and radiometric dating. The physical, chemical, biological, and plate tectonic evolution of the earth's crust, seawater, and atmosphere. Comparison with other planets. Climate changes and man as a

geologic agent. Two one-day field excursions. Prerequisite: minimum grade of 1.7 in either ESS 211 or ESS 212. Offered: Sp.

ESS 230 Rivers and Beaches (3/5) NW Introduction to Earth surface environments, the processes that shape them, how humans affect them and are affected by them. Weekend field trips examine mountains, rivers, deltas/estuaries, beaches, and environments beyond. Focus on linkages between these environments to illustrate coupling between landscapes and seascapes. Offered: jointly with OCEAN 230.

ESS 301 Geology of the Northwest (5) NW Geologic history of Washington, Oregon, and Idaho. Emphasis on use of geologic principles in interpreting evidence found in landscapes and rocks. Weekend field trips optional. Prerequisite: either ESS 101, ESS 105, ESS 210, ESS 211.

ESS 302 Great Ice Age (5) NW Growth of mile-thick ice sheets, worldwide lowering of sea level, and other geological and paleoclimatological changes that accompany the harsh environments of a global glaciation. Geology of the last three million years, focusing on the causes and effects of global glaciation and future climate change. Prerequisite: either ESS 101, ESS 105, ESS 210, ESS 211.

ESS 304 Volcanoes and Glaciers of the Pacific Northwest (5) NW Introduction to volcanic and glacial processes, emphasizing examples in the Pacific Northwest. Volcanic products, landforms, hazards, prediction, and history. Relationship to tectonics. Nature and distribution of present and former glaciers in Washington. Two all-day Saturday field trips to Cascade volcanoes required.

ESS 305 Geology of the National Parks (5) NW Reviews a wide range of fundamental geological processes, using North American parks and monuments as examples of natural laboratories. Includes plate-tectonic history, volcanism, mountain-building, and glacial, fluvial, and a host of other geomorphic forces as preserved in geologic exposures of National Parks. Prerequisite: either ESS 101, ESS 105, ESS 210, or ESS 211.

ESS 306 Planetary Geology (5) NW Up-to-date survey of geological features and processes on and within planets and their moons deduced from sampling, remote sensing, spacecraft imagery, and theory. Comparative discussion of volcanism, tectonics, surface processes, and thermal evolution. Examination of moon rocks and meteorites. Prerequisite: either ESS 101, ESS 105, ESS 210, ESS 211.

ESS 310 Mathematical Methods in the Earth Sciences (5) NW Roe Presents mathematical methods for Earth Sciences applications. Focuses on setting up equations and on the quality of written solutions. Prerequisite: MATH 125; either PHYS 114/PHYS 117 or PHYS 121.

ESS 311 Geomechanics (5) NW Introduction to continuum mechanics: elasticity, fluid dynamics, diffusion, porous flow, multiphase flow, dimensional analysis, and natural convection. Example applications: earthquakes and rock mechanics, flow of glaciers, slope stability, debris flows, groundwater flow, contaminant transport, flow in rivers and channels, mantle and magma convection. Prerequisite: either MATH 125 or Q SCI 292; either PHYS 114 and PHYS 117 or PHYS 121. Offered: W.

ESS 312 Geochemistry (5) NW Geochemical concepts essential to earth science studies. Crystal chemistry and elemental affinities, thermodynamics of geologic processes, trace element and isotopic fractionation, weathering, cosmochemistry, and exploration of basic global geochemical cycles. Laboratory exercises explore the dynamics of geochemical processes. Prerequisite: CHEM 142; either MATH 125 or Q SCI 292; ESS 212. Offered: Sp.

ESS 313 Geobiology (5) NW Introduction to the early record of life on earth. Environmental factors leading to life's diversification. The role of life in biomineralization. The history of biodiversity. The role of life in landform and soil formation. Laboratory exercises demonstrate specimens and

techniques. Prerequisite: CHEM 142; either PHYS 114 and PHYS 117 or PHYS 121. Offered: A.

ESS 314 Geophysics: Expedition to Planet Earth (5) NW Survey of fundamental geophysics using an investigative approach. Examines how a future expedition of extraterrestrial humanoids could use geophysical data, physical principles, and mathematical techniques to decide whether they should colonize Earth and understand why the indigenous civilization became extinct. Prerequisite: either MATH 126 or ESS 310; either PHYS 115 and PHYS 118 or PHYS 122. Offered: A.

ESS 315 Environmental Earth Science (5) NW Analysis of geologic constraints upon human activity and the environmental consequences of such activity. Topics include hillslope processes, fluvial and groundwater processes, earthquake and volcanic hazards, and environmental aspects of deforestation and atmospheric pollution. Prerequisite: either ESS 101, ESS 105, ESS 210, ESS 211. Offered: jointly with ENVIR 313.

ESS 326 Geomorphology (5) NW Introduction to landforms and surficial deposits. Emphasis on landscape-forming processes. Intended for students who wish to take additional courses in geomorphology. Prerequisite: either PHYS 114 or PHYS 121.

ESS 345 The Environment of Fuel and Mineral Deposits (3) I&S/NW Fuels and nonmetallic ores as the substrate of industrial civilization. Provides non-majors with sufficient information about these resources to allow for informed decisions of related geological, environmental, and societal issues. Prerequisite: either ESS 210 or ESS 211.

ESS 400 Field Geology (12) NW Six weeks of geologic mapping in a variety of rock types in the Western United States. Enhances students' knowledge of geologic phenomena and processes. Development of skills in mapping, field interpretation, and report writing. Students responsible for own living expenses while in the field. Prerequisite: ESS 211; ESS 212; ESS 213; one course selected from ESS 311, ESS 312, ESS 313, or ESS 314. Offered: S.

ESS 401 Regional Geology of the Pacific Northwest (3) NW Explores the geological diversity of the Pacific Northwest temporally (Archean to Pleistocene), tectonically (craton, terranes, and cover sequences), and lithologically (ophiolites to coal). Three weekend field trips required.

ESS 402 International Field Geology (3-12, max. 12) NW Supervised geological field work in classic, instructive international sites. Venue varies from year to year. Work may include geologic mapping, construction of cross sections, measurement and analysis of stratigraphic sections, field excursion, and supervised individual research projects.

ESS 403 Global Tectonics (5) NW Introduction to large-scale plate tectonics processes and observations including motions on a sphere, polar-wander paths, plate-boundary seismicity, focal mechanisms, gravity, magnetics, and heat flow. Also includes observations and theories of plate deformation and continental dynamics with emphasis on Western North America. Prerequisite: PHYS 121.

ESS 406 Earth Sciences for Middle and High School Science Teachers: Solid Earth (3) NW Topics of contemporary interest selected to meet state academic standards. Topics include Pacific Northwest earthquakes and volcanoes, global and regional plate tectonics, history of the Earth, the Earth's interior, planetary geology, and surface processes on the Earth. Does not count toward the ESS degree. Prerequisite: ESS 101.

ESS 408 Great Geological Issues (3) NW History and development of geological and paleontological theories and controversies; philosophy and methodology that have driven scientific inquiry in the earth sciences. Offered: A.

ESS 410 Marine Geology and Geophysics (4) NW Explores the geological and geophysical processes that form and shape the ocean basins and continental margins. Prerequisite: either ESS 210, ESS 211, or ESS 212. Offered: jointly with OCEAN 410; A.

ESS 411 Geophysical Continuum Mechanics (5) NW Analysis of stress and strain. Measurement and interpretation of strain in geological materials. Elasticity applied to determine stress in the Earth's lithosphere. Creep of solids and flow of geological materials. Prerequisite: either MATH 136 or both MATH 307 and MATH 308.

ESS 412 Introduction to Seismology (3) NW Examines stress and strain, the wave equation, travel times, amplitude and phase, reflection seismology, surface waves, and source theory, including moment tensors, radiation patterns, far-field wave shapes, source spectra, stress drop, and magnitude. Prerequisite: either ESS 411 or PHYS 123 and either MATH 307 or MATH 308.

ESS 413 Geophysics: The Earth (3) NW The Earth and its interior; gravity, magnetism, heat flow, seismology. Earth's outer structure, studied through the unifying concepts of plate tectonic theory. Quantitative approaches to problems, using techniques of classical physics. Prerequisite: either ESS 412 or PHYS 322.

ESS 414 Geophysics: Fluids (3) NW Introduction to geophysical fluid dynamics. An overview of fluids in geophysics with emphasis on the oceans. A nonrigorous development of the equations of motion with examples drawn from oceanography and solid earth geophysics. Prerequisite: either MATH 136 or both MATH 307 and MATH 308; PHYS 322.

ESS 415 Space and Plasmas (3) NW Survey of various phenomena occurring in outer regions of Earth's atmosphere, ionosphere, magnetosphere, and Van Allen radiation belts. Laboratory applications include plasma thrusters and fusion. Concepts include charged particles in magnetic fields, drift motion, plasma, magnetohydrodynamic waves. Prerequisite: PHYS 321.

ESS 416 Geophysics: The Atmosphere (3) NW Phenomena of the lower atmosphere: some simple applications of the principles of classical thermodynamics, fluid dynamics, and radiative transfer to the atmospheric hydrological cycle, global energy balance, and atmospheric dynamics and climate. Prerequisite: ESS 414.

ESS 418 Geoscience Communication (4) Covers principles of organizing, developing, and writing geoscience information including abstracts, presentations, scientific articles, correspondences, and proposals. Reviews writing conventions, use of illustrations, style, and tone. Prerequisite: 5 credits of composition; two of ESS 201, ESS 211; ESS 212, and ESS 213, any of which may be taken concurrently. Offered: WSp.

ESS 420 Introduction to Geological Geographic Information Systems (5) Walters Examines principles of GISA applied to the geological sciences. Covers basics of GIScience, data types, and GIS analyses. Includes hands-on analysis applied to geologic patterns and phenomena: sources geological data; geological mapping; measures of topography; hydrologic flow patterns; and topics of the students' own interests. Prerequisite: ESS 211. Offered: ASp.

ESS 421 Introduction to Geological Remote Sensing (4) NW Principles of image interpretation for geologists. Study of land forms, structure, lithology, surface processes using aircraft and satellite data. Use of digital multispectral images and radar images for geological mapping.

ESS 422 Intermediate Spectral Remote Sensing (4) NW Explores spectral image processing with ENVI software, used in individualized projects involving satellite or aircraft images. Emphasis on integration of remote sensing and field measurement using process models and Geographic Information Systems (GIS). Prerequisite: ESS 421.

ESS 424 Water in the Environment (3) NW Discusses the unique physical and chemical properties of the water molecule in relation to the atmospheric greenhouse effect, precipitation formation, oceanic circulations, infiltration of water through soils, geyser eruptions, and glacier and sea ice thickness. Prerequisite: either ESS 310, MATH 126,

or MATH 136; PHYS 123. Offered: jointly with ATM S 460/PHYS 460.

ESS 426 Fluvial Geomorphology (5) Hydraulic and morphological characteristics of streams and valley floors. Landscape evolution by stream erosion and deposition. Field exercises emphasize quantitative analysis of fluvial processes, channel forms, acquisition of various skills, such as mapping, topographic surveying, report writing. Prerequisite: either ESS 311 or ESS 326.

ESS 427 Hillslope Geomorphology (5) NW Theoretical, laboratory, and field study of hillslope evolution by mass wasting and water erosion. Prerequisite: either ESS 311 or ESS 326.

ESS 431 Principles of Glaciology (4) NW Covers snow deposition and metamorphism, avalanches, heat and mass balance at snow and ice surfaces, glacier flow, ice sheets, sea ice, permafrost, methods of paleoclimate reconstruction, Ice Age theories. Prerequisite: PHYS 121.

ESS 432 Glacial Geology (5) NW Interpretation of glacial environments and history through study of sediments and landforms. The laboratory component is largely field based and visits some spectacular glaciated landscapes. Provides students an experiential learning approach to the field as well as an opportunity to conduct independent research.

ESS 433 Environmental Change in the Glacial Ages (5) NW Physical, biological evidence of climatic change during Quaternary Period; emphasizing stratigraphy, chronology. Impact of alternating glacial/interglacial cycles on earth's terrestrial, marine environments. Theories on causes of climatic variation.

ESS 435 Glacial-Periglacial Geomorphology NW (3) NW Hallet Introduces glacial processes that shape mountainous and polar regions, creating a wealth of characteristic landforms; and periglacial processes that profoundly impact nearly twenty percent of the land surface of the planet and Mars through frost action and thermal fluctuations. Prerequisite: MATH 125; either PHYS 114 or PHYS 121; ESS 211; ESS 326.

ESS 437 Mineralogy (5) NW Symmetry of crystals and crystal structures. Rules of crystal chemistry. Microscopic, diffraction, and spectroscopic techniques of mineral characterization. Transformation processes in minerals: order-disorder, phase transition, and exsolution. Crystal chemistry and phase relations. Reactions on mineral surfaces. Physical properties, deformation, and creep. Prerequisite: CHEM 142; ESS 212; ESS 312.

ESS 439 Petrology of Igneous Rocks (5) NW Systematic study of the major families of volcanic and plutonic igneous rocks with emphasis on tectonic setting, phase relations, geochemistry, and models of their origin and evolution throughout geologic time. Laboratory emphasizes thin-section study of rocks using transmitted and reflected light. Prerequisite: ESS 312.

ESS 440 Petrography and Petrology of Metamorphic Rocks (5) NW Mineralogy, textures, and origins of metamorphic rocks; metamorphic facies and metamorphic phase equilibria; controls of metamorphism. Prerequisite: ESS 312.

ESS 441 Petrology and Petrography of Sedimentary Rocks (5) NW Mineralogy, textures, and origin of sedimentary rocks, using petrographic microscope. Prerequisite: ESS 312.

ESS 445 Geology of Ore Deposits (5) NW The geologic principles, environmental aspects, and exploration strategies of selected types of metallic and nonmetallic ore deposits and coal. Prerequisite: ESS 312.

ESS 447 Engineering Geology: Methods and Application (4) Applies the application of geologic principles to geotechnical and environmental problems; includes investigation and characterization of soil and rock properties. Includes two weekend field trips. Prerequisite: ESS 210 or ESS 211; either ESS 311, ESS 411, ESS 463, or CEE 220.

ESS 449 Intensive Field Experience in Biology (3-5) NW Introduces field methods and research in various areas of biology, e.g., paleontology, ecology, climate change, and mycology. Includes two or more weeks away from campus at field site. Offered: jointly with BIOL 475; S.

ESS 450 Paleobiology (3) NW Biological evolution over the past 500 million years, considering how the reciprocal interactions between environment and evolution have influenced the major episodes in life's history and providing a background for assessing the evolutionary impact of modern environmental change.

ESS 451 Invertebrate Paleontology (5) NW Important larger invertebrate groups; morphology, classification, stratigraphic distribution, evolution, paleoecology. Offered: jointly with BIOL 451.

ESS 452 Vertebrate Paleontology (5) NW C. SIDOR Examines fossil vertebrate life, focusing on systematics and morphology of major lineages (fish, reptiles, bird, and early mammal relatives). Examines fossil and modern vertebrates from the Burke Museum collection in the lab. Weekend field trip. Prerequisite: either BIOL 354, BIOL 452, BIOL 453 or ESS 100. Offered: jointly with BIOL 450.

ESS 453 Fossil Mammals (5) NW Evolutionary relationships of fossil mammals, from mammal-like reptiles of late Paleozoic to diverse Cenozoic groups. Morphology, adaptations, extinctions, evolutionary patterns. Structures and relationships of most major groups. Field trip. Prerequisite: either ESS 100 or ESS 452.

ESS 454 Hydrogeology (4) NW Covers the analysis of groundwater flow systems, geologic controls, and hydrologic properties; basics of chemistry and solute transport in groundwater; and the use of numerical models. Considers local examples and groundwater resource management. Prerequisite: ESS 311.

ESS 455 Stratigraphy (4) NW Systematic study of stratified rocks and space-time implications. Principles of stratigraphy, including biostratigraphy, magnetostratigraphy, seismic stratigraphy, subsurface analysis. Basin analysis, evolution of sedimentary basins and continental margins. Prerequisite: ESS 213.

ESS 456 Depositional Environments (4) NW Principles of sedimentary facies analysis, including survey of modern processes that produce sedimentary sequences. Recognition of various depositional environments represented in the geologic record, including terrestrial, marine terrigenous, and carbonate environments. Two field trips required. Prerequisite: ESS 213.

ESS 457 Environmental Geochemistry (4) NW Examines the geochemistry of natural waters, emphasizing applications in geological and soil sciences. Topics include soil/ground water composition; weathering and the carbon cycle; equilibrium computer modeling; colloids and clay minerals; organic geochemistry of water and soil; and groundwater quality. Experience with geochemical instrumentation. Prerequisite: ESS 312, CHEM 152, or CHEM 155.

ESS 459 Environmental Isotope Geology (3) NW The geochemistry of stable isotopes. Topics include the theory of isotope fractionation, application of isotopes in earth surface processes, climate, and biogeochemical cycles. Includes extensive laboratory experience. Prerequisite: ESS 312.

ESS 460 Cosmogenic Nuclides in Geomorphology (3) NW Use of cosmic-ray-produced nuclides to date rock surfaces and analyze geomorphic processes. Nuclide production by cosmic radiation above and below ground; tracer methods; exposure dating; coupling of cosmogenic nuclide data to geomorphic models. Open to undergraduate students only. Prerequisite: either ESS 311 or ESS 312.

ESS 461 Geological Time (3) NW Principles of radiometric dating. Methods applicable to Earth history from planetary formation to the recent past. Radiocarbon dating; geological dating with long-lived isotopes; uranium series, trapped

charge and cosmogenic isotope techniques. Applications in archaeology, climate change, geomorphology, tectonics, and Earth evolution.

ESS 462 Volcanic Processes (4) NW Pre-eruption, eruption, and post-eruption processes. Examines triggers of magma ascent, controls on volatile build-up and loss, magma fragmentation, magma-groundwater interaction, eruption column dynamics, gravity-controlled eruptive phenomena, syn- and post-eruption lahars and other re-working of deposits. Prerequisite: either ESS 212, ESS 311, or ESS 312.

ESS 463 Structure and Tectonics (5) NW Geometry, kinematics, and tectonic setting of major types of structures, including those in contractional fold-and-thrust belts; extended crust; strike-slip-dominated regimes; and shear zones. Laboratory exercises develop basic tools of structural geology. Prerequisite: ESS 213.

ESS 465 Seismology and Earthquake Engineering (3) NW Presents an overview of earthquake processes and details of the characteristics of destructive ground motion; illustrates the effects of such motion on engineering structures; reviews current practice in estimating earthquake hazards for important structures such as nuclear power plants. Prerequisite: either ESS 310, MATH 126, MATH 134, or both MATH 307 and MATH 308. Offered: jointly with CEE 431.

ESS 467 Seismic Exploration and Stratigraphy (5) NW Introduction to theory and practice of seismic exploration. Application of refraction and reflection techniques to problems in engineering geology and mineral exploration. Constraints in the interpretation of subsurface structure. Prerequisite: either ESS 311 or OCEAN 410; either MATH 126 or MATH 136; PHYS 123. Offered: jointly with OCEAN 412.

ESS 471 Introduction to Space Physics (3) NW Introduces several areas of space physics, the physical principles that apply therein, and the methods by which significant observations are made. Covers electromagnetic and plasma processes from the center of the sun to the surface of the earth. Prerequisite: PHYS 123.

ESS 472 Rockets and Instrumentation (2-4, max. 12) Students launch science payloads to high altitude using high power amateur rockets, providing design, fabrication, test, integration, and management experience; covers science motivation, engineering aspects, and delivery systems. Project may vary each year. Offered: AW.

ESS 475 Current Research in Climate Science Seminar (3, max. 6) Weekly lectures focusing on a particular aspect of climate from invited speakers, complemented by class discussion, readings, and final paper. Promotes interdisciplinary understanding of climate concepts. Prerequisite: either ESS 201, ATM S 211, or ATM S 321. Offered: jointly with ATM S 475/OCEAN 475; A.

ESS 480 Advanced Methods in Isotope Geochemistry (3, max. 18) NW Huntington, Steig Studies new developments in isotope geochemistry. Topics vary by quarter and may include clumped isotopes, triple-oxygen isotopes, rate isotopes, mass-independent fractionation, and their incorporation into Earth system models. Introduces theory, measurement, and applications to processes in Earth, ocean, atmospheric, planetary, and climate science. Prerequisite: either ESS 312, ESS 424, ESS 457, ESS 459.

ESS 489 Honors Seminar (3) Covers current scientific topics in earth and space sciences; philosophy and methodology of science strategies for developing research projects; scientific education and career planning. May require colloquium or local conference attendance. Offered: A.

ESS 490 Special Topics (1-10, max. 20) NW

ESS 492 Undergraduate Teaching Experience and Outreach (1-3, max. 12) NW Designed to help undergraduate majors acquire effective teaching skills at the college and public school level. Teaching experience gained through assisting graduate student teaching assistant or K-12 public school outreach. Involves classroom teaching experience and improving communications and presentation skills.

ESS 495 NASA Science and Engineering Research Seminar (1, max. 4) NW Review of current space science-related research. Emphasis varies, but topics may include planetary geology, astronomy, global change, aeronautical engineering, and remote sensing. Credit/no-credit only.

ESS 498 Undergraduate Thesis (5) NW The thesis must be submitted at least one month before graduation.

ESS 499 Undergraduate Research (*, max. 15)

ESS 501 Geochemical Systems (3) Nelson Geochemical systems through time, from solar system origin to present. Explores fundamental geochemical concepts using current research issues and discussion. Concepts include radiogenic and stable isotope systematic, thermodynamics, high and low temperature chemistry of rocks and water, geochemical cycles through Earth's history. Prerequisite: graduate student standing or permission of instructor.

ESS 502 The Solid Earth (3) Concepts of internal earth processes: Earth as heat engine and chemical processor, style of mantle convection, origin and evolution of the Earth's magnetic field, Cascadia subduction and hazards. Introduces seismology, fluid dynamics, heat flow, gravity, and geomagnetism. Focuses on the analysis, critique, and communication of ideas from scientific literature.

ESS 503 Introduction to Solar Terrestrial Physics (3) Introduces several areas of space physics, the physical principles that apply therein, and the methods by which significant observations are made. Covers electromagnetic and plasma processes from the center of the sun to the surface of the Earth. Prerequisite: PHYS 123.

ESS 504 The Earth Surface (3) Investigates the coupled tectonic and geomorphic processes that shape the surface of the Earth, creates the surface environment that sustains humanity and other life systems, and produces natural hazards. Introduces modern tools, techniques, and theories applicable to analysis of this coupled dynamic system.

ESS 505 The Cryosphere (4) Waddington, Warren Covers snow deposition and metamorphism, avalanches, heat and mass balance at snow and ice surfaces, glacier flow, ice sheets, sea ice, permafrost, methods of paleoclimate reconstruction, and Ice Age theories. Prerequisite: PHYS 121. Offered: A.

ESS 508 Great Geological Issues (3) History and development of geological and paleontological theories and controversies; philosophy and methodology that have driven scientific inquiry in the earth sciences. Requires a term paper analyzing primary material. Prerequisite: graduate standing in earth sciences, or in history of science, or permission of instructor.

ESS 509 Field Methods in Applied Geology I (3) Crider Introduction to problems and techniques of applied geology. Studies the interactions among land use, infrastructure, and the dynamic landscape of the Pacific Northwest. Includes nine-day intensive, mid-September field course held near Mount Rainier. Prerequisite: strong background in field methods and geology. Offered: A.

ESS 510 Field Methods in Applied Geology II (3) Troost Application of applied geology core curriculum to field problems. Includes nine-day intensive, mid-June field course held on the Olympic Peninsula and coastal Puget Sound. Prerequisite: ESS 509; three of ESS 420, ESS 454, ESS 526, ESS 527, or ESS 547. Offered: S.

ESS 511 Geophysical Continuum Mechanics (5) Analysis of stress and strain. Measurement and interpretation of strain in geological materials. Elasticity applied to determine stress in the Earth's lithosphere. Creep of solids and flow of geological materials. Includes advanced, research-oriented problems. Prerequisite: MATH 307 and MATH 308 or equivalent.

ESS 512 Seismology (3) Examines stress and strain, the wave equation, travel times, amplitude and phase, reflection seismology, surface waves, and source theory, including moment tensors, radiation patterns, far-field wave

shapes, source spectra, stress drop, and magnitude. Prerequisite: either ESS 511 or PHYS 123 and one of MATH 307 or MATH 308.

ESS 513 Geophysics: The Earth (3) Study of gravity, magnetism, heat flow, seismology. Earth's outer structure studied through unifying concepts of plate tectonic theory. Quantitative approaches to problems, using techniques of classical physics. Includes advanced, research-oriented problems. Prerequisite: ESS 512; PHYS 322.

ESS 514 Geophysics: Fluids (3) Geophysical fluid dynamics. Fluids in geophysics with emphasis on the oceans. Development of the equations of motion with examples drawn from oceanography and solid earth geophysics. Includes advanced, research-oriented problems. Prerequisite: PHYS 322, MATH 307, and MATH 308 or equivalent.

ESS 515 Geophysics: Space (3) Various phenomena occurring in outer regions of Earth's atmosphere, ionosphere, magnetosphere, and Van Allen radiation belts. Laboratory applications include plasma thrusters and fusion. Concepts include charged particles in magnetic fields, drift motion, plasma, magnetohydrodynamic waves. Includes advanced, research-oriented problems. Prerequisite: PHYS 321 or equivalent.

ESS 516 Geophysics: The Atmosphere (3) Phenomena of the lower atmosphere: some simple applications of the principles of classical thermodynamics, fluid dynamics, and radiative transfer to the atmospheric hydrological cycle, global energy balance, and atmospheric dynamics and climate. Includes advanced, research-oriented problems. Prerequisite: ESS 514.

ESS 517 Early Earth Evolution (3) Geological, biological, and environmental evolution of the Earth over the first 4 billion years of its history, as an analogue for the development of other habitable planets.

ESS 518 Technical Communication in Applied Geosciences (1, max. 3) Reading, writing, and presentation of technical information in the geosciences. Topics vary by quarter. Offered: AWSp.

ESS 519 Scientific Writing and Graphics (2) *Waddington, Warren* Covers principles of scientific writing; methods of ensuring clarity in writing for scientific journals and research proposals; principles of graph construction; and authorship, peer review, and citations. For graduate students in Earth-science related fields. Credit/no-credit only. Offered: jointly with ATM S 519/OCEAN 518; Sp, odd years.

ESS 520 Applications in Geological Geographic Information Systems (4) *Walters* Covers applied uses of GIS in the applied earth sciences. Includes hands-on instruction in and discussion of analysis of geologic patterns and phenomena: terrain analysis and interpretation; riverbed modeling; floodplain analysis; rainfall patterns and effects; landslide forecasting; isostatic phenomena; and topics of the students' own interest. Also covers basic instruction in geospatial statistics. Prerequisite: ESS 420 or permission of instructor. Offered: W.

ESS 522 Geophysical Data Collection and Analysis (3) Theory and practical application of data collection and analysis applied to geophysical problems. Digital processing of signals; filtering and spectral analysis. Laboratory sessions include problem solving on computer-based processing system.

ESS 523 Geophysical Inverse Theory (3) Introduction to the mathematical techniques for estimating properties of physical systems, such as the earth or atmosphere, from data that is insufficient for a precise specification of the system. Emphasis is on the concept of the resolving power of data sets. The ideas developed are quite general and have a wide range of applicability in the field of data interpretation. Prerequisite: ESS 522, or permission of instructor.

ESS 524 Numerical Heat and Mass Flow Modeling in the Earth Sciences (3) *Waddington* Numerical solution of steady and transient advective-diffusion equations de-

scribing heat and mass transport processes in earth sciences, emphasizing finite-volume methods and their relationship to finite-difference and finite-element methods. Topics include discretization methods; coordinate systems; boundary conditions; accuracy; and stability. Prerequisite: MATH 307; MATH 308 or equivalent; or permission of instructor. Offered: Sp, even years.

ESS 526 Fluvial Geomorphology (5) *Collins* Hydraulic and morphological characteristics of streams and valley floors. Landscape evolution by stream erosion and deposition. Field exercises and independent project emphasize quantitative analysis of fluvial processes, channel forms, acquisition of various skills, such as mapping, topographic surveying, and report writing.

ESS 527 Hillslope Geomorphology (5) *Duval* Theoretical and applied study of hillslope processes including erosion and deposition; mass wasting; and slope forms and evolution.

ESS 528 Interpretation of Sedimentary Structures (2-4, max. 4) Physical and environmental analysis of sedimentary structures, including biogenic sedimentary structures. Clastic sediments and rocks. Field trips required.

ESS 529 Principles of Fluid Dynamics, Heat, and Mass Transfer in Earth Sciences (3) Introduction to the quantitative treatment of transport phenomena with applications to mantle and magma convection, volcanic eruptions, landslides, porous flow, and reaction. Emphasis on the governing equations of fluid dynamics including porous and multiple flow, chaotic convection, mixing, heat transfer, rheology, analytical, numerical, and scaling solutions.

ESS 531 Physics of Ice (3) Structure of the water molecule. Crystallographic structures of ice. Electrical, optical, thermal, and mechanical properties of ice. Growth of ice from vapor and liquid phases. Offered: jointly with ATM S 510.

ESS 532 Snow and Ice on the Earth's Surface (3) Snow and ice climatology. Formation of the ice crystals in clouds. Snow metamorphism. Transfer of radiative, sensible, and latent heat at snow and ice surfaces. Remote sensing of snow and ice. Growth and melt of sea ice. Climatic records from ice. Prerequisite: permission of instructor. Offered: jointly with ATM S 511.

ESS 533 Dynamics of Snow and Ice Masses (3) Rheology of snow and ice. Sliding and processes at glacier beds. Thermal regime and motion of seasonal snow, glaciers, and ice sheets. Avalanches and glacier surges. Deformation and drift of sea ice. Response of natural ice masses to change in climate. Prerequisite: permission of instructor. Offered: jointly with ATM S 512.

ESS 535 Ice and Climate (3) Examines the role of ice and snow in climate. Polar climate dynamics. Polar-global interactions. Modeling snow cover, sea ice, and ice-sheet balance, and flow in the climate system. Prerequisite: permission of instructor. Offered: jointly with ATM S 514.

ESS 537 Advanced Mineralogy (3) Crystal symmetry; point groups, space groups. Mathematical description of crystal structures; group theory, irreducible representations; tensor description of physical properties: stress, strain, piezoelectricity, elasticity; structural and magnetic phase transitions, Landau theory, deformation and creep crystals; elasto-viscous properties of Earth's mantle, crystal chemistry, solid state reactions. Offered: jointly with MSE 518; A.

ESS 538 Petrogenesis of Igneous Rocks (3) Origin of one or more of the major groups of igneous rocks. Selected petrogenetic problems in light of tectonic setting, petrography, geochemistry, and experimental studies. Prerequisite: ESS 439 or equivalent.

ESS 540 Advanced Igneous Petrology (4) Crystal-liquid-vapor equilibria in magmatic systems. Physical properties of silicate melts. Geothermometry and geobarometry in igneous rocks. Models of fractionation, assimilation, and magma mixing. Trace elements, radiogenic isotopes, and stable isotopes as tracers in magmatic processes. Nucle-

ation, crystal growth, and diffusion in melts. Prerequisite: ESS 312; ESS 439.

ESS 541 Applied Fluvial Geomorphology (4) Application of theory in fluvial geomorphology to framing and addressing questions in basic research and problems in applied contexts such as river engineering, land use planning, resource management, and river restoration. Prerequisite: either ESS 426, ESS 526, or permission of instructor.

ESS 544 Applied Tsunami Hazard Science (4) *Gonzalez* Broad introductory overview of tsunami science and physical, social, and economic impacts of tsunami hazards. Designed for scientific, engineering, earth-science professionals, and graduate students interested in tsunami hazard assessment, mitigation, or warning. Prerequisite: MATH 126; PHYS 123; AMATH 301, or equivalents.

ESS 546 Continental-Margin Sedimentation (3) Detailed evaluation of recent studies into processes forming strata on continental margins, including the diverse time scales ranging from sediment transport to sequence stratigraphy. Highlights the linkages with physical oceanographic processes, the fates of geochemical components, and the relationship to biological communities. Offered: jointly with OCEAN 546.

ESS 547 Engineering Geology: Methods and Application (4) Applies the application of geologic principles to geotechnical and environmental problems; includes investigation and characterization of soil and rock properties. Includes two weekend field trips.

ESS 550 Electromagnetic and Potential Field Methods (3) Development of equations of electromagnetic fields in conducting media. Solution of forward and inverse problems with natural and controlled sources: magnetotelluric and related methods. Includes the special case of static fields: DC resistivity, gravity, and magnetic interpretation. Prerequisite: PHYS 323; ESS 522; and either ESS 413 or ESS 513; or permission of instructor.

ESS 551 Mineral Physics (3) Applications of condensed matter physics to various geophysical problems. Topics vary, but usually include the thermal properties of relevant geophysical materials, the equation of state for the Earth's mantle and core, defects in solids and their roles in tectonophysics. Prerequisite: permission of instructor.

ESS 553 Electron Beam Microanalysis (4) Materials analysis using electron beams, including electron-target interactions, wave and energy dispersive x-ray analysis, scanning electron microscopy, and applications of these and related techniques to geological problems.

ESS 554 Paleoclimate Proxies (3) *Alexander, Sachs* Provides a critical evaluation of the most commonly applied paleoclimate proxies from the ocean, land, and ice sheets. Offered: jointly with ATM S 554/OCEAN 554.

ESS 555 Physics and Chemistry of the Earth's Interior (3) Emphasizes current issues in global tectonics and mantle dynamics. Examples include global seismic tomography and its bearing on geodynamics, the fate of subducted lithosphere and geochemical constraints on mantle convection. Prerequisite: permission of instructor.

ESS 557 Vertebrate Paleontology (5) Examines the biology of vertebrate animals, emphasizing their diversity, adaptations, and evolutionary history. Introduces aspects of behavior, physiology, morphology, and ecology that emerge from the comparative study of vertebrates. Laboratory includes local field trips and introduction to regional vertebrate fauna. Offered: jointly with BIOL 557.

ESS 558 Introduction to Graduate Research in Paleobiology (1) Introduction to paleobiology techniques and resources. Credit/no-credit only. Offered: jointly with BIOL 555; A.

ESS 559 Climate Modeling (3) *Bitz, Thompson* Principles of Earth system modeling. Emphasis on atmosphere, ocean sea ice, and land-surface components. Climate forcing. Appropriate use of models. Topics of current interest including carbon cycle, atmosphere chemistry, and biogeo-

chemistry. Prerequisite: either ATM S 587/OCEAN 587/ESS 587, ATM S 504 or ATM S 505. Offered: jointly with ATM S 559/OCEAN 558.

ESS 560 Cosmogenic Nuclides in Geomorphology (3) Use of cosmic-ray-produced nuclides to date rock surfaces and analyze geomorphic processes. Nuclide production by cosmic radiation above and below ground; tracer methods; exposure dating; coupling of cosmogenic nuclide data to geomorphic models. Prerequisite: either AMATH 301, AMATH 351, or permission of instructor.

ESS 562 Observational Seismology (1, max. 18) Quarterly research themes introduce students to a variety of digital and analog seismograms and techniques for their interpretation. Students present results of short investigations in an informal seminar setting. Credit/no-credit only.

ESS 563 Theoretical Seismology I (3) Advanced theoretical seismology. Attenuation and physical dispersion. Waves in anisotropic media. Moment-tensor source representation. Lamb's problem. Waves in stratified media: propagator methods, asymptotic ray theory, WKBJ seismograms. Inverse methods and analysis of seismological data. Prerequisite: either ESS 412, ESS 512, or permission of instructor.

ESS 564 Theoretical Seismology II (3) Advanced theoretical seismology. Attenuation and physical dispersion. Waves in anisotropic media. Moment-tensor source representation. Lamb's problem. Waves in stratified media: propagator methods, asymptotic ray theory, WKBJ seismograms. Inverse methods and analysis of seismological data. Prerequisite: ESS 563.

ESS 568 Oceanic Lithosphere (3) Basic principles of elasticity, fluid flow, and heat transport with specific applications to the formation and evolution of the oceanic lithosphere. Includes deformation of the earth, flow in porous media, heat transport, and marine seismological and potential field techniques. Prerequisite: OCEAN 540. Offered: jointly with OCEAN 545.

ESS 573 Cloud Microphysics and Dynamics (3) Basic concepts of cloud microphysics, water continuity in clouds, cloud dynamics, and cloud models. Prerequisite: ATM S 501 or permission of instructor. Offered: jointly with ATM S 535; Sp.

ESS 575 Advanced Rockets and Instrumentation (2-4, max. 12) Students launch science payloads to high altitude using high power amateur rockets, providing design, fabrication, test, integration, and management experience; covers science motivation, engineering aspects, and delivery systems. Project may vary each year. Offered: AW.

ESS 576 Space and Laboratory Plasma Physics (3) Discussion of waves, equilibrium and stability, diffusion and resistivity, basic plasma kinetic theory, and wave-particle interactions. Prerequisite: ESS 415, or equivalent, or permission of instructor. Offered: jointly with A A 556; W, odd years.

ESS 577 Advanced Space Plasma Physics (3) Formation by the interaction of solar wind with geomagnetic field. Trapped particles. Electromagnetic waves in anisotropic plasma. Dynamic disturbances and plasma instabilities. Prerequisite: ESS 415, or permission of instructor.

ESS 578 Kinetic Theory and Simulation of Space Plasmas (3) Wave-particle interactions in space plasmas. Generation of different wave modes, electrostatic and electromagnetic, Langmuir waves to Alfvén waves. Beam, Weibel, and masers instabilities, heavy ion interactions. Particle simulations, electrostatic and electromagnetic, for non-linear wave evolution and particle heating.

ESS 579 Computational Methods and Modeling in Geophysics I (3) Solution of complex dispersion equations including multiple root finding. Data analysis, fitting, smoothing, fast integration. Ray tracing and particle tracking in 2-D and 3-D. Computer simulation of fluid interactions, unmagnetized and magnetized, compressible and incompressible, and flow around objects.

ESS 580 Advanced Methods in Isotope Geochemistry (3, max. 18) *Huntington*, Steig Studies new developments in isotope geochemistry. Topics vary by quarter and may include clumped isotopes, triple-oxygen isotopes, rate isotopes, mass-independent fractionation, and their incorporation into Earth system models. Introduces theory, measurement, and applications to processes in Earth, ocean, atmospheric, planetary, and climate science. Prerequisite: one of ESS 312, ESS 424, ESS 457, ESS 459, ESS 501, ESS 554, OCEAN 583, or permission of instructor.

ESS 581 Planetary Atmospheres (3) Problems of origin, evolution, and structure of planetary atmospheres, emphasizing elements common to all; roles of radiation, chemistry, and dynamical processes; new results on the atmospheres of Venus, Mars, Jupiter, and other solar system objects in the context of comparative planetology. Offered: jointly with ASTR 555/ATM S 555.

ESS 583 Origin of the Solar System (3) Nebular and non-nebular theories of the solar system origin; collapse from the interstellar medium, grain growth in the solar nebula, formation of planetesimals and planets, early evolution of the planets and other possible planetary systems; physical and chemical evidence upon which the ideas concerning the origin of the solar system are based. Offered: jointly with ASTR 557.

ESS 585 Climate Impacts on the Pacific Northwest (4) *Mantua*, *Snover* Knowledge of past/future patterns of climate to improve Pacific Northwest resource management. Topics include the predictability of natural/human-caused climate changes; past societal reactions to climate impacts on water, fish, forest, and coastal resources; how climate and public policies interact to affect ecosystems and society. Offered: jointly with ATM S 585/ENVIR 585/SMEA 585; Sp.

ESS 586 Current Research in Climate Change (2, max. 20) Weekly lectures focusing on a particular aspect of climate (topic to change each year) from invited speakers (both UW and outside), plus one or two keynote speakers, followed by class discussion. Credit/no-credit only. Offered: jointly with ATM S 586/OCEAN 586.

ESS 587 Fundamentals of Climate Change (3) Examines Earth's climate system; distribution of temperature, precipitation, wind ice, salinity, and ocean currents; fundamental processes determining Earth's climate; energy and constituent transport mechanisms; climate sensitivity; natural climate variability on interannual to decadal time scales; global climate models; predicting future climate. Offered: jointly with ATM S 587/OCEAN 587.

ESS 588 The Global Carbon Cycle and Climate (3) *Emerson* Oceanic and terrestrial biogeochemical processes controlling atmospheric CO₂ and other greenhouse gases. Records of past changes in the earth's carbon cycle from geological, oceanographic, and terrestrial archives. Anthropogenic perturbations to cycles. Develop simple box models, discuss results of complex models. Offered: jointly with ATM S 588/OCEAN 588; W.

ESS 589 Paleoclimatology: Data, Modeling, and Theory (3) Evidence for past changes in land and sea surface temperature, in precipitation and atmospheric dynamics, and in ocean circulation: both long and interannual timescales. Paleoclimate modeling and theory. Time series analysis and climate noise. Rapid climate change. Statistical reconstruction of interannual variability. Offered: jointly with ATM S 589/OCEAN 589.

ESS 590 Special Topics (2-10, max. 20)

ESS 592 Professional Practice in Applied Geosciences (1, max. 3) Covers major issues and current topics in the practice of Geosciences: professional licensing, ethics, business trends, environmental regulation, emerging technologies. Includes internships and career guidance, as well as weekly guest speakers. Offered: AWSp.

ESS 593 Climate Science Seminar (1) *Mote* Focuses on how to communicate climate science to many different

audiences through careful construction of figures and through written and oral communication. Credit/no-credit only. Offered: jointly with ATM S 593/OCEAN 593; W.

ESS 594 Introduction to Earth and Space Sciences Research (1-2, max. 4) Introduces research of faculty and advanced graduate students to first-year graduate students and provides experience for the formulation, oral presentation, and defense of research proposals and results.

ESS 595 Earth and Space Sciences Research Methods (2, max. 30) Current research methodology and results based on recent literature and on faculty and student research. Designed to develop student perspective on observational and theoretical methods and on relation of specific research to broader developments in geophysics and interdisciplinary aspects of geophysics through faculty-guided presentations and discussion by students. Credit/no-credit only.

ESS 596 Climate Science Capstone Project (1-5, max. 5) *Mote* Climate capstone directed by a mentor, may be a group effort, and may encompass curriculum development, internships, workshop organization, etc., capturing interdisciplinary aspects of climate science and effective communication of climate science. Offered: jointly with ATM S 596/OCEAN 596; AWSpS.

ESS 599 Seminar (1, max. 24) Review of current literature in geophysics and graduate student research with faculty participation. Credit/no-credit only.

ESS 600 Independent Study or Research (*-) Credit/no-credit only.

ESS 601 Internship (*) *Crider*, *Troost* Graduate internship and final exam. Prerequisite: permission of instructor.

ESS 700 Master's Thesis (*-)

ESS 800 Doctoral Dissertation (*-)

Program on the Environment

Wallace Hall, Suite 12
3737 Brooklyn Ave NE
Seattle, WA 98195-5679
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poe@uw.edu

The Program on the Environment (PoE) is the home for Environmental Studies education at the University of Washington. Environmental Studies focuses on the interactions between humans and environments, drawing on an interdisciplinary approach to understand and address complex environmental issues.

The Environmental Studies program offers a BA major in Environmental Studies, a minor in Environmental Studies, and a Graduate Certificate in Environmental Management.

Building on a foundation of natural science, social science, and humanities courses, the curriculum offers students flexibility in choosing an individual course of study. Internship, research, and study abroad opportunities develop skills and leadership for careers in environmental policy, sustainability, conservation, education, or consulting.

UNDERGRADUATE PROGRAM

Adviser

12 Wallace Hall, Box 355679

(206) 616-1208

poeadv@uw.edu

The Program on the Environment offers the following programs of study:

- The Bachelor of Arts degree with a major in environmental studies
- A minor in environmental studies

Bachelor of Arts

Suggested First and Second-Year College Courses: ENVIR 100, ENVIR 200, ENVIR 250, and all foundational courses listed below.

Program Admission Requirements

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

General Education Requirements

All majors must satisfy the College of the Environment general education requirements.

Major Requirements

102-110 credits, as follows:

1. *Core Courses (20 credits):* ENVIR 100, ENVIR 200, ENVIR 250, ENVIR 300
2. *Foundational Courses (39-45 credits)*
 - a. *Biology (5 credits):* BIOL 180 and one course (or sequence) from among BIOL 200, BIOL 118/BIOL 119, BIOL 250/FISH 250/OCEAN 250, ENVIR 280
 - b. *Biological Systems (3-5 credits):* One course from BIOL 200, BIOL 250/FISH 250/OCEAN 250, ENVIR 240, ENVIR 280
 - c. *Chemistry (5 credits):* CHEM 120 or CHEM 142
 - d. *Earth Systems Literacy (6-10 credits):* Two courses from ATM S 211, ATM S 212, or ESS 201, ESS 210, ESS 230/OCEAN 230, OCEAN 200, GEOG 205
 - e. *Statistics (5 credits):* One course from Q SCI 381, STAT 220, STAT 221/CS&SS 221/SOC 221, STAT 311
 - f. *Economics (5 credits):* One course from ENVIR 235/ESRM 235/ECON 235 or FISH 230/ECON 230
 - g. *Values and Cultures (10 credits):* Two courses from ANTH 210, ANTH 211/ENVIR 211, HSTAA 221/ENVIR 221, or ENVIR 243/PHIL 243
3. *Analytical Methods (3-5 credits):* One course from approved list (see department website or advising office for list)
4. *Environmental Perspectives and Experiences (30 credits):* Minimum 30 credits from the list of approved courses (see department website or advising office for list). Minimum 3 credits in each of the six following categories: perspectives -- human and social dimensions; natural sciences, and policy and decision making; experiences -- bioregional; international; and fieldwork. At least 25 of the 30 credits must be at the 300 or 400 level. Courses listed under both perspectives and experiences may count toward either, but not both. Environmentally related independent study courses, study abroad programs, and other courses not on the approved list may count toward this requirement if approved in advance by the PoE adviser.
5. *Capstone Experience (10 credits):* ENVIR 490, ENVIR 491, ENVIR 492

6. *GPA Requirements:* Minimum 2.0 grade in each course presented for the major.

Minor

Minor Requirements: 30 credits, including ENVIR 100 and either ENVIR 200 or ENVIR 250. Five (5) credits from among ECON 235/ENVIR 235/ESRM 235, HSTAA 221/ENVIR 221, and PHIL 243/ENVIR 243. Remaining 15 credits drawn from the environmental perspectives course list (see program website or adviser for list). At least one course (minimum 3 credits) in each environmental perspectives course category, i.e., natural sciences, human and social dimensions, and policy and decision making. Ten (10) of these 15 credits must be at the 300 or 400 level. Minimum 2.0 for each course presented for the minor.

Continuation Policy

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

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The environmental studies major offers a rigorous, interdisciplinary, experiential curriculum designed to prepare future environmental leaders to respond to bioregional and global environmental opportunities and challenges. It takes advantage of the extraordinary environmental research at the UW, and makes that social, scientific, humanistic, and professional expertise accessible to students in innovative ways.

Students completing the BA in environmental studies have developed skills in the following:

- *Earth Systems Knowledge:* Understand the structure, function, and integration of the Earth, its inhabitants, and its four major spheres: land, water, living things, and air.
- *Interdisciplinary Approach:* Apply an interdisciplinary approach to the study of the environment, integrating multiple kinds of information, tools, methods, and scholarship from a variety of disciplines, in order to analyze and construct arguments about complex environmental issues.
- *Experiential Learning:* Understand the connections between classroom and experiential learning and successfully practice multiple forms of hands-on, real world applications.
- *Communication:* Demonstrate proficiency in multiple modes of communication (writing for different audiences and purposes, using a range of disciplinary norms; oral presentations and public speaking; online publishing; and visual display of environmental information).
- *Public Policy and Decision Making:* Understand how uncertainty, risk, law, politics, ethics, economics, and culture interact with environmental public policy and decision making.
- *Teamwork:* Collaborate as members of teams, effectively working with multiple stakeholders from various backgrounds to address environmental issues.
- *History of Environmental Inquiry:* Understand and reflect critically on the intellectual and cultural history of environmental studies including the history of environmental preservation and conservation.
- *Temporal Scales:* Understand various temporal scales inherent in environmental studies and situate themselves on the continuum of geologic time, evolutionary history, human environment history, and decision making for future generations.

- *Spatial Scales:* Understand various spatial scales inherent in environmental studies spanning the continuum from the local/bioregional to the international/global.
- *Diversity:* Understand how environmental perspectives, policies, and decisions are related to issues of diversity, privilege, and power.
- *Technical Knowledge:* Be familiar with some of the technological tools commonly used to address environmental challenges.
- *Professional Development:* Understand how their education will serve them as environmental professionals.
- *Instructional and Research Facilities:* The Program on the Environment office in Wallace Hall Suite 12 includes a commons area for student and faculty events and presentations, four study areas, and a computer lab. Because PoE is an interdisciplinary program, its students access resources, laboratories, and field stations across a range of UW departments, colleges, and schools.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* All environmental studies majors complete a senior capstone experience, which includes an internship with a community-based organization or government agency, an undergraduate research project, and/or international fieldwork or study abroad.
- *Student Organizations/Associations:* SAGE (Student Association for Green Environments) is a club to spread awareness for environmental issues on and off campus and to promote events for a greener, sustainable environment. SAGE is committed to community engagement and education and creating professional development opportunities for environmental studies students.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

ENVIR 100 Environmental Studies: Interdisciplinary Foundations (5) I&S/NW T. BILLO, K. STRAUS, Y. WENG, E. WHEAT Introduces environmental studies through interdisciplinary examination of the ethical, political, social, and scientific dimensions of current and historical environmental issues. Integrates material from different disciplines, and applies insights and methods to actual problems and situations at scales from the local to the global. Offered: AWSp.

ENVIR 103 Society and the Oceans (5) I&S/NW Explores the social and policy dimensions of the ocean environment and ocean management policy. Pays attention to how human values, institutions, culture, and history shape environmental issues and policy responses. Examines case studies and influential frameworks, such as the ocean as "tragedy of the commons." Offered: jointly with JSIS B 103/SMEA 103.

ENVIR 200 Environmental Studies: Communication and Information (5) VLPA/I&S E. SCHAUMBERG A practical course for developing the skills necessary to engage, analyze, write, and speak about complex environmental issues in a variety of disciplinary contexts with particular values and emphases. Focus on reading, writing, presentation, and critical analysis of written material. Prerequisite: minimum grade of 2.0 in ENVIR 100; minimum grade of 2.0 in either C LIT 240, ENGL 109 and ENGL 110; ENGL 111, ENGL 121, ENGL 131, ENGL 197, ENGL 198, ENGL

199, ENGL 281, ENGL 297, ENGL 298, or ENGL 299. Offered: AWSp.

ENVIR 210 Introduction to Environmental Modeling (4) NW, QSR D. GRUNBAUM Explores strengths and limitations of diverse modeling approaches, and strategies for using models in quantitative critical analysis of past, current and future conditions in terrestrial and marine environments. Focus on active learning use of models to ask and answer questions about biotic and abiotic environmental processes, management strategies and policy decision-making. Offered: jointly with Q SCI 210.

ENVIR 211 Environmental Justice (5) I&S, DIV D. PENA Examines introductory studies of environmental racism and ecological injustice in the United States and select areas of the world. Reviews environmental justice theories and methods applied to risk science, ecosystem management, biodiversity conservation, and sustainable development. Includes comparative studies of social movements for “eco-justice.” Offered: jointly with AES 211/ANTH 211.

ENVIR 221 Environmental History of the U.S. (5) I&S L. NASH Surveys the relationship between nature and human history, including the impact of the non-human environment on American history and the environmental effects of colonization, urbanization, and consumerism; the cultural construction of nature in different eras and its social implications; the sources and limits of modern environmental politics. Offered: jointly with HSTAA 221; A.

ENVIR 235 Introduction to Environmental Economics (5) I&S/NW S. RABOTYAGOV Introduces environmental and natural resource economics. Discusses fundamental economic concepts, including markets and private property. Includes basic tools used in the economic assessment of environmental problems and applies these methods to key environmental issues. Offered: jointly with ECON 235/ESRM 235; SpS.

ENVIR 239 Sustainability: Personal Choices, Broad Impacts (3-5) I&S/NW K. STRAUS Presents frameworks of sustainability via exploration of key pillars of sustainability, the history of sustainability movements, and sustainability in action. Students examine personal and global aspects of sustainability through issues such as smart growth, environmental and natural building, green business and energy, ecotourism, and international policy. Offered: Sp.

ENVIR 240 The Urban Farm (5) NW E. WHEAT Develops students' understanding the ecological connections between food production, human health, and planetary sustainability. Teaches basic skills needed for food production in urban areas and the ethics behind sustainable urban agriculture, including a hands-on component on the farm at the biology greenhouse. Offered: Sp.

ENVIR 243 Environmental Ethics (5) VLPA/I&S L. NICHOLS Focuses on some of the philosophical questions that arise in connection with environmental studies. Topics to be considered include: the ideological roots of current issues, values and the natural world, public policy and risk assessment, intergenerational justice, and social change. Offered: jointly with PHIL 243.

ENVIR 250 Environmental Studies: Data Types and Collection Methods (5) NW, QSR T. BILLO, K. STRAUS, Y. WENG, E. WHEAT Introduction to the diversity of methods for collecting and analyzing data used to understand complex environmental issues. Case studies help to illustrate research design processes, and introduce key methods of data collection and analysis relevant to the problem. Prerequisite: minimum grade of 2.0 in ENVIR 100. Offered: AW.

ENVIR 280 Natural History: Knowing Our Non-Human Neighbors (5) NW T. BILLO Introduces natural history, the observation and representation of nature, at biological scales from organisms to landscapes. Emphasizes the natural history of the Pacific Northwest. Offered: Sp.

ENVIR 296 Study Abroad - Environmental Studies (1-15, max. 15) Environmental studies course taken through an approved study abroad program, for which there are no

direct UW equivalents. Credit does not apply to major requirements without approval.

ENVIR 300 Environmental Studies: Synthesis and Application (5) I&S/NW T. BILLO, L. NICHOLS, K. STRAUS, Y. WENG, E. WHEAT Synthesis and application of natural and social science disciplines to environmental issues in specific, place-based case studies. Cases illustrate design of environmental policies, analysis of complex environmental problems, and the entanglement of facts and values in environmental decision-making. Prerequisite: minimum grade of 2.0 in ENVIR 200 and ENVIR 250. Offered: Sp.

ENVIR 313 Environmental Earth Science (5) NW Analysis of geologic constraints upon human activity and the environmental consequences of such activity. Topics include hillslope processes, fluvial and groundwater processes, earthquake and volcanic hazards, and environmental aspects of deforestation and atmospheric pollution. Prerequisite: either ESS 101, ESS 105, ESS 210, ESS 211. Offered: jointly with ESS 315.

ENVIR 330 Climate Change Impacts on Marine Ecosystems (5) NW Links the physics of climate to marine ecosystem processes, exploring both observed climate impacts from the past and projected ecosystem changes due to human-caused climate change in the future. Case studies include polar, sub-arctic, temperate, tropical, and upwelling ecosystems, and ocean-acidification and its projected impacts. Required: high school or college physics and algebra with a basic understanding of Newton's Laws and the ability to comprehend and construct vector diagrams. Offered: jointly with FISH 330; Sp.

ENVIR 341 Energy and Environment (3) NW Energy use. Fossil energy conversion. Oil, gas, coal resources. Air impacts. Nuclear energy principles, reactors, fuel cycle. Prerequisite: either MATH 112, MATH 124, or Q SCI 291; either CHEM 120, CHEM 142, CHEM 144, PHYS 114, or PHYS 121. Offered: jointly with CHEM E 341/M E 341; A.

ENVIR 350 Internship (1-5, max. 15) Fieldwork, coursework, or other learning experience conducted off-campus, but supervised by UW faculty. Credit/no-credit only.

ENVIR 360 Environmental Norms in International Politics (5) I&S Ingebritsen Surveys development of international environmental consciousness from 1960s to present. Models of “green development”; ways in which norms for resource use have entered global politics. Patterns of state compliance with international environmental agreements, and why states fall short of meeting their international obligations. Offered: jointly with JSIS B 350/SCAND 350.

ENVIR 362 Introduction to Restoration Ecology (5) I&S/NW J. BAKKER An introduction to ecological restoration of damaged ecosystems. Examines the philosophical base of restoration as well as the social, biological, and political forces that impact the success of any restoration project. Includes lectures, readings, case studies, and field trips. Offered: jointly with ESRM 362; A.

ENVIR 371 Anthropology of Development (5) I&S Development refers to social, economic, cultural, political transformations viewed as progress. Studied from anthropological perspectives. Historical, social context for emergence of ideas of development. Role of development in promoting national cultures. Impact of development on individual citizenship, families, rural-urban relations, workers, business, environment. Prerequisite: one 200-level ANTH course. Offered: jointly with ANTH 371.

ENVIR 379 Environmental Sociology (5) I&S/NW S. ASAH Social processes by which environmental conditions are transformed into environmental problems; scientific claims, popularization of science, issue-framing, problem-amplification, economic opportunism, and institutional sponsorship. Examination of social constructs such as ecosystem, community, and free-market economy. Use of human ecology to assess whether the current framing of environmental problems promotes ecological adaptability. Offered: jointly with ESRM 371/SOC 379; A.

ENVIR 384 Global Environmental Politics (5) I&S K. LITFIN Examines the globalization of environmental problems, including climate change, ozone depletion, and loss of biodiversity, as well as the globalization of political responses to these problems within the framework of globalization as set of interlinked economic, technological, cultural, and political processes. Offered: jointly with POL S 384.

ENVIR 385 Political Ecology of the World Food System (5) I&S/NW K. LITFIN Investigates the intersection of globalization and food politics, the pivotal role of petroleum in the world food system, and the commodity chains for some foods. Includes an optional service learning component. Offered: jointly with POL S 385.

ENVIR 410 Growing Stuff: Ecology, Economy, and Culture of Resource-Production Ecosystems (5) I&S S. HARRELL Examines the connections between ecological, economic, and cultural aspects of local ecosystems that produce natural resources, through three case studies involving reading, writing, class discussion, and three required Saturday or weekend field trips. Case studies may include forest products, seafood, dairy products, biofuels, orchard crops, or others. Offered: jointly with ANTH 410/ESRM 405.

ENVIR 415 Sustainability and Design for Environment (3) Cooper Analysis and design of technology systems within the context of the environment, economy, and society. Applies the concepts of resource conservation, pollution prevention, life cycle assessment, and extended product responsibility. Examines the practice, opportunities, and role of engineering, management, and public policy. Offered: jointly with CEE 495/M E 415.

ENVIR 416 Ethics and Climate Change (5) I&S S. GARDINER, L. NICHOLS Critical examination of the ethical issues surrounding climate change. Prerequisite: either one philosophy or one environmental studies course. Offered: jointly with PHIL 416.

ENVIR 417 Advanced Topics in Environmental Philosophy (5) I&S S. GARDINER Critical examination of issues in environmental philosophy. Topics vary. Prerequisite: one philosophy course. Offered: jointly with PHIL 417.

ENVIR 418 Communications and the Environment (5) I&S Examines the role of mass media in the resolution of environmental problems. Topics include strengths and weaknesses of media coverage, use of media by environmental groups and government agencies, media effects on public opinion, and mass communication and social movements. Offered: jointly with COM 418.

ENVIR 431 Ecopsychology (5) I&S P. KAHN Explores psychology of the human relationship with nature. Critically examines how ecopsychology can impact urban sustainability, human health, environmental education, and the design of new technologies. Specific topics include evolutionary psychology; human-animal interaction; biophilia; children and nature; indigenous cultures; and ecotherapy. Offered: jointly with ESRM 431/PSYCH 431; W.

ENVIR 433 Environmental Degradation in the Tropics (5) I&S/NW Christie Considers theories and controversies of environmental degradation in the tropics, ecological and social case studies of Central American rain forests and Southeast Asian coral reefs, and implications of environmental management techniques. Offered: jointly with JSIS B 433/SMEA 433.

ENVIR 439 Attaining a Sustainable Society (3) I&S/NW E. WHEAT Discusses diverse environmental issues, the importance of all areas of scholarship to evaluating environmental challenges, and the connections between the past and the future, to reveal integrative approaches to protect the long-term interests of human society. Offered: W.

ENVIR 440 Environmental Pedagogy (3) I&S/NW Introduces the art of teaching in non-traditional settings. Designed to help students become effective environmental educators such as park naturalists, interpretive guides, or urban garden educators. Students learn pedagogical philosophy

and gain skills to become more effective environmental educators.

ENVIR 459 Culture, Ecology, and Politics (5) I&S, DIV D. *PENA* Critical studies of class, gender and race differences in environmental politics. The political-economic dimensions of ecological change. Contemporary environmental movements including the varieties of bioregionalism, deep ecology, ecofeminism, ecosocialism, environmental justice, and social ecology. Offered: jointly with ANTH 459.

ENVIR 460 Power, Privilege, and Preservation (5) I&S/NW, DIV Critically examines strategies of resource managers to integrate local communities and cultures in protected areas management. Explores issues of power, privilege, and injustice and their impacts on individuals, society, and resource management decisions. Examines the potential for more socially just and ecologically sustainable approaches to protected areas management. Offered: A.

ENVIR 476 Introduction to Environmental Law and Process (3) I&S Bryant Use and application of key statutes in marine living resources management. Overview of administrative law and process. Basic legal research, reading, and briefing selected judicial opinions. Participatory case study component. Designed for non-law graduate and advanced undergraduate students. Offered: jointly with SMEA 476; A.

ENVIR 478 Topics in Sustainable Fisheries (3, max. 9) I&S/NW Seminar series featuring local, national, and internationally known speakers in fisheries management and conservation. Conservation/restoration in practice. Pre-seminar discussion section focusing on select readings. Topics may include harvest management, whaling, by-catch, salmon, marine protected areas, introduced species, citizen action, co-management, and marine ethics. Offered: jointly with BIOL 478/FISH 478.

ENVIR 480 Sustainability Studio (5, max. 10) Exploration of definitions and critical concepts of sustainability and analysis of sustainability practices on the UW campus. Student research teams analyze specific sustainability practices related to food, water, energy, and climate, among other topics. Sustainability project topic focus is different each quarter. Offered: AWSp.

ENVIR 485 Environmental Planning and Permitting in Practice (5) I&S T. WILDERMUTH Advanced survey of environmental planning and permitting as encountered by environmental and natural resource professionals in Washington State and beyond. Focuses on Washington State acts (SEPA, SMA, GMA) and Federal systems (NEPA, CWA, ESA) that shape environmental land use planning and federal planning and permitting systems Offered: W.

ENVIR 489 Peer Teaching Assistants in Environmental Studies (1-5, max. 10) Develops and enhances teaching skills through supervised direct teaching experience. Prepares students for graduate school teaching or other teaching by developing leadership, mentoring, and communication skills. Includes attending lectures and weekly preparation sessions, directed discussions with faculty and TAs, and teaching course lab, field, or discussion sections. Credit/no-credit only. Offered: AWSpS.

ENVIR 490 Pre-Capstone Seminar (2) P. MCDONALD Critique readings on environmental education and applied environmental work. Define a capstone experience based on personal interests and skills and complete a learning contract and a contextual bibliography for ENVIR 491. Prerequisite: minimum grade of 2.0 in ENVIR 300. Offered: ASP.

ENVIR 491 Capstone Experience ([1-12]-, max. 12) Capstone experiences, arranged during ENVIR 490, may include internships and other applied environmental work, directed research on environmental topics, or team efforts. Prerequisite: ENVIR 490. Offered: AWSpS.

ENVIR 492 Post-Capstone Seminar (-3) P. MCDONALD Build writing skills around course readings and discussion. Complete three final products: a capstone analysis paper summarizing and contextualizing work in ENVIR 491; an integrative essay reflecting on personal education; and a

formal capstone presentation. Prerequisite: ENVIR 491. Offered: ASP.

ENVIR 495 Advanced Topics in Environmental Studies (1-5, max. 15) Advanced topics in environmental studies. Offered: AWSpS.

ENVIR 496 Study Abroad - Advanced Environmental Studies (1-15, max. 15) Environmental studies course taken through an approved study abroad program for which there are no direct UW equivalents. Credit does not apply to major requirements without approval.

ENVIR 497 Seminar in Environmental Studies (1-3, max. 6) Intensive and advanced reading and discussion of selected works in interdisciplinary environmental studies. Topics vary. Credit/no-credit only.

ENVIR 498 Independent Study (1-5, max. 15) Independent reading and/or research. Limited to majors and minors in Environmental Studies.

ENVIR 499 Undergraduate Research (1-15, max. 15) Undergraduate research in environmental studies. Offered: AWSpS.

ENVIR 500 Graduate Seminar in Environmental Studies (1-5, max. 15) Exploration of interdisciplinary themes in environmental science communication. Topics vary.

ENVIR 501 Graduate Seminar in Environmental Management (1-5, max. 15) Addresses a contemporary interdisciplinary issue in environmental management by integrating the perspectives and theories of science/technology, public policy, and business. Format emphasizes interactive, hands-on approaches to problem solving, with visiting lectures by academic and/or external practitioners.

ENVIR 502 Business Strategy and the Natural Environment (4) Applies economic and business principles (marketing, accounting, operations) to understand interactions between business and the natural environment and how environmental issues influence business strategy. Theory and case studies explore strategies that both respond to and seek competitive advantage from firms' interactions with the environment.

ENVIR 511 Environmental Management - Keystone Project I (4) First in a two-quarter, project-base course in which graduate students in the Environmental Management Certificate work in teams of an environmental problem for a government, business, or non-profit organization. Keystone projects address a range of issues in environmental management, and integrate aspects of science, policy, and business. Offered: A.

ENVIR 512 Environmental Management - Keystone Project II (4) Second in a two-quarter, project-base course in which graduate students in the Environmental Management Certificate work in teams of an environmental problem for a government, business, or non-profit organization. Keystone projects address a range of issues in environmental management, and integrate aspects of science, policy, and business. Prerequisite: ENVIR 511. Offered: W.

ENVIR 550 Global Commercialization of Sustainable Technologies (4) Students work on faculty-supervised interdisciplinary teams (with students from business, sciences/engineering, and public policy) to develop business plans for commercializing environmentally friendly technologies around the world. The projects involve collaborating with EPA's Environmental Technology Commercialization Center, with Battelle Labs, and with Puget Sound businesses. Offered: jointly with B BUS 550.

ENVIR 585 Climate Impacts on the Pacific Northwest (4) *Mantua, Snover* Knowledge of past/future patterns of climate to improve Pacific Northwest resource management. Topics include the predictability of natural/human-caused climate changes; past societal reactions to climate impacts on water, fish, forest, and coastal resources; how climate and public policies interact to affect ecosystems and society. Offered: jointly with ATM S 585/ESS 585/SMEA 585; Sp.

ENVIR 600 Independent Study or Research ([1-5]-) Independent reading and research. Limited to students enrolled in the Program on the Environment's graduate certificate programs.

School of Environmental and Forest Sciences

Director

Thomas DeLuca

107 Anderson

The School of Environmental and Forest Sciences, through teaching, research, and outreach, generates and disseminates knowledge for the stewardship of natural and managed environments and the sustainable use of their products and services. Its vision is to provide internationally recognized knowledge and leadership for environmental and natural resource issues.

Founded in 1907, the school holds a position of national and international leadership in instruction and research. Its location in one of the world's largest forested regions provides students access to a unique urban-to-wildland world-class laboratory in which to study. Approximately 400 undergraduate and 175 graduate students are enrolled, taught by more than 50 faculty members. Students enjoy small classes and close association with faculty, as well as the diversity and superior facilities of a large research university.

The school's programs focus on the sustainability and functionality of complex natural resource and environmental systems, using an integrated, interdisciplinary approach across multiple scales involving the urban-to-wildland gradient. Its programs serve society generally, and natural resource professions in particular, with graduates well equipped to contribute to discussions and solutions to resource problems facing the region and the world. Interdisciplinary research and outreach centers and cooperatives include the Center for International Trade in Forest Products (CINTRAFOR), the Water Center, the UW Botanic Gardens, which include the Center for Urban Horticulture and the Washington Park Arboretum, the Olympic National Resources Center (ONRC), the Stand Management Cooperative (SMC), and the Precision Forestry Cooperative. For current information on these centers and cooperatives, visit www.sefs.washington.edu/centersPrograms/.

Office of Student and Academic Services

Director, Student and Academic Services

130 Anderson

sefsadv@uw.edu

The Office of Student and Academic Services in the School of Environmental and Forest Sciences assists prospective students with admission to the school and advises current students, including interpretation of school and University requirements and assistance in course planning. At the graduate level, faculty advisers assist students in choosing a course plan to help build an appropriate academic background for their research areas.

The office also helps to sponsor a career fair winter quarter. Students are strongly urged to seek summer employment and internship positions relevant to their career goals.

Research Programs

Areas of research are closely tied to the school's graduate program research areas. These include bioresource sci-

ence and engineering; forest ecology; forest soils; forest systems and bioenergy; restoration ecology and environmental horticulture; social sciences; sustainable resource management; and wildlife science.

Outreach Programs

The school, through its interdisciplinary centers and through collaboration with UW and external partners, undertakes and promotes continuing public and professional education for citizens of the state.

Facilities

The school occupies three central Seattle campus buildings: Alfred H. Anderson Hall, the Hugo Winkenwerder Forest Sciences Laboratory, and Julius H. Bloedel Hall. In addition, the Center for Urban Horticulture, a part of the UW Botanic Gardens, is located near the Union Bay natural area on the east side of the Seattle Campus. The center maintains a library that serves students, faculty, landscape professionals, and the public. The center's herbarium supports fieldwork in environmental horticulture, restoration ecology, and dendrology. Containing representative plant material from all parts of the United States, the collection includes dried, mounted specimens of shrubs, hardwood trees, and conifers. Another herbarium, complete in plants native to the Pacific Northwest and maintained by the Burke Museum and Department of Biology, is available for use by the school's students.

The school's laboratory facilities represent an extensive array of modern equipment for research, including optical equipment, electronic instrumentation for a wide variety of uses, gas chromatographs, spectrophotometers, and physical-test equipment. Specific laboratories are designed to study soil chemistry and soil physics, hydrology, polymer chemistry, tree physiology, genetics, wood and extractives chemistry, physics of fibrous composites, applied mechanics, wood process technology, silviculture, ecology, paleoecology, pathology, entomology, wildlife, landscape management systems, horticultural physiology, and horticultural plant materials.

The school computing facilities include computer systems and staff dedicated to specific research areas, a computer student laboratory, and a local area network with several servers offering access to the Internet and local printers.

Field Facilities

School field facilities include two major forested areas covering more than 4,000 acres, an arboretum, a natural area, and several cooperative research centers and stations. These lands offer a wide variety of terrestrial and aquatic characteristics favorable to a full range of scientific investigations. They also provide a natural-science laboratory for the many disciplines in the school concerned with the research and teaching of natural resources science and management.

The 4,200-acre Charles Lathrop Pack Experimental Forest is located 65 miles south of the University, near Eatonville, Washington, and is home to the Center for Sustainable Forestry at Pack Forest. Broad forest and soil diversity in this area has led to extensive biological, management, and engineering research. A full-time resident staff manages the facility, harmonizing its public-education objectives with academic and research objectives. Rustic but comfortable facilities which provide housing and support to research programs are also used extensively for conferences both within and outside the University. The Center for Sustainable Forestry is charged with discovering, teaching, and demonstrating the concepts of sustainable forestry, with special emphasis on the school's strategic themes of sustainable forest enterprise and sustainable land and ecosystem management in an urbanizing world.

The Olympic Natural Resources Center (ONRC) is a 19,000-square-foot research and education facility located on the west side of the Olympic Peninsula. The mis-

sion of the center is to conduct research and education on natural-resources management practices that integrate ecological and economic values. Innovative management methods that integrate environmental and economic interests into pragmatic management of forest and ocean resources are demonstrated. Both a forest management program and a marine program are in place to study the relationship between the terrestrial and marine environment.

The Lee Memorial Forest, approximately 160 acres, is located about 22 miles northeast of the University, near Maltby. This forested property provides valuable academic and research opportunities near the campus. Characterized by forest types and soils common to Western Washington lowlands, Lee Forest is used extensively for short field trips and for long-term research and demonstration projects especially related to changing land uses.

The Allan E. Thompson Research Center and the Joe E. Monahan Findley Lake Reserve and Research Area in the Cedar River watershed are used by the school in cooperation with Seattle Public Utilities for studies in forest ecology and soil science in representative low and high elevation forest ecosystems.

The UW Botanic Gardens include the Center for Urban Horticulture, which has offices, laboratories, public-education resources, and field sites for teaching and research along the shore of Union Bay. Its 10-acre Union Bay Gardens emphasize unusual ornamental and native woody landscape plants. The 60-acre Union Bay Natural Area, a former landfill, now a naturalized habitat, is used by University classes and the public to study principles and practices of restoration ecology. The Douglas Research Conservatory is a modern plant-growing facility with greenhouses, growth chambers, nursery, and classrooms. The Otis Douglas Hyde Herbarium is dedicated to plants of urban and environmental horticultural significance. The Miller Seed Vault stores seeds of Washington's rare and endangered native plants in support of restoration and research projects. The Elisabeth C. Miller Library is the Northwest's foremost public horticultural library, with books, journals, and other materials available to the gardening public, students, and professional horticulturists. The Center for Urban Horticulture also conducts courses, lectures, and special events for the public and professionals as part of the school's outreach program. Cooperative programs are in place with Washington State University/King County Cooperative Extension, whose horticulture program is housed at the center.

The UW Botanic Gardens' largest facility is the Washington Park Arboretum, a 230-acre collection of trees and shrubs in a naturalistic setting on the south shore of Lake Washington. Managed in cooperation with the City of Seattle Department of Parks and Recreation, the arboretum contains some 5,200 different kinds of woody plants that are available for research and academic study, making it the third most diverse arboretum in the United States. Displays and programs educate students and visitors about woody plants' diversity, natural ecology, and urban landscape use, as well as conserving endangered natural and cultivated plants. Classes in botany, dendrology, horticulture, wildlife, and landscape architecture make use of the collections, while the grounds are used for studies in soil science, ecology, and other research projects, including many independent student projects. The arboretum, established in 1934, offers numerous formal and informal classes for the general public and, in addition, serves the community as a public park and open space.

UNDERGRADUATE PROGRAM

Adviser

116 Anderson

(206) 543-3077

sefsadv@uw.edu

The School of Environmental and Forest Sciences offers the following programs of study:

- The Bachelor of Science degree with a major in environmental science and terrestrial resource management. Within this major, options in landscape ecology and conservation, restoration ecology and environmental horticulture, sustainable forest management, and wildlife conservation are offered.
- The Bachelor of Science degree with a major in biore-source science and engineering. Biore-source science and engineering has ABET accreditation which is recognized by the Council on Postsecondary Accreditation and the U.S. Department of Education as the accrediting agency for engineering in the United States.
- Minors in ecological restoration, and environmental science and terrestrial resource management.

Bachelor of Science

Suggested First- and Second-Year School Courses:

- *Environmental Science and Terrestrial Resource Management:* ENGL 131 (or other 5-credit English composition course); COM 220; BIOL 180, BIOL 200, BIOL 220; CHEM 120, CHEM 220; any 5-credit VLP course; MATH 120 or Q SCI 291; ESRM 210.
- *Biore-source Science and Engineering:* CHEM 142, CHEM 152, CHEM 162, CHEM 237, CHEM 238; ECON 200; ENGL 131 (or other 5-credit English composition course); HCDE 231; CHEM E 260; MATH 124, MATH 125, MATH 126, MATH 307; PHYS 121, PHYS 122, PHYS 123; Q SCI 381; BSE 150; BSE 201, BSE 202, BSE 248, and BSE 450.

Department Admission Requirements

- *Environmental Science and Terrestrial Resource Management:* Students in good academic standing may declare this major at any time.
- *Biore-source Science and Engineering:* Students may apply for freshman admission or upper-division admission. Applications are available in Student and Academic Services, 116 Anderson, or through the College of Engineering, 356 Loew, or by visiting the school website. Prospective upper-division BSE applicants should have most pre-engineering coursework completed before applying (see suggested sequencing at: www.sefs.washington.edu/academicPrograms/undergrad/bse/BSEflier.pdf), especially MATH 126 and CHEM 238. See adviser for further information. Admission is competitive; completion of requirements does not guarantee admission. Students may also apply to the chemical engineering degree program through the College of Engineering advanced admission program (see College of Engineering section for advanced admission entrance and continuation requirements).

Graduation Requirements

Environmental Science and Terrestrial Resource Management

180 credits, to include:

1. General Education Requirements (72-73 credits)

- a. *Written Communication (12 credits):* 5 credits English composition (ENGL 131 preferred); and seven additional credits.

- b. *Quantitative and Symbolic Reasoning* (20 credits): Q SCI 291, Q SCI 292, Q SCI 381; ESRM 250.
 - c. *Natural World* (29-30 credits): BIOL 180, BIOL 200, and BIOL 220; CHEM 120 and CHEM 220, or CHEM 142 and CHEM 152; ESRM 210 or ESS 210 or ESS 230/OCEAN 230 (5 credits only) or ESS 201 or ATM S 211.
 - d. *Visual, Literary, & Performing Arts (VLPA)* (10 credits): COM 202 or COM 220; five additional credits from the University VLPA list.
 - e. *Individuals & Societies (I&S)* (10 credits): ENVIR 235/ECON 235 or ECON 200 or ECON 201; and five additional credits, which are satisfied by core courses shown below.
2. *Major Requirements* (62 credits for the major):
 - a. *Core Courses* (17 credits): ESRM 200, ESRM 201, ESRM 300, ESRM 304.
 - b. *Restricted Electives*: minimum 35 credits of 300- or 400-level courses from within the School of Environmental and Forest Sciences for the major; 35 credits may come from one of the specified option course lists; 15 of the credits must be at the 400 level.
 - c. *Capstone* (10 credits): ESRM 462 and ESRM 463 or ESRM 464; or ESRM 494 and ESRM 496; or ESRM 494 and ESRM 495
 - d. All ESRM courses must be completed with a minimum 2.0 grade to count toward major requirements.
 3. *Free Electives*: As needed to bring minimum total to 180 credits.
- c. *Business Option*: Additional 12 credits minimum): ESRM 320, ESRM 321, and one course from approved list.
3. *Free Electives*: To bring minimum total to 180 credits.

Minors

Ecological Restoration

Minor Requirements: 25 credits as follows:

1. *Introduction to Restoration Ecology* (5 credits): Either ESRM 362/ENVIR 362, BES 362, or TESC 362.
2. *Capstone* (10 credits): One of the following sequences: ESRM 462/ENVIR 462, ESRM 463/ENVIR 463, ESRM 464/ENVIR 464; or BES 462, BES 463, BES 464; or TESC 462, TESC 463, TESC 464.
3. *Electives*: 10 credits from approved list of electives maintained by each campus.
4. Minimum 2.00 cumulative GPA for courses presented for the minor.
5. Minimum 15 credits from outside the student's major.
6. Minimum 15 credits completed through the UW.

Environmental Science and Terrestrial Resource Management

Minor Requirements: Minimum 25 ESRM credits, 20 of which must be upper division. Maximum 5 credits from BSE courses allowed.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: Forest resources emphasizes interactions between biotic and human systems at landscape to regional scales. It also provides a knowledge base to answer critical questions about how individual organisms and biotic systems respond to perturbations and stresses imposed by human activities, as well as how the environment affects human behavior and institutions. This knowledge enables the design of methods for the conservation, restoration, and sustainable use of biotic systems, and is critical for environmental decision making.

The goal of the bioresource science and engineering curriculum is to provide students with the training, tools, and experiences needed to be successful professionals in the paper and allied industries. At the same time, it provides a comprehensive education so graduates can effectively work and live in the world's complex society.

The goal of the environmental science and terrestrial resource management curriculum is to present fundamental knowledge and problem-solving experiences that enable students to understand the interdisciplinary dimensions of natural resource and environmental sciences and management. The structure of this curriculum provides great flexibility for students to pursue specialized fields through the formal program options, which include: landscape ecology and conservation; restoration ecology and environmental horticulture; sustainable forest management; and wildlife conservation; or to construct individual coursework to fit their educational goals.

Career opportunities abound in the area of environmental science and terrestrial resource management in both private and public sectors. One example is the projected need in the U.S. Forest Service, where it is estimated that one-third of the workforce will be retiring within the next five years.

- *Instructional and Research Facilities*: See the main School page for details.
- *Honors Options Available*: With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). See adviser for require-

ments or visit www.sefs.washington.edu/academicPrograms/undergrad/honors.shtml.

- *Research, Internships, and Service Learning*: The Office of Student and Academic Services regularly receives internship announcements, which are forwarded to all SEFS students via email and placed in the office's Career Corner. Students are strongly encouraged to pursue these opportunities, which include work experience with federal, state, and private organizations in environmental science, forestry, engineering, conservation, wildlife, horticulture, and other related fields.

Undergraduate research opportunities are available. Students should contact faculty members in their areas of interest. There are also foreign study and field opportunities within the College. Some are formal study with faculty members, others are through other agencies. Contact the Office of Student and Academic Services for more information.

- *Department Scholarships*: For majors, the School of Environmental and Forest Sciences has a strong scholarship program that provides in-state tuition to students, based on merit or need. Application information can be found at www.sefs.washington.edu/academicPrograms/scholarship/index.shtml.

The Washington Pulp and Paper Foundation provides scholarships for students enrolled in the bioresource science and engineering curriculum. For information, contact Professor Rick Gustafson in Bloedel 364 or visit the foundation website at: depts.washington.edu/wppf/.

- *Student Organizations/Associations*: The School has student organizations which organize student symposia, field trips, parties, slide shows and talks, public service projects, and other social activities. Current SEFS student organizations can be found at www.sefs.washington.edu/people/organizations.shtml.
- *Of Special Note*: Some classes include field trips or require laboratory supplies or material duplication at student expense.

Environmental Science and Terrestrial Resource Management voluntary program options:

All requirements for any of the four voluntary options are the same as for the major shown directly above. See the school's website for approved course lists.

1. *Landscape Ecology and Conservation Option*: At least 35 credits from the approved list.
2. *Restoration Ecology and Environmental Horticulture Option*: At least 35 credits from the approved list.
3. *Sustainable Forest Management Option*: At least 35 credits from the approved list.
4. *Wildlife Conservation Option*: At least 35 credits from the approved list.

Bioresource Science and Engineering

1. *General Education Requirements* (105 credits)

- a. *Written Communication* (12 credits): 5 credits English composition (ENGL 131 preferred); HCDE 231 (3 credits). (Additional 4 credits satisfied by BSE courses shown below.)
- b. *Natural World (NW)* (68 credits): MATH 125, MATH 126, MATH 307 (or AMATH 351), MATH 308 (or AMATH 352); Q SCI 381 or IND E 315 or STAT 390. CHEM 152, CHEM 162; CHEM 237, CHEM 238; PHYS 121, PHYS 122, PHYS 123; A A 260; 10 credits from the University NW list (outside the major).
- c. *Visual, Literary, & Performing Arts (VLPA)* (10 credits), chosen from the University VLPA list.
- d. *Individuals & Societies (I&S)* (20 credits): ECON 200; 10 credits chosen from the University I&S list (outside the major). (5 additional credits satisfied by required BSE courses.)

2. *Major Requirements* (74 credits)

- a. *Bioresource Science* (59 credits): BSE 150, BSE 201, BSE 202, BSE 248, BSE 391, BSE 392, BSE 406, BSE 420, BSE 421, BSE 422, BSE 426, BSE 430, BSE 436, BSE 480, BSE 481, BSE 497. All required BSE courses must be completed with a minimum 2.0 grade.
- b. *Engineering Electives* (15 credits minimum): Taken from a list of approved engineering electives.

GRADUATE PROGRAM

Graduate Program Adviser

116 Anderson, Box 352100

(206) 543-7081

sefsadv@uw.edu

Graduate programs in forest resources are designed to accommodate a wide range of education and career objectives. A student may concentrate on development of advanced professional skills and knowledge or on exploration of forest-related science.

Graduate programs offered in forest resources lead to the degrees of Master of Environmental Horticulture, Master of Forest Resources in Sustainable Forest Management, Master of Science, and Doctor of Philosophy. Graduate students may center their study in one of the special fields within the school's divisions.

Master of Environmental Horticulture

Admission Requirements

1. Evidence of academic readiness for the program.
 - a. Minimum 3.00 GPA in last 60 semester or last 90 quarter hours
 - b. Type and level of courses completed (generally students are not admitted if their academic performance has been below average or they do not have sufficient course background in their intended program of study)

- c. Adequate Scores on the GRE (550-Verbal, 600-Quantitative, 5.0-Writing, or 156-Verbal, 148- Quantitative, 5.0-Writing for tests after August 2011 recommended)
 - d. International applicants only: Minimum TOEFL score of 580 (237 for computer-based test, 92 for internet-based, and 7 for IELTS tests)
2. Evidence of knowledge of intended area of study.
 - a. Clearly written statement of objectives in pursuing further education.
 - b. Ideally, work or field experience in the planned area of study.
 3. Supporting evidence from reference persons (three recommendations total).
 - a. Recommendations from references familiar with applicant's academic ability and potential.
 - b. Letters of recommendation from employers in field related to applicant's educational goals.

Degree Requirements

45 credits, as follows:

1. SEFS 500, SEFS 503, SEFS 549, SEFS 561, ESRM 411, ESRM 451, ESRM 480, ESRM 481; and 13 credits of restricted electives.
2. Internship/independent research: A formal public presentation and written professional paper are required. A member of the EHUF faculty advise the student on his/her project, which is completed as SEFS 601 (9 credits minimum)
3. Electives (7 credits)

Master of Forestry, Sustainable Forest Management

Admission Requirements

1. Evidence of academic readiness for the program.
 - a. Minimum 3.00 GPA in last 60 semester or last 90 quarter hours
 - b. Type and level of courses completed (generally students are not admitted if their academic performance has been below average or they do not have sufficient course background in their intended program of study)
 - c. Adequate scores on the GRE (550-Verbal, 600-Quantitative, 5.0-Writing, or 156-Verbal, 148- Quantitative, 5.0-Writing for tests after August 2011 recommended)
 - d. *International Applicants Only:* Minimum TOEFL score of 580 (237 for computer-based test, 92 for internet-based, and 7 for IELTS tests)
2. Evidence of knowledge of intended area of study
 - a. Clearly written statement of objectives in pursuing further education.
 - b. Ideally, work or field experience in the planned area of study.
3. Supporting evidence from reference persons (3 recommendations total)
 - a. Recommendations from references familiar with applicant's academic ability and potential.
 - b. Letters of recommendation from employers in field related to applicant's educational goals.

Degree Requirements

45 credits, as follows:

1. SEFS 500, SEFS 509, SEFS 526
2. *Directed Electives:* 24 credits distributed among the following four areas, with at least two classes required in each area: forest biology/ecology, forest management,

forest measurements, forest policy and administration. See adviser for list of approved courses for each area.

3. *Unrestricted Electives:* 9 credits
4. *Capstone Project:* SEFS 600 or SEFS 601

Master of Science

Admission Requirements

1. Evidence of academic readiness for the program
 - a. Minimum 3.00 GPA in last 60 semester or last 90 quarter hours
 - b. Type and level of courses completed (generally students are not admitted if their academic performance has been below average or they do not have sufficient course background in their intended program of study)
 - c. Adequate scores on the GRE (550-Verbal, 600-Quantitative, 5.0-Writing, or 156-Verbal, 148- Quantitative, 5.0-Writing for tests after August 2011 recommended)
 - d. *International Applicants Only:* Minimum TOEFL score of 580 (237 for computer-based test, 92 for internet-based, and 7 for IELTS tests)
2. Evidence of knowledge of intended area of study
 - a. Clearly written statement of objectives in pursuing further education.
 - b. Ideally, work or field experience in the planned area of study.
3. Supporting evidence from reference persons (3 recommendations total).
 - a. Recommendation from references familiar with applicant's academic ability and potential.
 - b. Letters of recommendation from employers in field related to applicant's educational goals.

Degree Requirements

Minimum 45 credits, to include:

1. *Orientation:* SEFS 500
2. *Social and Natural Sciences Applied to Natural Resource and Environmental Issues:* SEFS 509
3. *Disciplinary Knowledge:* Minimum 10 credits from list of approved courses according to interest area
4. *Research Design and Quantitative Analysis:* Minimum 8 credits from list of approved courses according to interest area
5. *Current Topics:* 2 credits (500 level), topics vary from year to year
6. *Thesis Research:* SEFS 700 (9 credits minimum)

Current interest groups:

- Forest ecology
- Forest soils
- Bioresource science and engineering
- Restoration ecology and environmental horticulture
- Social sciences
- Sustainable resource management
- Wildlife science

Doctor of Philosophy

Admission Requirements

1. Evidence of academic readiness for the program.
 - a. Minimum 3.00 GPA in last 60 semester or last 90 quarter hours
 - b. Type and level of courses completed (generally students are not admitted if their academic performance has been below average or they do not have

sufficient course background in their intended program of study)

- c. Adequate scores on the GRE (550-Verbal, 600-Quantitative, 5.0-Writing, or 156-Verbal, 148- Quantitative, 5.0-Writing for tests after August 2011 recommended)
 - d. *International Applicants Only:* Minimum TOEFL score of 580 (237 for computer-based test, 92 for internet-based, and 7 for IELTS tests)
2. Evidence of knowledge of intended area of study
 - a. Clearly written statement of objectives in pursuing further education. PhD applicants should have earned a master's degree; most apply for the master's and then continue on to the PhD.
 - b. Ideally work or field experience in the planned area of study.
 - c. Publications written by the student related to the planned area of study.
 3. Supporting evidence from reference persons (3 recommendations total).
 - a. Recommendations from references familiar with applicant's academic ability and potential.
 - b. Letters of recommendation from employers in field related to applicant's educational goals.

Degree Requirements

90 credits, to include:

1. Same as for Master of Science degree (above) with one additional course in each of the categories:
 - a. Disciplinary knowledge
 - b. Research design and quantitative analysis
 - c. Current topics
2. Qualifying examination
3. General examination
4. *Dissertation Research:* SEFS 800 (27 credits minimum)
5. Final examination

Financial Assistance

The school has a limited number of appointments for teaching and research assistantships that provide a stipend, tuition waiver, and benefits. Teaching and research assistant responsibilities are half-time, allowing time to pursue a full academic load. Students may contact faculty directly about available research assistantships.

Fellowships without teaching or research obligations are also available. Requests for consideration must be submitted by December 31 for the following academic year. Applications are in the school's admission packet, available on the school's website at: www.sefs.washington.edu/academicPrograms/graduate/applicant.shtml.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsat/

SEFS 500 Graduate Orientation Seminar (1) Introduction to graduate study at the School, student resources and services, and current research. Required for all new graduate students in SEFS. Offered: A.

SEFS 501 Forest Ecosystems - Community Ecology (5) Community ecology of forest ecosystems. Quantitative methods of community description. Role of limiting factors, competition, and disturbance in determining community composition, structure, and stability. Introduction to forest ecosystem productivity. History and application of successional theory. Prerequisite: basic ecology course or permission of instructor. Offered: A.

SEFS 502 Analytical Techniques for Community Ecology (4) *J. BAKKER* Analysis of ecological data, focusing on community-level data. Topics include distance measures, group comparison methods (Mantel test, permutational MANOVA), ordinations (PCA, DCA, NMS), methods of identifying groups (cluster analysis, classification trees), as well as Indicator Species Analysis, diversity measures, and related topics. Prerequisite: Q SCI 482, which may be taken concurrently. Offered: W.

SEFS 503 Current Issues in Restoration Ecology and Environmental Horticulture (1, max. 10) Critical evaluation and discussion of published research in urban horticulture and restoration. Students and faculty present and discuss research methods and questions from current literature. Credit/no-credit only. Offered: AWSp.

SEFS 504 Research Processes in Forest Resources (4) Comprehensive survey of research processes for entering graduate students. Diagnostic and prescriptive evaluation of student research capabilities. Problem and hypothesis formulation, study design, multi-method strategies for gathering and analyzing data, and interpretation and presentation of results.

SEFS 505 Introduction to Pulp, Paper, and Bioproducts (3) *R. GUSTAFSON* Introduction to pulp and paper technology for BSE graduate students who do not have a prior background in pulp and paper. Broad overview of pulp and paper technology and the pulp and paper industry. Offered: A.

SEFS 507 Soils and Land Use Problems (4) *R. HARRISON* Environmental concerns of soils; how soil properties control potential and reasonable possibilities of land use. Includes factors controlling soil stability, hydrology, fertility, and movement of pollutants. Field trip oriented with weekly activity summaries. Students also conduct field trips to soil-use problem sites. Offered: W.

SEFS 509 Analysis of Research Problems (3) *S. RABOTYA-GOV* Natural resource issues emerge from interactions between humans and their biophysical world. Understanding resource problems and solutions requires integration of numerous areas of knowledge and methods of discovery. Objectives include exposure to, and development of, fundamental issues and skills essential for natural resource professionals, including development of a research plan. Offered: W.

SEFS 510 Graduate Studies in Forest Soils (1-5, max. 15) Offered: AWSpS.

SEFS 512 Biogeochemical Cycling in Soils and Forest Ecosystems (3) *D. ZABOWSKI* Elemental cycles in forests and soils. Fundamentals of processes involved in cycling are addressed along with alterations resulting from environment, vegetation, and soil types. Consideration of cycles of nutrients, metals, and other elements. Weekly discussion section reviews literature on biogeochemical cycling. Prerequisite: one soils course or permission of instructor. Offered: W, even years.

SEFS 513 Advanced Soil Genesis and Classification (5) *D. ZABOWSKI* Soil formation, morphology, classification, and relationship to the environment. Labs and field trips illustrate properties and processes of forest and grassland soils in Washington. Requires two weekend field trips and a graduate project. Prerequisite: CFR 510 or permission of instructor. Offered: Sp, even years.

SEFS 514 Advanced Forest Soil Fertility and Chemistry (4) *R. HARRISON* Chemical properties of soil, nutrient, and toxic elements; supply, retention, and loss of nutrients in soils; utilization of geochemical and ecosystem models such as GEOCHEM, MAGIC, TRICLE-DOWN, and ILWAS in developing a quantitative understanding of the chemical function of forest ecosystems. Prerequisite: general chemistry and geology of soils. Offered: Sp, odd years.

SEFS 515 Advanced Soil and Plant Analysis (3) *R. HARRISON* Plants and animals must acquire nutrient elements from their environment. Quantifying the composition of samples is the first step in understanding the processes

in natural and manmade systems. Sampling, handling, preparation, storage, and analysis stressed. Prerequisite: one botany or plant science course, instrumental analysis, soils. Offered: Sp, even years.

SEFS 519 Conducting Financial, Environmental, and Social Responsibility Performance Research (3, max. 12) *D. PAUN* Focuses on the concepts of accounting, finance, and financial statement analysis; techniques for analyzing firm performance; and conducting competitor analyses. Conduct in-depth, comparative performance analyses of U.S. and Canadian paper firms and publish the findings as a peer-reviewed manuscript in a journal. Offered: WSp.

SEFS 520 Geographic Information Systems in Forest Resources (5) *J. LAWLER* Applications of GIS technology to forest science and management. Fundamentals of GIS systems: data sources, preprocessing, map analysis, output; remote sensing as a source of GIS data, image analysis, and classification. Emphasis on GIS as a source of management and technical information requests. Offered: AWSp.

SEFS 521 Current Topics in Forest Resources (2-5, max. 10) Critical evaluation and discussion of published research in the broad field of forest resources. Topics and requirements vary. Offered: AWSp.

SEFS 522 Plant-Microbe Interactions (1, max. 3) *S. DOTY* Discusses current research related to forest tree-microbe interactions. Credit/no-credit only. Offered: W, odd years.

SEFS 523 Environmental Applications of Plants: Bioenergy and Bioremediation (3) *S. DOTY* Covers phytoremediation (removing pollutants using plants), biofuel production, and carbon sequestration. Focuses on the biology rather than the chemistry. Emphasizes the latest research on how current practices in these areas are being improved. Offered: A.

SEFS 525 Advanced Wildland Hydrology (4) *S. BOLTON* Advanced treatment of hydrologic cycle and basic hydrologic methods as applied to wildlands. Effects of forest management activities on hydrologic processes. Graduate focus on a detailed field or modeling hydrologic analysis. Offered: W.

SEFS 526 Seminar in Advanced Silviculture (3) Seminar on current and emerging silvicultural issues and underlying biological principles. Topics include: stand management to enhance wildlife, biodiversity, and high productivity in subtropical and tropical regions; computer simulation of stand growth; adaptation to changes in management objectives; soil conditions and productivity during stand rotation; and minimizing effects of catastrophic disruption. Prerequisite: ESRM 428. Offered: W.

SEFS 527 Ecosystems Seminar (1) Discussion by invited speakers on current research related to ecosystems. Credit/no-credit only.

SEFS 529 School of Environmental and Forest Sciences Seminar (1, max. 6) Weekly seminars covering School of Environmental and Forest Sciences topics, with lectures from scientists on and off campus. Credit/no-credit only. Offered: AWSp.

SEFS 530 Introduction to Restoration Ecology (3/5) *J. BAKKER* Provides introduction to ecological restoration of damaged ecosystems. Examines the philosophical base of restoration as well as the social, biological, and political forces that impact the success of any restoration project. Includes lectures, readings, case studies and field trips. Offered: A.

SEFS 535 Fire Ecology (4) *E. ALVARADO-CELESTIN* Fire regime concept as applied to fire ecology. Methodology for fire history research. History and function of forest fire in Western United States with emphasis on Pacific Northwest. One weekend field trip. Offered: A.

SEFS 540 Optimization Techniques for Natural Resources (5) *S. TOTH* Studies optimization techniques for natural resources managers including spatial optimization; linear, integer, and multi-objective programming; and stochastic and combinatorial optimization. Emphasizes model build-

ing rather than on algorithmic concepts. Prerequisite: MATH 308 or permission of instructor. Offered: Sp.

SEFS 541 Advanced Landscape Ecology (5) *J. LAWLER* Hands-on, applied, project-based research class. Students work in a team in conjunction with one or more outside partners to address real landscape-scale conservation problems. Covers scaling, landscape processes, pattern measurement, connectivity, landscape modeling, and conservation planning. Prerequisite: SEFS 501. Offered: W, odd years.

SEFS 549 Urban Horticulture Seminar (1, max. 6) Discussion by invited speakers on current topics in urban horticulture. Credit/no-credit only. Offered: A.

SEFS 550 Graduate Seminar (2-5, max. 10) Graduate seminar to evaluate and discuss current research topics. Topics and requirements vary. Offered: AWSp.

SEFS 554 Wildlife Seminar (1-2, max. 10) West Discussion of current research and application in wildlife biology and conservation. Credit/no-credit only. Offered: AWSp.

SEFS 561 Public Presentation in Urban Horticulture (2) Students learn to make public presentations in scientific, professional, and popular contexts and to interpret technical information for professional and lay audiences. Support materials, such as audiovisuals and graphics, are discussed. Offered: Sp.

SEFS 564 Advanced Forest Biometry (3/5) *E. TURNBLOM* Classical problems in analysis of forest populations and growth theory, and principles of parametric analysis and estimation processes in forest biometry. Offered: A, odd years.

SEFS 567 Topics in Advanced Ecology (3, max. 6) Discusses literature on active research areas or controversies in different branches of ecology. Offered: jointly with BIOL 567/FISH 567; W.

SEFS 570 Seminar in Environmental Sociology (3) Offered: jointly with SOC 570.

SEFS 571 Resource Policy and Administration (4) Study based on understanding of the actors, arenas, issues, and policy communities that form the context for policy development and implementation. Exploration of approaches to policy inquiry. Consideration of implications for both policy and management. Students develop a study design for course project. Offered: jointly with PB AF 592.

SEFS 574 Restoration Problem Solving: Ecological Engineering (5) *J. FRIDLEY* Exposes students to real-life problem solving that involves the design and manipulation of natural systems to perform ecological function. Focuses on the analysis, design, and implementation of discrete projects. Includes projects dealing with plants, hydrology, earthwork, waste and pollution management, as well as other resources and problems. Offered: A.

SEFS 590 Graduate Studies (1-5, max. 10) Study of emerging scientific developments in forest resources that may develop into regular course offerings. Offered: AWSpS.

SEFS 591 Seminar in Resource Policy and Management (1) Introduction and orientation for concurrent degree program between the Evans School of Public Affairs and the School of Environmental and Forest Sciences. Examines research and literature on contemporary issues related to the integration of natural resource science, policy, and management, through discussion among faculty, students, and invited speakers. Offered: jointly with PB AF 591.

SEFS 592 Environmental Policy Processes (3-4) Presents background to establish the need for environmental policy. Explores in a comparative manner, examining both successes and failures, various strategies that have been used or proposed to protect the environment. Offered: jointly with PB AF 590.

SEFS 595 Graduate Teaching Practicum (1-5, max. 5) Principles of teaching and learning applied to undergraduate instruction in the School of Environmental and Forest Sciences. Development, delivery, and evaluation of lectures

and homework assignments. Graduate teaching experience for SEFS students only. Credit/no-credit only. Offered: AWSp.

SEFS 600 Independent Study or Research (*-) Offered: AWSpS.

SEFS 601 Internship (3-9, max. 9) Graduate internship under the supervision of a faculty member. Credit/no-credit only. Offered: AWSpS.

SEFS 700 Master's Thesis (*-) Offered: AWSpS.

SEFS 800 Doctoral Dissertation (*-) Offered: AWSpS.

Bioresource Science and Engineering

BSE 150 Bioresource Science and Engineering Seminar (1) *R. GUSTAFSON* Introduces the science and technology of bioresources, including paper. Faculty, advisers, and guest lectures present on topics throughout the quarter. Credit/no-credit only. Offered: A.

BSE 190 Special Topics (1-5, max. 10) *NW R. BURA* Introduces current topics or courses under development to address the latest issues in bioresource science and engineering.

BSE 201 Introduction to Pulp, Paper, and Bioproducts (3) *NW* Broad overview of the science and technology of producing pulp and paper. Introduction of the BSE major course sequence and various career options. Examination of Pacific Northwest pulp and paper production facilities. Offered: W.

BSE 202 Pulp and Paper Lab and Field Studies (1) *NW* Laboratory and field trip studies in pulp and paper technology. Visits to local forest product manufacturing facilities. Required for BSE majors. Credit/no-credit only. Offered: W.

BSE 211 Creativity and Society (5) *VLPA/I&S G. ALLAN* Explores the nature of creativity and innovation in U.S. and other societies. Investigates the processes of thinking and techniques of idea generation in fields such as art, music, science, engineering and medicine. Offered: AWS.

BSE 248 Paper Properties (4) *NW* Acquaints students with raw material characteristics, physical and mechanical concepts, nomenclature, and procedures related to evaluating paper and paperboard product properties. Emphasizes structural, optical, mechanical, and moisture related properties. Offered: A.

BSE 309 Creativity and Innovation (2) *VLPA G. ALLAN* Understanding creativity and creative thinking; its challenges and dynamics through knowledge, judgment, planning, and observation. Techniques of creative thinking. Design and development of creative games. Computer-aided creative thinking. Creation, protection, and exploitation of a useful idea, including bargaining and negotiations. Offered: jointly with CHEM E 309; Sp.

BSE 391 Engineering Principles of Biorefineries (5) *NW F. PACHECO DE RESENDE* Introduction to biorefinery processes, including material and energy balances; sustainability aspects and environmental issues; and process modeling. Application of conservation laws to calculation of flow rates, chemical composition, and heat requirements of non-reactive and reactive systems typical of processes involving lignocellulosic biomass. Prerequisite: A A 260; either CHEM 237 or CHEM 223; MATH 307 Offered: A.

BSE 392 Bioresource Transport Phenomena (5) *NW F. PACHECO DE RESENDE* Focuses on transport phenomena involved in the biorefinery processes, including: momentum, heat, and mass transfer; paper drying, transport in biochemical and thermochemical processes, and product separation; and computational tools. Application of conservation laws to calculations of flow rates, chemical composition, and heat requirements involving lignocellulosic biomass. Prerequisite: BSE 391. Offered: W.

BSE 399 Undergraduate Internship (1-5, max. 15) Internship experience with a public agency or private company,

supervised and approved by a faculty member. Preparation of professional report reflecting on the experience is required. Credit/no-credit only. Offered: AWSpS.

BSE 406 Natural Products Chemistry (5) *NW R. BURA* Provides knowledge of chemistry of aqueous and solvent-rich systems, natural and synthetic polymers, and of interactions with inorganic materials and trace substances present in biomass processing systems. Covers the chemistry of lignocellulosic biomass components: cellulose, hemicellulose, lignin, and extractives. Presents the fundamental chemistry of biomass conversion process. Prerequisite: either CHEM 237 or CHEM 335. Offered: A.

BSE 420 Bioresource Engineering I (4) *R. BURA* Covers chemistry and reaction kinetics of conversion of biomass into molecules and fibers for use in making fuels and high value products. Includes chemical, biological, and thermal conversion of biomass. Develops applications of reaction kinetics to design reactor configurations. Prerequisite: BSE 406. Offered: W.

BSE 421 Bioresource Engineering II (4) *R. GUSTAFSON* Introduces basic mass transfer processes and physical basis: diffusion, convection, and mass transfer coefficients. Analyzes separation processes used in forest products and bioresources industries: membrane separations, flow through porous media, leaching and extraction, and evaporation. Includes industrial processes: dialysis, reverse osmosis, fiber web formation, pulp washing, and black liquor evaporation. Prerequisite: minimum grade of 2.0 in both BSE 392 and BSE 420. Offered: Sp.

BSE 422 Bioresource Engineering III (4) *R. GUSTAFSON* Introduces process simulators and their application to model unit operations and large scale integrated facilities such as biorefineries and pulp and paper mills. Covers applications to optimize processes for production and environmental impact, basic control equipment, process models used in control, types of controllers, and simple controller tuning. Prerequisite: minimum grade of 2.0 in BSE 421. Offered: A.

BSE 426 Bioresource Laboratory (4) *R. BURA* Covers bio-conversion laboratory techniques, focusing on design and operation of conversion processes to produce high value biorenewable products based on chemistry of biomass. Products include ethanol, pulp, glycols, and sugar streams. Includes significant product design component, and hands-on laboratory creation of products based on design. Prerequisite: BSE 420; Q SCI 381, which may be taken concurrently. Offered: Sp.

BSE 430 Papermaking Processes (5) Examines stock preparation operations (refining, screening, and cleaning) for papermaking and sheet forming as a unit of operations. Considers related unit operations of fluid dynamics and heat transfer as they apply to the commercial process. Covers sheet finishing operations of surface sizing, calendaring, and rewinding. Analyzes physics of fiber webs. Prerequisite: either BSE 392 or CHEM E 340. Offered: A.

BSE 436 Pulp and Paper Laboratory II (4) Paper testing, paper additives, flocculation, drainage, retention, heat transfer, and fluid dynamics in papermaking from virgin and recycled raw materials. Prerequisite: BSE 430. Offered: W.

BSE 480 Bioresource Design I (4) *I&S/NW R. GUSTAFSON* Design and production of biomass derived products meeting given specifications and financial constraints, integrating coursework knowledge to solve complex, open-ended design problems. Specific considerations in design include: economic, marketability, environmental, sustainability, ethical, health and safety, social, and political. Prerequisite: minimum grade of 2.0 in BSE 406; 2.0 in BSE 420; 2.0 in BSE 430. Offered: W.

BSE 481 Bioresource Design II (5) *I&S/NW R. GUSTAFSON* Comprehensive design of pulp and paper processes, including: economic feasibility studies; process equipment design, optimization, and control; and overall process integration and layout. Safety and ethics in the design process. Prerequisite: BSE 480. Offered: Sp.

BSE 489 Foreign Study (1-5, max. 15) Individual foreign study of topics for which there is not sufficient demand to warrant the organization of regular classes. Offered: AWSpS.

BSE 490 Special Topics (1-5, max. 15) Individual tutorial study of topics or courses under development to address the latest scientific developments in forest resources. Offered: AWSp.

BSE 497 Pulp and Paper Internship (1, max. 3) Technical and economic analysis of commercial pulp and paper installations. Structured visits to industrial operations to observe technical aspects of pulp and paper curriculum in practice. Preparation of visitation reports and analysis in seminar setting. Offered: AWSpS.

BSE 499 Undergraduate Research (1-5, max. 15) Individual research supervised by a faculty member. For advanced students desiring to extend their educational experience. Offered: AWSpS.

Environmental Science and Resource Management

ESRM 100 Introduction to Environmental Science (5) *I&S/NW R. HARRISON, D. ZABOWSKI* Covers the importance of the environment in society with particular emphasis on worldwide distribution and uses of resources, the role of natural and man-made environments, and causes of environmental degradation. Introduces ethics of conservation and recycling. Cannot be taken for credit if ESC 110 already taken. Offered: AWSpS.

ESRM 101 Forests and Society (5) *I&S/NW K. VOGT* Survey course covering forest ecosystems of the world, history of forestry and forest conservation, how forest ecosystems function, wildlife in forests, environmental issues in forestry, forest management, economics and products, and new approaches to forest management. Open to majors and nonmajors. Cannot be taken for credit if CFR 101 already taken. Offered: ASP.

ESRM 150 Wildlife in the Modern World (5) *I&S/NW* Covers major wildlife conservation issues in North America. Some global issues are also treated. Examples of topics include the conservation of large predators, effects of toxic chemicals on wildlife, old-growth wildlife, conservation of marine wildlife, recovery of the bald eagle, and gray wolf. Offered: A.

ESRM 200 Society and Sustainable Environments (5) *I&S/NW S. ASAH* Introduces the application of social concepts and theories to understanding and managing urban, urbanizing, and wildland landscapes in a sustainable manner. Of particular interest are factors that shape patterns on the landscape and resulting social and economic benefits. Explores landscapes across the urban to wildland gradient. Offered: WSp.

ESRM 201 Sustaining Pacific Northwest Ecosystems (5) *I&S/NW S. BOLTON, S. DOTY* Introduces the principles of ecology across an urban to wildland gradient and discusses how these landscapes can be sustainably managed. Explores basic ecological theories, plant communities, soil, climate, pollution, hydrology, and wildlife in classroom, labs, and field trips. Offered: ASP.

ESRM 210 Introductory Soils (5) *NW D. ZABOWSKI* Physical, chemical, and biological properties that affect distribution and use patterns of this important ecosystem component. Includes soil morphology and genesis, plant nutrition and nutrient cycling, soil water, microbiology, and application of soil properties to environmental concerns. One Saturday field trip. Offered: A.

ESRM 235 Introduction to Environmental Economics (5) *I&S/NW S. RABOTYAGOV* Introduces environmental and natural resource economics. Discusses fundamental economic concepts, including markets and private property. Includes basic tools used in the economic assessment of environmental problems and applies these methods to key

environmental issues. Offered: jointly with ECON 235/ENVIR 235; SpS.

ESRM 250 Introduction to Geographic Information Systems in Forest Resources (5) NW, QSR J. LAWLER Applications of GIS technology to forest science and management. Fundamentals of GIS systems: data sources, preprocessing, map analysis, output; remote sensing as a source of GIS data, image analysis, and classification. Emphasis on GIS as a source of management and technical information requests. Offered: AWSpS.

ESRM 300 Principles of Sustainability (2) I&S/NW Overview of principles of sustainability, including discussion of current literature, presentation, and discussion with practitioners, and methods for balancing social, economic, and ecological consequences of proposed policies and actions. Students develop a plan to further their studies in natural resources and environmental sustainability. Credit/no-credit only. Offered: W.

ESRM 304 Environmental and Resource Assessment (5) NW, QSR E. TURNBLOM, D. VOGT The processes of measuring, monitoring, and assessment; illustrated in diverse environmental and resource case studies. Explores the scientific method, hypothesis testing, sampling, and experimental designs, the role of questionnaires and polling techniques, remote sensing techniques, and population measurements. Offered: ASpS.

ESRM 311 Soils and Land Use (3) NW R. HARRISON Intended for students concerned with environmental problems in the Puget Sound basin; also for those who intend to become professionally involved in land-planning decisions. Focus is on the significance of soils in understanding environmental problems and in promoting intelligent land-use decisions. Basic concepts of soil systems are presented, stressing those aspects important in making land-planning decisions. Offered: W.

ESRM 315 Natural Resource Issues: Old-Growth and Forest Management (5) I&S/NW J. FRANKLIN Biological and social elements of current conflicts, especially those associated with old-growth and its disposition. Ecology of Pacific Northwest forests and landscapes, history of forest practices, application of emerging science, proposed alternative practices and policies, including analysis of current proposal and its predecessors and successors. Open to majors and nonmajors. Offered: Sp.

ESRM 320 Marketing and Management from a Sustainability Perspective (5) I&S/NW D. PAUN Introduction to business concepts relating to marketing, human resource management, small businesses and entrepreneurship, and economics in the context of environmental resource management. Offered: AS.

ESRM 321 Finance and Accounting from a Sustainability Perspective (5) I&S/NW D. PAUN Introduction to business concepts relating to finance, accounting, and international business in the context of environmental resource management. Offered: WS.

ESRM 323 Silviculture (5) NW E. TURNBLOM Silviculture techniques, including nursery practices, clear-cutting, seed trees, shelterwood, selection cutting, site preparation, regeneration methods, thinning, fertilization, chemicals, and regional silviculture in the Northeast, Southeast, Midwest, Rocky Mountains, California, Pacific Northwest, and Alaska. Multiple-use field trips. Offered: Sp.

ESRM 325 Environmental Applications of Plants: Bioenergy and Bioremediation (3) NW S. DOTY Explores current topics in forest bioresources with an emphasis on bioenergy, remediation of pollutants, and carbon sequestration. Offered: A.

ESRM 328 Forestry-Fisheries Interactions (4) NW Offered: jointly with FISH 328.

ESRM 331 Landscape Plant Recognition (3) NW S. REICHARD Field recognition of important groups of woody landscape plants, emphasizing diversity at the genus and family levels. Cultivated plant nomenclature. Plant descriptive

characters evident in the field with eye and hand lens. Hardiness and landscape applications. Offered: jointly with BIOL 331; Sp.

ESRM 350 Wildlife Biology and Conservation (5) NW A. WIRSING Wildlife ecology and population biology, and interrelationships between wild animals and humans, including encouragement of wildlife population growth and productivity, control of pest populations, and preservation of endangered species with emphasis on forest environments and forest faunas. Open to nonmajors. Prerequisite: either BIOL 162, BIOL 180, BIOL 220, or ESRM 162, any of which may be taken concurrently. Offered: A.

ESRM 351 Wildlife Research Techniques (8) NW Scientific approaches to the field study of wildlife populations and habitat, including species identification and natural history, experimental design, and report writing. Emphasis on direct experience with current field techniques used in the study of vertebrate populations and habitat. Prerequisite: either BIOL 162, BIOL 180, ESRM 162, or ESRM 350. Offered: Sp.

ESRM 362 Introduction to Restoration Ecology (5) I&S/NW J. BAKKER An introduction to ecological restoration of damaged ecosystems. Examines the philosophical base of restoration as well as the social, biological, and political forces that impact the success of any restoration project. Includes lectures, readings, case studies, and field trips. Offered: jointly with ENVIR 362; A.

ESRM 368 Natural Resource Measurements (4) NW E. TURNBLOM Introduction to principles of measurement, basic field measurement skills, measurement of vegetation, including stand examination, timber cruising, size, weight, volume and biomass of trees, and stream flow. Laboratories include field exercises on sampling techniques for trees and lesser vegetation and linear regression modeling to predict quantities from basic measurements. Prerequisite: either IND E 315, Q SCI 381, STAT 220, or STAT 311. Offered: W.

ESRM 371 Environmental Sociology (5) I&S/NW S. ASAH Social processes by which environmental conditions are transformed into environmental problems; scientific claims, popularization of science, issue-framing, problem-amplification, economic opportunism, and institutional sponsorship. Examination of social constructs such as ecosystem, community, and free-market economy. Use of human ecology to assess whether the current framing of environmental problems promotes ecological adaptability. Offered: jointly with ENVIR 379/SOC 379; A.

ESRM 381 Management of Wildland Recreation and Amenities (3) NW Introduction and overview of wildland recreation and amenities management. Agency history and objectives explored along with integration of recreation with other land uses. Water, forestry, wildlife, and wilderness resources for recreational uses discussed along with role of private enterprise in recreation and amenities. Topics of current and local interest. Offered: A.

ESRM 399 Field or Teaching Internship (1-5, max. 15) Internship experience in undergraduate teaching or in the environmental field, supervised and approved by a faculty member. Preparation of professional report reflecting on the experience is required. Credit/no-credit only. Offered: AWSpS.

ESRM 400 Natural Resource Conflict Management (3) I&S/NW C. RYAN Introduction to the causes, dynamics, and consequences of natural resource conflicts as well as the range of procedural interventions used to manage conflict. Specific cases of environmental conflict and alternative dispute resolution procedures are examined. Emphasis on developing skills to effectively analyze, manage, and resolve natural resource conflicts. Offered: W.

ESRM 401 Spring Comes to the Cascades (3) NW Examines the interaction between forests, environment, and growth at three locations in the Cascades, from lowlands to alpine. Field trips and associate observations are linked

to classroom or group project activities and are used to understand a number of ecological, physiological, and meteorological concepts. Offered: Sp.

ESRM 403 Forest and Economic Development in the Developing World (4) NW J. EASTIN Examines the relationship between forests and economic development in tropical countries. Topics include the role of population growth, poverty, land tenure, and international trade on forest use as well as theories of economic development. Case examples of forest-based economic development in different countries and regions. Offered: A.

ESRM 404 Plant Microbiology Laboratory (5) NW S. DOTY Focuses on measuring impacts of beneficial microorganisms on plants. Assays include colonization of plants, N stress alleviation, photosynthesis, and growth enhancement. Microorganisms are characterized by phytohormone production, provision of nutrients, and growth. Microbial strains are identified using standard molecular analysis methods (PCR, cloning, sequencing). Includes short lectures. Prerequisite: ESRM 201; BIOL 180; either CHEM 120 or CHEM 142 Offered: W.

ESRM 405 Growing Stuff: Ecology, Economy, and Culture of Resource-Production Ecosystems (5) I&S S. HARRELL Examines the connections between ecological, economic, and cultural aspects of local ecosystems that produce natural resources, through three case studies involving reading, writing, class discussion, and three required Saturday or weekend field trips. Case studies may include forest products, seafood, dairy products, biofuels, orchard crops, or others. Offered: jointly with ANTH 410/ENVIR 410.

ESRM 409 Soil Ecology (5) NW Soil organisms in forest and other ecosystems, decomposition, nutrient cycling. Nitrogen transformation, mycorrhizae, effects of forest management. Offered: A.

ESRM 410 Forest Soils and Site Productivity (5) NW R. HARRISON Considers unique properties and processes occurring in forest soils throughout the world with emphasis on soils of Pacific Northwest and aspects of forest soils that affect productivity. Two all-day Saturday field trips and one Saturday-Sunday field trip required. Offered: A, odd years.

ESRM 411 Plant Propagation: Principles and Practice (3) NW S. KIM Science and practice of plant propagation including sexual (seed) and asexual (cutting, layering, grafting) propagation. Includes discussion of physiological effects, methodology and laboratory exercises. Wide variety of plants covered. Intended for majors in urban horticulture and urban forestry and others interested in reproducing landscape plants. Offered: Sp.

ESRM 412 Native Plant Production (3) NW J. BAKKER Advanced plant propagation techniques, emphasizing native plants, propagation for restoration projects, and unique problems associated with providing appropriate plant material for restoration or conservation purposes. Emphasizes greenhouse and fieldwork, and includes lectures, field trips, and a class project. Offered: Sp.

ESRM 413 Soil Genesis and Classification (5) NW D. ZABOWSKI Soil formation, morphology, classification, and relationship to the environment. Labs and weekend field trips illustrate properties and processes of forest and grassland soils in Washington. Offered: Sp, even years.

ESRM 414 Forest Soil Fertility and Chemistry (3) NW R. HARRISON Tree growth depends, in part, on the interaction between chemical and biological activities within a given soil: the biological and chemical parameters that influence the growth; soil solution chemistry and surface reactions; reactions and processes that control essential plant nutrient levels and forms in soil solutions. Offered: Sp, odd years.

ESRM 415 Biology, Ecology, and Management of Plant Invasions (5) NW S. REICHARD Explores how biological invasions are one of the most serious threats to the preservation of biodiversity worldwide. Explores the vectors which

move plants and their pests, the biology and impacts of the invasive species, and management and policy approaches. Prerequisite: either BIOL 162, BIOL 220, BIOL 333, BIOL 471, BIOL 472, ESRM 201, ESRM 401, ESRM 472, or ESRM 473. Offered: A, even years.

ESRM 416 Field Survey of Wildland Soils (3) NW R. HARRISON, D. ZABOWSKI Study of soils in remote sites about which little information is available. Focus is field trip in Cascade Mountains just north of Glacier Peak with prior study of hiking area, soil and ecosystem changes, and wilderness use. Offered: S, odd years.

ESRM 420 Wildland Fire Management (5) NW E. ALVARADO-CELESTIN Principles of wildland fire behavior, ecology, and management. Weather, fuels, and topography effects on fire behavior. Forest structure influence on historical and current fire ecology. Principles of firesafe forests. Management issues of fire control and use in wilderness, multiple-use forest, and the wildland-urban interface. Offered: Sp.

ESRM 425 Ecosystem Management (5) NW J. FRANKLIN Scientific and social basis for ecological forestry. Forest practices to achieve integrated environmental and economic goals based upon material models of disturbance and stand development including alternative harvesting methods; adaptive management and monitoring; certification and global issues. Prerequisite: ESRM 323. Offered: A.

ESRM 426 Wildland Hydrology (4) NW S. BOLTON Introduction to the hydrologic cycle and basic hydrologic methods as applied to wildlands. Effects of forest management activities on hydrologic processes. Offered: W.

ESRM 428 Principles of Silviculture and Their Application (5) NW Ford Focuses on the biology of major tree species in the PNW and their use in silviculture, stand development in plantation forest systems and its relationship to forest yield, the advantages and limitations of plantation silviculture relating to specific biotic, abiotic, and economic conditions, and management for objectives other than time yield. Prerequisite: ESRM 323. Offered: A.

ESRM 429 Environmental Science and Resource Management Seminar (1, max. 6) NW Weekly presentations covering environmental topics by scientists on and off campus. Credit/no-credit only. Offered: AWSp.

ESRM 430 Remote Sensing of the Environment (5) NW Moskal Focuses on hyperspatial remote sensing fundamentals, interpretation and manipulation of aerial photography, satellite imagery, and Light Detection and Ranging (LiDAR). Uses traditional and 'state of the art' image processing techniques. Students learn to evaluate available hyperspatial remote sensing data sources and design simple projects related to environmental applications. Offered: W.

ESRM 431 Ecopsychology (5) I&S P. KAHN Explores psychology of the human relationship with nature. Critically examines how ecopsychology can impact urban sustainability, human health, environmental education, and the design of new technologies. Specific topics include evolutionary psychology; human-animal interaction; biophilia; children and nature; indigenous cultures; and ecotherapy. Offered: jointly with ENVIR 431/PSYCH 431; W.

ESRM 435 Forest Entomology (3) NW Introduction to general entomology, characteristics, life histories, ecological relations, prevention, and control of forest insects. Offered: Sp.

ESRM 436 Laboratory in Forest Entomology (2) NW

ESRM 441 Landscape Ecology (5) NW J. LAWLER Basic landscape ecology concepts, including patches, corridors, networks, spatial dynamics; island biogeographic principles; landscape analysis methods; landscape models. Applications of landscape ecology in resources management (e.g., cumulative effects, cutting, patterns, anadromous fisheries, management of wildlife populations, and open-space planning). Offered: A.

ESRM 442 Forest Ecology and the Sierra Nevada and White Mountains (5) NW An ongoing research project used as a vehicle for learning field methods, natural history, Sierra Nevada species, and ecological theory. Fieldwork occurs on the Yosemite Forest Dynamics Plot, a long-term study of community dynamics. Prerequisite: either ESRM 200, ESRM 201, or ENVIR 490. Offered: S.

ESRM 450 Wildlife Ecology and Conservation (5) NW A. WIRSING Covers principles of wildlife ecology such as habitat use and selection, population and metapopulation dynamics, and predator-prey interactions, and illustrates how they apply to wildlife conservation problems with terrestrial, aquatic, and marine wildlife. Prerequisite: minimum grade of 2.0 in ESRM 350. Offered: W.

ESRM 452 Field Ornithology (3) NW J. MARZLUFF Students learn field identification skills and are introduced to field methodologies through required indoor labs, field trips, and field exercises. Exercises include study of survey techniques, feeding ecology, and behavior. Students are required to share field trip costs. Prerequisite: ESRM 456 which may be taken concurrently; either BIOL 162, BIOL 180, or BIOL 220, any of which may be taken concurrently. Offered: A.

ESRM 455 Wildlife Seminar (1, max. 8) NW Discussion of current research and application in wildlife biology and conservation. Credit/no-credit only. Offered: AWSp.

ESRM 456 Biology and Conservation of Birds (3) NW J. MARZLUFF Major principles of natural history, avian reproductive biology, population ecology, and national and international conservation strategies for both hunted and unhunted birds. Emphasis on western United States. Prerequisite: either BIOL 162, BIOL 180, or BIOL 220, ESRM 162, any of which may be taken concurrently. Offered: A.

ESRM 457 Fish and Wildlife Toxicology (3/5) NW Overview of fish/wildlife toxicology: history of the field; regulations; methods used to assess risks contaminants pose to fish/wildlife; classes of contaminants and their direct, sublethal and indirect effects; and contemporary threats of contaminants to fish/wildlife, their habitats and prey. Includes laboratory. Offered: jointly with FISH 455; W.

ESRM 458 Management of Endangered, Threatened, and Sensitive Species (5) NW J. MARZLUFF Biological underpinnings and political realities of endangered species management, including: legal issues, recovery teams, citizen rights, extinction, rarity, proactive management, captive propagation, reintroduction, species endangered in the Pacific Northwest. Students revise endangered species recovery plans. Offered: W.

ESRM 459 Wildlife Conservation in Northwest Ecosystems (3) NW J. MARZLUFF, A. WIRSING Extended field course offers wildlife science students personal interactions with wildlife managers and wildlife populations in strategic public and private lands in the northwestern United States and southern Canada. Students share costs of trip. Offered when there is sufficient student demand. Prerequisite: ESRM 350; may not be repeated. Offered: Sp.

ESRM 461 Forest Management and Economics (5) I&S/NW Presents important contemporary decision tools, especially how they are used by forest managers to interpret, critique, and develop their basic applications in forestry. Topics include optimization techniques, including linear and nonlinear programming, concepts in interest and time evaluation of alternatives, marginal cost analysis, and computer spreadsheet assisted analysis. Prerequisite: Q SCI 381 or STAT 311; Q SCI 291 or MATH 124. Offered: Sp.

ESRM 462 Restoration Ecology Capstone: Introduction (2-) NW First of a three-course capstone sequence in restoration ecology. Students review and assess project plans and installations. Class meets with members of previous capstone classes to review their projects. Offered: jointly with BES 462/TESC 462.

ESRM 463 Restoration Ecology Capstone: Proposal and Plan (-3-) NW Student teams prepare proposals in

response to requests for proposals (RFPs) from actual clients. Clients may be governments, non-profit organizations, and others. Upon acceptance of the proposal, teams prepare restoration plans. Prerequisite: ESRM 462. Offered: jointly with BES 463/TESC 463.

ESRM 464 Restoration Ecology Capstone: Field Site Restoration (-5) NW Teams take a restoration plan developed in ESRM 463 and complete the installation. Team participation may include supervision of volunteers. Teams prepare management guidelines for the client and conduct a training class for their use. Prerequisite: ESRM 463. Offered: jointly with BES 464/TESC 464.

ESRM 465 Economics of Conservation (3) I&S/NW J. PEREZ-GARCIA Economic principles and their use in the analysis of contemporary conservation problems. Particular emphasis directed toward the conservation of forest resources in the Pacific Northwest and related policy issues. Offered: Sp.

ESRM 468 Forest Operations (5) Examines forest land surveying, low volume road access planning, and timber harvesting concepts. Low volume road design principles and practical application of field road location. Overview of road drainage design, construction techniques and maintenance. Reviews basic harvest systems and setting design processes, including cost, production control, environmental and safety considerations. Prerequisite: ESRM 250; ESRM 368; ESRM 323 which may be taken concurrently. Offered: Sp.

ESRM 470 Natural Resource Policy and Planning (5) I&S/NW Introduction to and analysis of environmental policy-making processes, with a focus on forest and land policy and law. Use of policy models to examine the interaction of agencies, interest groups, Congress, and the courts in the legislative process. Policy implementation, evaluation, and change are also addressed. Offered: W.

ESRM 473 Restoration in North America (5) NW K. EWING Investigates the vegetation and climate of North American ecosystems. Includes an ecosystem by ecosystem review of how restoration is done in each system, including some tropical ecosystems. Offered: W.

ESRM 474 Restoration Problem Solving: Ecological Engineering (5) J. FRIDLEY Exposes students to real-life problem solving that involves the design and manipulation of natural systems to perform ecological function. Focuses on the analysis, design, and implementation of discrete projects. Includes projects dealing with plants, hydrology, earthwork, waste and pollution management, as well as other resources and problems. Offered: A.

ESRM 478 Plant Ecophysiology (5) NW S. KIM Explores physiological mechanisms that underlie ecological observations, including how above- and below-ground microclimates develop and affect plant physiological processes. Discusses acclimation to environmental change along with species differences in physiological processes and plant's occupation of heterogeneous environments. Laboratories emphasize field measurement techniques. Prerequisite: either BIOL 180, B BIO 180, TESC 120, ESRM 201, ESRM 162, or FISH 162. Offered: jointly with BIOL 424; W.

ESRM 479 Restoration Design (5) I&S/NW K. EWING, J. FRIDLEY Covers the design process in ecosystem restoration by presenting a series of weekly design problems that students solve as teams. Categorizes problems by disturbance type, including restoration necessitated by agriculture, urbanization, salt-marsh filling or diking, construction of transport corridors, etc. Includes a team design portfolio. Offered: Sp.

ESRM 480 Landscape Plant Science and Sustainable Management (5) NW S. KIM Principles and practices of plant management in urban and modified landscapes. Physiological basis for plant management and selection; site analysis and preparation; plant installation and after-care; plant performance evaluation; long-term sustainable management and plant health care. Offered: A, even years.

ESRM 489 Foreign Study (1-5, max. 15) Individual foreign study of topics for which there is not sufficient demand to warrant the organization of regular classes. Offered: AWSpS.

ESRM 490 Special Topics (1-5, max. 15) Individual tutorial study of topics or courses under development to address the latest scientific developments in forest resources. Offered: AWSpS.

ESRM 491 Field Studies (1-5, max. 10) Independent field study or one time organized field courses with emphasis outside the traditional classroom. Offered: AWSpS.

ESRM 494 Senior Capstone Proposal (5-) Selection of a capstone topic and type, either thesis or project. Students select a faculty adviser to assist them in the proposal writing process. Regular or Honors credit. Prerequisite: ESRM 200; ESRM 201; ESRM 300; ESRM 304. Offered: AWSpS.

ESRM 495 Senior Project (-5) Individual study of an environmental science and resource management problem under direction of a faculty member. Requires a written project report. Generally taken in last year of residence. Prerequisite: ESRM 494, which may be taken concurrently. Offered: AWSpS.

ESRM 496 Senior Thesis (-5) Statistical analysis and presentation of research results and discussion of results in a thesis paper. Students work with faculty advisers to complete field or laboratory research and then prepare the senior thesis. Prerequisite: ESRM 494, which may be taken concurrently. Offered: AWSpS.

ESRM 499 Undergraduate Research (1-5, max. 15) Individual research supervised by a faculty member. For advanced students desiring to extend their educational experience. Offered: AWSpS.

Marine and Environmental Affairs

3707 Brooklyn Avenue Northeast

The School of Marine and Environmental Affairs offers an interdisciplinary program of study leading to the Master of Marine Affairs degree. Marine affairs concerns management and policy questions on the uses of the coastal and offshore regions of the ocean and their resources. The core curriculum includes courses in marine affairs, economics, law, marine sciences, and public affairs, with emphasis on human dimensions of the environment.

GRADUATE PROGRAM

Graduate Program Coordinator

3707 Brooklyn NE, Box 355685

(206) 543-4326, (206) 543-7004

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Master of Marine Affairs

The School of Marine and Environmental Affairs offers an internationally recognized master's degree program for launching careers in marine policy and administration. Students learn creative approaches to resolving marine problems and conflicts, charting rational use of living and non-living marine resources, and managing human activities on the coasts, at sea, and in estuaries, wetlands, and large inland bodies of water.

A major program objective is to prepare students for professional careers in policy making, management, teaching, and research. Breadth of study is emphasized, and all students are expected to gain familiarity with relevant aspects of the social, technological, and environmental sciences.

In addition, each student is expected to develop a professional and scholarly proficiency in a particular aspect of marine affairs.

Completion of the MMA program normally requires two academic years for students who have received a baccalaureate degree. During the first year, students develop a comprehensive understanding of the marine affairs field and acquire analytic skills. During the second year, a special competence is developed in a topical area of interest (e.g., ocean and coastal management, ports and marine transportation, marine environmental protection, marine resources management, ocean and coastal tourism and recreation), and a thesis is prepared and presented under the guidance of a faculty Supervisory Committee. Individual courses of study may be adjusted to accommodate prior experience and academic background. Mid-career and other qualifying students can apply to follow a non-thesis track emphasizing additional coursework and a degree project.

Admission Requirements

Admission to the School of Marine Environmental Affairs is based on evaluation of required application materials in competition with other applicants. Required materials include Graduate Record Examination general-test scores, completed departmental supplementary information form, three letters of recommendation, official academic transcripts, and a statement of career objectives. Applicants must apply directly to, and be accepted by, the University's Graduate School. Course sequences begin each autumn quarter, and new students normally are admitted only at that time.

Degree Requirements

59 credits as follows:

1. The Core Curriculum (29 credits minimum)

- a. *Introduction to Marine Affairs*: SMEA 500 , SMEA 501
- b. *Economics*: SMEA 536 . (The Graduate Program Coordinator may waive SMEA 536 for students with adequate undergraduate training, but students must take at least one economics course at the 400 or 500 level. The following courses are suggested: SMEA 537 , SMEA 538 , ECON 435 , ECON 436 .)
- c. *Marine Law*: SMEA 506/LAW 561 or SMEA 515/LAW 565
- d. *Policy Analysis*: SMEA 519 or PB AF 513
- e. *Policy Processes*: One of the following: SMEA 507 , SMEA 508 , SMEA 521 , SMEA 523 , PB AF 590/CFR 592 (when course content appropriate; check with Graduate Program Coordinator); PB AF 592/FM 571
- f. *Marine Science*: SMEA 591 . (The Graduate Program Coordinator may waive from SMEA 591, but students must take at least one 400- or 500-level science course. The following courses are suggested: SMEA 510 ; FISH 450 (4); FISH 454 ; BIOL 472 ; or BIOL 473 .)
- g. *Quantitative Skills*: One of the following: The required skill level is equivalent to intermediate statistics, including an understanding of point estimates, confidence intervals and regression equations. Students not meeting this requirement through undergraduate classes or experience should take one appropriate course while at SMEA. Recommended courses include: Q SCI 381 , STAT 301 , or STAT 311 . (Although 300-level courses do not qualify for graduation credits, the school waives 3 credits of the 59-credit SMEA graduation requirement for students completing one of these courses.)
- h. *Social Science Data Collection and Analysis*: One of the following: SMEA 476 , SMEA 512 , PB AF 507 , GEOG 425 , or CRF 400
- i. *Marine Affairs Seminar*: SMEA 550

2. *Electives (20 credits minimum – or 10 additional elective credits for non-thesis track)*: Elective credits must qualify as graduate credit (typically 400- or 500-level courses) offered in any UW department or school. Students should consult their advisor or thesis committee chair in choosing a set of elective courses. At least 6 credits, and two courses must come from the following list of SMEA courses: SMEA 433 , SMEA 480 , SMEA 485 , SMEA 499 (var.) (when subject is African Population, Development and Marine Environment), SMEA 509 , SMEA 510 , SMEA 514 , SMEA 516 , SMEA 517 , SMEA 540 , SMEA 555 , SMEA 581 , SMEA 550 (cannot simultaneously be used to meet core requirements).
3. *The Thesis and Thesis Presentation (10 credits minimum – for thesis track students)*: SMEA 700 (minimum 9 credits); SMEA 570 .
4. *Career Skills (non-credit requirement)*: First year: One career counseling appointment during fall quarter. One resume review session during winter quarter. Second year: One career counseling appointment during fall quarter. One resume review session during winter quarter.

Financial Aid

The School of Marine Affairs has a limited number of positions for graduate student appointments as research assistants. Applicants in need of support are urged to investigate outside sources of funding.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

SMEA 103 Society and the Oceans (5) I&S/NW Explores the social and policy dimensions of the ocean environment and ocean management policy. Pays attention to how human values, institutions, culture, and history shape environmental issues and policy responses. Examines case studies and influential frameworks, such as the ocean as "tragedy of the commons." Offered: jointly with ENVIR 103/JSIS B 103.

SMEA 407 International Organizations and Ocean Management (3) I&S Surveys the manner in which international regimes and organizations govern and manage ocean use. Primary emphasis is on the analysis of the effectiveness of regimes and of processes that support or constrain organizations in different issues or regions, such as climate change or the Arctic.

SMEA 430 Development and the Environment (3) I&S, DIV Dolsak Critically examines policy approaches that balance economic development, natural resource use/environmental protection, and socioeconomic and political diversity. Examined policy approaches include market instruments, standards, information-based regulation, and corporate responsibility. Offered: A.

SMEA 433 Environmental Degradation in the Tropics (5) I&S/NW Christie Considers theories and controversies of environmental degradation in the tropics, ecological and social case studies of Central American rain forests and Southeast Asian coral reefs, and implications of environmental management techniques. Offered: jointly with ENVIR 433/JSIS B 433.

SMEA 476 Introduction to Environmental Law and Process (3) I&S Bryant Use and application of key statutes in marine living resources management. Overview of administrative law and process. Basic legal research, reading, and briefing selected judicial opinions. Participatory case study component. Designed for non-law graduate and advanced undergraduate students. Offered: jointly with ENVIR 476; A.

SMEA 480 Human Dimensions of Fishery Management (3) I&S/NW Techniques and philosophy for conservation,

management, and development of harvested marine populations. Emphasis on integration of ecological, sociological, and economic dimensions of institutional decision making for policy formation in uncertain environments. Offered: jointly with FISH 480.

SMEA 485 Pacific Recreation and Tourism Issues (3) I&S/NW, DIV Miller Examines how marine tourism links people to one another and to the environment. Utilizes concepts from cultural anthropology, sociology, political science, geography, ecology, conservation biology, and planning. Topics include: ecotourism, ethnic tourism, marine parks and protected area, fisheries, sustainable development, tourism ethics, and marine environmental education.

SMEA 499 Undergraduate Research (1-15, max. 15) Research on assigned topics under the supervision of faculty members.

SMEA 500 Introduction to the Human Dimensions of Global Change (3) D. FLUHARTY, T. LESCHINE Introduces students to human dimensions of global change in the marine environment. Examines how changes are physical, social, and institutional; and how global climate change affects the ability of ecosystems to provide services that support humankind. Explores changes the use of coastal and ocean resources. Offered: A.

SMEA 501 Integrated Marine Affairs Practice (3) Allison Survey of tools used in integrated assessment of contemporary problems in marine affairs explored through evaluation and comparison of theory and practical application. Prerequisite: SMEA 500 plus two of the following: SMEA 519, SMEA 536, SMEA 591, or permission of instructor. Offered: W.

SMEA 502 Decision Making and Action Taking in Marine Affairs (3) P. CHRISTIE Focuses on the dynamic interaction between human- and natural-world marine environmental systems and the policy- and decision-making, implementation, evaluation, and adjustment that must follow for effective response to problems that emerge within the human dimensions of global change in the marine environments framework. Prerequisite: SMEA 500; SMEA 501.

SMEA 506 International Law of the Sea (3)

SMEA 507 International Organizations and Ocean Management (3) Dolsak Survey of the manner in which international regimes and organizations attempt to manage and regulate the uses of the ocean. Primary emphasis is on the analysis of the effectiveness of regimes and of processes that support or constrain these organizations. Prerequisite: SMEA 500 or permission of instructor. Offered: jointly with PB AF 538.

SMEA 508 National Marine Policy Processes (3) Dolsak Comparative institutional dimensions of marine policy processes. Marine policy context at the national level and the dynamics that drive policy formulation and policy implementation.

SMEA 509 Integrated Coastal Management (3) Christie Managing multiple uses of coastal waters and the adjacent land; conflicts arising from competition for space and resources; organization, scientific, and economic problems associated with coastal management; planning and management experience in the United States and Southeast Asia. Prerequisite: SMEA 500 or permission of instructor.

SMEA 510 Topics in Marine Ecology (3) Klinger Study of ecological principles as they apply to marine species, populations, and ecosystems, using current examples from the primary literature, including contemporary issues such as species declines, species additions, pollution, and global change. Offered: W.

SMEA 511 Coastal Environment Management (3) Evaluation of human uses of the coastal and upland areas in the context of coupled social-ecological systems. Concepts and techniques for evaluation and practical application.

SMEA 512 Interviewing Methods and Environmental Topics (3) Miller Focuses on qualitative techniques employed

by social scientists and other researchers (e.g., sociologists, cultural anthropologists, political scientists, journalists, reporters) in interview situations. Students conduct interviews and limited participant observation with people in public, private, and activist sectors. Relevant to students with interests in marine affairs, forestry, fisheries, and environmental studies.

SMEA 514 Marine Pollution Management Issues (3) Leschine Management and policy aspects of marine environmental protection, emphasizing the two-way interaction between environmental managers and environmental and policy scientists which shapes policy.

SMEA 515 U.S. Coastal and Ocean Law (3-5) Kelly Study of the legal framework in the United States controlling allocation and use of coastal and marine resources. Topics include coastal zone management, fisheries management, protection of marine mammals and endangered species, marine pollution, offshore oil and gas development, and marine transportation.

SMEA 517 Marine Uses: Transportation and Commerce (3) Role of the oceans in the transportation of people and materials, character and trends in vessel design and terminal facilities, pattern and nature of industry organization, regulations, economics of the shipping industry, management of fleets and vessels, individuals at sea and ashore, national policies affecting the merchant marine and port facilities. Prerequisite: SMEA 500 or permission of instructor.

SMEA 519 Marine Policy Analysis (3) Dolsak Goal is appreciation for and basic working knowledge of techniques used in policy analysis. Techniques are explored in both quasi-realistic settings and in application to real world problems of marine policy.

SMEA 521 Governmental Responses to Global Climate Change (3) Dolsak Exploration of major scientific, policy, and legal issues pertaining to problems of global climate change including regime design, use of climate models, impact on hydrology water resources, and forests.

SMEA 523 International Science and Technology Policy (3) Dolsak Analyzes the relationships between research and development policy, capabilities, and national technological strategies for advanced industrial and less-developed countries. Deals with international implications as countries make policies in regional and global organizations. Examples chosen from space telecommunication, weather and climate modification, airline transportation, nuclear energy, and seabed exploration.

SMEA 525 Marine Protected Area Management and Science (3) Fluharty Examines management and scientific issues involved with the design, establishment, operation, and maintenance of MPAs. Offered: Sp.

SMEA 530 Development and the Environment (3) Dolsak Examines two intertwined concepts that are frequently in conflict, economic development and the environment. Examines sustainable development, growth management, sustainable yield, and corporate social responsibility; the emergence, effectiveness, and their relationships with democracy and equity. Offered: A.

SMEA 536 Applied Microeconomics for Marine Affairs (3) Acquaints students with microeconomic tools commonly employed in policy analysis. Emphasis is placed on mastery of basic concepts, definitions, and models useful to marine policy, including determinants of price and outputs in competitive markets, effects of other market structures, market failure, and applied welfare economics.

SMEA 537 Economic Aspects of Marine Policy (3) Development of pertinent economic concepts and their application to selected topics in marine policy decision making, including maritime policy, OCS oil and gas development, and wetlands management. Prerequisite: SMEA 500 or permission of instructor. Offered: jointly with ECON 537; W.

SMEA 538 Economics of Living Marine Resources (3) Develops pertinent economic concepts and applications for conservation, regulation, and restoration of fisheries and

other living resources. Gives special attention to fishery management, including harvest regulation and enforcement, recreational fisheries evaluation, property rights regimes, contemporary issues, and marine protected area management. Offered: jointly with ECON 538; Sp.

SMEA 539 U.S. Fisheries Management and Policy (3) Examination of basic laws and policies in the US that govern fisheries management and their implementation by managers at federal, tribal, state, and international levels. Includes lectures, guest speakers, and field trips. Offered: jointly with FISH 539.

SMEA 540 International Strategic Planning for Marine Resources (3) Kaczynski Marine economies are affected by declining resources, population pressure, and economic globalization. International examples and case studies are used to explore opportunities for strategic planning. Prerequisite: SMEA 500 or permission of instructor. Offered: A.

SMEA 550 Special Topics in Marine Studies (1-3, max. 18) Examination of various aspects of marine studies. Content varies, depending upon the interests of the faculty and students. Intended for the joint participation by the faculty and advanced students in the investigation of selected topics. One or more groups are organized each quarter.

SMEA 570 Thesis Presentation (1) Fluharty Completion of the thesis requirement for SMEA. Prepare a professional presentation to a peer audience. Credit/no-credit only. Offered: AWSpS.

SMEA 571 Non-Thesis Seminar (1) Leschine Capstone course for students enrolled in non-thesis track to synthesize and integrate their learning into concrete products. Credit/no-credit only. Offered: AWSpS.

SMEA 581 Case Study Research: Design and Methods (3) Provides in-depth training in case study theory, design, and methods. Designed for exploring prospectus ideas or beginning analysis of thesis research. Through readings, discussions, exercises, and lectures, students learn how to select units of analysis, control data quality, and collect, analysis, and report data. Offered: jointly with FISH 581.

SMEA 585 Climate Impacts on the Pacific Northwest (4) Mantua, Snover Knowledge of past/future patterns of climate to improve Pacific Northwest resource management. Topics include the predictability of natural/human-caused climate changes; past societal reactions to climate impacts on water, fish, forest, and coastal resources; how climate and public policies interact to affect ecosystems and society. Offered: jointly with ATM S 585/ENVR 585/ESS 585; Sp.

SMEA 591 Marine Science in the Coastal Zone (3) R. KELLY Presentation and analysis of the marine science of estuarine, coastal, and open ocean systems, including evaluation and interpretation of scientific information necessary for management. Lectures, discussions, and readings emphasize the relevance of natural processes to marine environmental management and decision-making. Offered: jointly with OCEAN 591; A.

SMEA 600 Independent Study or Research (*-)

SMEA 700 Master's Thesis (*-)

Oceanography

108 Oceanography Teaching Building

Oceanography - study of the marine environment and its interactions with the earth, the biosphere, and the atmosphere - is prompted both by the intellectual desire to understand how the oceans move and how life develops in a salty, cold environment, and the need to use wisely the ocean's resources for the benefit of humanity. As an interdisciplinary science, oceanography integrates the basic

principles of biology, chemistry, geology, physics, geophysics, mathematics, botany, zoology, meteorology, and geography. Applications of high technology to oceanographic instrumentation and vessels, increasingly sophisticated computers, satellite remote sensing, and innovative methodologies are rapidly opening new possibilities for exploration and study. Oceanography is divided into four areas of emphasis:

Biological Oceanography examines the processes governing the distribution, abundances, and production of plants, animals, and nutrients in the oceanic ecosystem. Emphasis is on investigations of bacteria, phytoplankton, zooplankton, and benthic organisms.

Chemical Oceanography investigates the complex chemistry, distribution, and cycling of dissolved substances, nutrients, and gases in seawater, the mechanisms controlling them, and their origins and fates.

Marine Geology and Geophysics studies marine sediments (their formation, transport, and deposition); ocean basin formation (plate tectonics); processes governing shoreline formation; and the origin, structure, and history of the oceanic crust and upper mantle.

Physical Oceanography endeavors to understand and predict motions in the sea from millimeters through tidal and current scales to the great ocean gyres, the distribution of physical properties (temperature, salinity, sea ice), and air-sea interaction and its implications for climate.

UNDERGRADUATE PROGRAM

Adviser

108 Oceanography Teaching Building, Box 357940

(206) 543-5039

student@ocean.washington.edu

The School of Oceanography offers the following programs of study:

- The Bachelor of Science degree with a major in oceanography
- The Bachelor of Arts degree with a major in oceanography
- Specializations include biological, chemical, or physical oceanography, or marine geology and geophysics
- A minor in oceanography
- A minor in climate science (offered jointly with the Departments of Atmospheric Sciences and Earth and Space Sciences)
- A minor in arctic studies (offered jointly between the Jackson School of International Studies and the School of Oceanography)

Bachelor of Arts

Suggested Pre-College Courses: Interest in natural sciences and a good record in high school science courses, particularly mathematics. One year each of biology, chemistry, and physics recommended.

Suggested First- and Second-Year College Courses: MATH 124, MATH 125, MATH 126 (or Q SCI 291, Q SCI 292, Q SCI 381); CHEM 142, CHEM 152; BIOL 180, BIOL 200; one of ESS 210, ESS 211, or ESS 212; PHYS 121, PHYS 122, PHYS 123 (or PHYS 114, PHYS 115, PHYS 116); OCEAN 220; and English composition

Department Admission Requirements

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

General Education Requirements

1. English composition (5 credits), with a minimum grade of 2.0

2. Writing courses (10 credits), including OCEAN 220 (3 credits) and OCEAN 444 (5 credits)
3. Quantitative and Symbolic Reasoning (10 credits), met by departmental requirements below
4. Individuals & Societies (20 credits). 10 of these credits must be taken out of major, defined as courses that neither count toward major requirements below nor have the prefix of the department from which the student is earning a degree (includes co-listed courses).
5. Visual, Literary, & Performing Arts (10 credits)
6. Natural World (20 credits). 10 credits must be taken out of major, defined as courses that neither count toward major requirements below nor have the prefix of the department from which the student is earning a degree (includes co-listed courses).

Major Requirements

Same as for the Bachelor of Science degree (see below), except only 10 credits of upper-division science, mathematics, or engineering courses are required.

Bachelor of Science

Suggested Pre-College and First- and Second-Year College Courses: Same as for Bachelor of Arts degree (shown above)

Department Admission Requirements

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

General Education Requirements

Same as for the Bachelor of Arts degree (shown above).

Major Requirements

Minimum 116 credits, to include the following:

1. **Foundational Courses (55 credits):** PHYS 121, PHYS 122, PHYS 123 (or PHYS 114, PHYS 115, PHYS 116); MATH 124, MATH 125, MATH 126 (or Q SCI 291, Q SCI 292, Q SCI 381); CHEM 142, CHEM 152; BIOL 180, BIOL 200; one of ESS 210, ESS 211, ESS 212; and BIOL 161-BIOL 162 or BIOL 180, BIOL 200, BIOL 220
2. OCEAN 200, OCEAN 201, OCEAN 210, OCEAN 220, OCEAN 400, OCEAN 410, OCEAN 420, OCEAN 430, OCEAN 443, OCEAN 444, OCEAN 445 (35 credits)
3. 400-level oceanography coursework selected in the student's area of specialization, in consultation with a faculty adviser (6 credits)
4. Upper-division science, mathematics, or engineering, selected in the student's area of specialization, in consultation with a faculty adviser (20 credits)
5. Minimum 2.0 grade in all required oceanography courses.

Minor

Minor Requirements: 25 credits as follows:

1. OCEAN 200, OCEAN 210, OCEAN 220
2. One of the following: OCEAN 400, OCEAN 410, OCEAN 420, or OCEAN 430
3. 12 credits of OCEAN electives, chosen from 300- and 400-level oceanography courses

Minor in Arctic Studies

See entry for Arctic Studies in the Interdisciplinary Undergraduate Programs section of the General Catalog.

Minor in Marine Biology

See entry for Marine Biology in the Interdisciplinary Undergraduate Programs section of the General Catalog.

Minor in Climate Science

See entry for Climate Science in the Interdisciplinary Undergraduate Programs section of the General Catalog.

Student Outcomes and Opportunities

- **Learning Objectives and Expected Outcomes:** The degree offers students a solid foundation in biological, chemical, geological, and physical oceanography, together with more specialized expertise in one of those options. Expertise is gained through team-based field and laboratory research during the sophomore and junior years, then by independent research on a thesis topic during the senior year. Emphasis is on building skills with the tools and techniques of shipboard oceanographic research and data analysis and interpretation. Students engage in fieldwork and data collection, learn to analyze and interpret that data, and prepare scientific reports. Additionally students acquire familiarity with the specialized instruments of oceanographic research.

The program prepares students to enter the profession directly or to pursue graduate studies. Oceanographers seek to produce a new understanding of an ocean system and to explore the potential consequences to the marine environment of human activities. They collect samples and data, analyze and interpret them, and prepare and disseminate the results. They work at sea, on land, in laboratories, and with computers. Most are employed in education and research institutions and federal, state and local government agencies. Other employers include environmental consulting firms and private companies extracting and harvesting marine products. A degree can also serve as a background for a career in teaching, administration, marine affairs, computing, or environmental studies.

- **Instructional and Research Facilities:** The school has extensive laboratory facilities equipped with highly specialized instruments and computers for teaching and research. The school operates two research vessels: the 274 foot R/V Thomas G. Thompson, used chiefly for open ocean research throughout the world, and the 65 foot R/V Clifford A. Barnes, used for research in coastal waters and estuaries of Washington. Undergraduate students have ample opportunities to gain research experience in the laboratories of faculty and to do oceanographic research in Puget Sound.
- **Honors Options Available:** With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- **Research, Internships, and Service Learning:** Special opportunities for oceanography majors are provided by involving students in undergraduate research projects and part-time employment.
- **Department Scholarships:** See adviser for availability.
- **Student Organizations/Associations:** The Student Oceanographic Society (SOS) provides peer advice, organizes field trips, sponsors alumni career panels, and holds social gatherings.

GRADUATE PROGRAM

Graduate Student Services

108 Ocean Teaching, Box 357940

(206) 543-5039

student@ocean.washington.edu

The School of Oceanography provides instruction and research opportunities at the graduate level in all areas: biological, chemical, and physical oceanography, and marine geology and geophysics. The program of study emphasizes independent research in conjunction with basic and spe-

cialized courses. Interdisciplinary research is encouraged, and students enjoy the opportunity to work across the usual scientific boundaries. Coursework during the first two years is required in each option; specialized coursework is structured to fit the student's background and objectives. Foreign-language proficiency is required only when deemed crucial to scholarly research.

Master of Science

The program of study includes coursework in the student's area of interest and the other oceanography options, as well as completion of an approved research project and oral presentation of the results. Thesis and non-thesis programs are offered; most students select the non-thesis option.

Admission Requirements

1. One official copy of transcript(s) from all colleges or universities attended
2. Minimum 3.00 GPA or B for last 90 quarter (60 semester) credits
3. GRE scores
4. TOEFL scores for international students
5. Statement of goals and objectives (to be defined in online application), which may include any or all of the following: How or why applicant became interested in oceanography, significant accomplishments, summary of research experience, research area(s) of special interest, ultimate goals, extracurricular activities and interests.
6. Three letters of recommendation on School of Oceanography forms (included in online application). Recommendations should be from faculty or scientists familiar with the applicant's academic achievements and research experience. Applicants who have been out of school for some time may include recommendations from employer(s), but all efforts should be made to include at least one letter from academic faculty.

Degree Requirements

36-45 credits, as follows:

Thesis program: Minimum 36 quarter credits (27 course credits and minimum 9 credits of thesis). *Non-thesis program:* Minimum 36 quarter credits of coursework.

1. At least 18 of the minimum 36 quarter credits must be numbered 500 and above. (In a thesis program, 9 of the 18 credits must be course credits and 9 may be OCEAN 700.)
2. Numerical grades in at least 18 quarter credits of coursework taken at the UW. The Graduate School accepts numerical grades (a) in approved 400-level courses accepted as part of the major, and (b) in all 500-level courses. A minimum cumulative GPA of 3.00 is required for a graduate degree at the University.
3. Minimum three full-time quarters of residence credit. Part-time quarters may be accumulated to meet this requirement.
4. In the thesis degree program, a thesis, approved by the Supervisory Committee, must be submitted to the Graduate School. A student must register for a minimum of 9 credits of thesis (OCEAN 700). With the exception of summer quarter, students are limited to a maximum of 9 credits per quarter of thesis (OCEAN 700). A final master's examination, either oral or written, as determined by the student's Supervisory Committee, must be passed.
5. A final master's examination, either oral or written, as determined by the student's supervisory committee.

Biological Oceanography Option: The core curriculum consists of OCEAN 530 , OCEAN 531 , OCEAN 532 , OCEAN 533 . Master's level students must take a minimum of 3 credits of advanced biological oceanography courses.

Chemical Oceanography Option: The core curriculum consists of OCEAN 520 . Master's level students must take a minimum of three advanced chemical oceanography courses.

Marine Geology and Geophysics Option: The core curriculum consists of OCEAN 540 , OCEAN 541 , OCEAN 545 .

Physical Oceanography Option: The core curriculum consists of OCEAN 500 , OCEAN 510 , OCEAN 511 , OCEAN 512 , OCEAN 513 , OCEAN 514 , OCEAN 515 , OCEAN 517 . Physical oceanography students take a sequence of three courses in applied mathematics.

Out-of-Option Requirement: All graduate students are required to take a minimum of one 3-credit, numerically graded, 500-level course from each option outside their own for a total of three courses and 9 credits. Each option provides a list of courses that can be taken to fulfill this requirement. See department website or adviser for a list of suitable courses. Students are expected to complete this breadth requirement prior to receiving an MS degree. A graduate student affairs committee, chaired by the Graduate Program Coordinator, addresses any requests for waivers.

Doctor of Philosophy

The degree program places a strong emphasis on research following completion of course requirements and the general examination. Upon successful completion of the general examination, the student undertakes an original research investigation, which is described in the dissertation and defended during the final examination.

Admission Requirements

1. One official copy of transcript(s) from all colleges or universities attended
2. Minimum 3.00 GPA or B for last 90 quarter (60 semester) credits
3. GRE scores
4. TOEFL scores for international students
5. Statement of goals and objectives (to be defined in online application), which may include any or all of the following: How or why applicant became interested in oceanography, significant accomplishments, summary of research experience, research area(s) of special interest, ultimate goals, extracurricular activities and interests.
6. Three letters of recommendation on School of Oceanography forms (available in online application). Recommendations should be from faculty or scientists familiar with the applicant's academic achievements and research experience. Applicants who have been out of school for some time may include recommendations from employer(s), but all efforts should be made to include at least one letter from academic faculty.

Degree Requirements

Minimum 90 credits, as follows:

1. Completion of a program of study and research as planned by the Graduate Program Coordinator in the student's major department or college and the Supervisory Committee. Half the total program, including dissertation credits, must be in courses numbered 500 and above. At least 18 credits of coursework at the 500 level and above must be completed prior to scheduling the general examination.
2. Presentation of a minimum three years (nine full-time quarters) of resident study, two being at the UW with at least one year in continuous full-time residence. The year of full-time residence may be satisfied by completing any three full-time quarters (not necessarily continuous) at the UW and must be completed prior to the general examination. Residence requirement for the doctoral degree cannot be met solely by part-time study.

A minimum of two academic years of resident study must be completed prior to scheduling the general examination.

3. With the approval of the degree-granting unit, an appropriate master's degree from an accredited institution may be applied toward one year of resident study at the UW.
4. Numerical grades must be received in at least 18 quarter credits of coursework taken at the UW. The Graduate School accepts numerical grades (a) in approved 400-level courses accepted as part of the major, and (b) in all 500-level courses. A minimum cumulative 3.00 GPA is required for a graduate degree at the University.
5. Creditable passage of the general examination. Registration as a graduate student is required the quarter the examination is taken and candidacy is conferred.
6. Preparation and acceptance by the Dean of the Graduate School of a dissertation that is a significant contribution to knowledge and clearly indicates training in research. Credit for the dissertation ordinarily should be at least one-third of the total credits. The candidate must register for a minimum of 27 credits of dissertation over a period of at least three quarters. At least one quarter must come after the student passes the general examination. With the exception of summer quarter, students are limited to a maximum of 10 credits per quarter of dissertation (OCEAN 800).
7. Creditable passage of a final examination, usually devoted to defense of the dissertation and the field with which it is concerned. The general and final examinations cannot be scheduled during the same quarter. Registration as a graduate student is required the quarter the examination is taken and the degree is conferred.
8. Completion of all work for the doctoral degree within ten years. This includes quarters spent on leave or out of status as well as applicable work from the master's degree from the UW or a master's degree from another institution, if applied toward one year of resident study.

Biological Oceanography Option: The core curriculum consists of OCEAN 530 , OCEAN 531 , OCEAN 532 , OCEAN 533 . Doctoral level students must take a minimum of 9 credits of advance biological oceanography courses.

Chemical Oceanography Option: The core curriculum consists of OCEAN 520 . Doctoral level students must take a minimum of six advanced chemical oceanography courses.

Marine Geology and Geophysics Option: The core curriculum consists of OCEAN 540 , OCEAN 541 , OCEAN 545 .

Physical Oceanography Option: The core curriculum consists of OCEAN 500 , OCEAN 510 , OCEAN 511 , OCEAN 512 , OCEAN 513 , OCEAN 514 , OCEAN 515 , OCEAN 517 . Physical oceanography students are also expected to take a sequence of three courses in applied mathematics.

Out-of-Option Requirement: All graduate students are required to take a minimum of one 3-credit, numerically graded, 500-level course from each option outside their own for a total of three courses and 9 credits. Each option provides a list of courses that can be taken to fulfill this requirement. See department website or adviser for list of suitable courses. Students are expected to complete this breadth requirement prior to receiving an MS degree. A graduate student affairs committee, chaired by the Graduate Program Coordinator, addresses any requests for waivers.

Financial Aid

Normally all students pursuing a graduate degree are supported by research or teaching assistantships, or by fellowships and scholarships from national or private sources. Most appointments continue through the summer when students are engaged in research.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/.

OCEAN 100 Explore Oceanography at UW (1) Explores the research and experiences of the Oceanography school's faculty, graduate students, and undergraduate students. Intended for freshmen, new transfer students, and other considering oceanography as a major. Credit/no-credit only. Offered: A.

OCEAN 101 Oceanography of the Pacific Northwest (5) NW Introduces the fundamental principle of oceanography by focusing on the waters that surround us - the Washington coast and Puget Sound. Investigates the geologic history of the Pacific Northwest, and the physics, chemistry, and biology of coastal waters using case studies. Intended for nonmajors. Offered: A.

OCEAN 102 The Changing Oceans (5) I&S/NW Historical case studies of research on the ancient oceans, deep-sea exploration, climate change and the oceans, and human impacts on marine life. Students consider societal factors affecting progress in marine science, changing popular attitudes toward the oceans, and key current policy implications of marine science. Intended for nonmajors. Offered: W.

OCEAN 115 Astrobiology: Life in the Universe (5) NW R. BUICK, D. CATLING, V. MEADOWS, W. SULLIVAN Introduces to the new science of astrobiology, study of the origin and evolution of life on Earth, and the search for microbial and intelligent life elsewhere in the Universe. Designed for non-science, liberal arts majors. Offered: jointly with AST-BIO 115/ASTR 115/BIOL 114/ESS 115.

OCEAN 121 Deep Sea Exploration: Submarine Volcanoes and Novel Life Forms (2) NW Examines the dynamic marine processes that shape the planet and cutting-edge oceanographic technologies used to explore the deepest oceans. Includes imagery of rarely seen submarine volcanic eruptions, hot springs, and novel life forms highlighting the interconnected geological-biological processes creating the most extreme environments on Earth. Offered: W.

OCEAN 200 Introduction to Oceanography (3) NW Description of the oceans. Emphasis on relations of biology, chemistry, geology, and physics in marine environments. Examination of relationships and interactions at macro-, meso-, and micro-scales in the ocean. Intended for science majors. Offered: Sp.

OCEAN 201 Introduction to Oceanography Lab (2) NW Ingalls Provides opportunities to experiment with oceanographic concepts through laboratory and field experiences, and learn about the scientific method of inquiry as it applies to the study of geology, physics, chemistry, and biology of the ocean. Emphasizes topics that explore current challenges faced by the ocean and its ecosystem. Co-requisite: OCEAN 200. Offered: Sp.

OCEAN 210 Integrative Oceans (4) NW Presents fundamentals of ocean science through regional case studies that illustrate the relationship between interdependent physical, chemical, biological, and geological process. Students apply tools from the major scientific disciplines to understand major changes predicted for future oceanic environments. Prerequisite: either OCEAN 200, or OCEAN 250/BIOL 250/FISH 250. Offered: A.

OCEAN 215 Methods of Oceanographic Data Analysis (4) Statistics, graphical representations, and analysis methods for oceanographic datasets using the PYTHON programming language. Prerequisite: Prerequisite: MATH 125. Offered: A.

OCEAN 220 Introduction to Field Oceanography (3/5) NW Design and conduct a field study in oceanography. Focuses on active learning, deployment of instruments, data collection, interpretation, and presentation. Required field trip

during spring break. Prerequisite: either OCEAN 200, or OCEAN 250/BIOL 250/FISH/250. Offered: Sp.

OCEAN 230 Rivers and Beaches (3/5) NW Introduction to Earth surface environments, the processes that shape them, how humans affect them and are affected by them. Weekend field trips examine mountains, rivers, deltas/estuaries, beaches, and environments beyond. Focus on linkages between these environments to illustrate coupling between landscapes and seascapes. Offered: jointly with ESS 230.

OCEAN 235 Arctic Change (2/3) I&S/NW Investigates the Arctic system of ocean, ice, atmosphere, and sea-floor; how human interact with it, and what the future of the Arctic means to the world. Includes sea-ice loss, climate impacts, and Arctic resource exploitation. Offered: W.

OCEAN 240 Contemporary Issues in Oceanography (1-5, max. 9) NW Selected topics of contemporary interest in oceanography such as hydrothermal vents, planetary volcanism, biogeochemical cycling, the ecology of Puget Sound, and the ocean's role in climate.

OCEAN 250 Marine Biology (3/5) I&S/NW Lecture-laboratory course in marine biology focusing on physical, biological, and social aspects of the marine environment. Topics include oceanography, ecology, physiology, behavior, conservation, fisheries, exploration, and activism. Weekend field trip. Honors section research project. Offered: jointly with BIOL 250/FISH 250; AS.

OCEAN 261 Introduction to Ocean Technology (2) NW M. LOGSDON Introduces ocean science and technology in observational ocean science. Covers the basics of underwater sensor design, power, and data communication, and introduces the design and build process and the operational scope of the ERIS cabled observatory. Offered: S.

OCEAN 270 Aquatic Ecophysiology (5) NW Focuses on fundamental physiology, with an emphasis on processes relevant to living in a variety of aquatic environments. Includes a broad survey of taxa, from prokaryotes to mammals, and a variety of aquatic habitats. Prerequisite: BIOL 200. Offered: jointly with FISH 270/MARBIO 270.

OCEAN 285 Physics Across Oceanography: Fluid Mechanics and Waves (5) NW In the context of oceanography and marine science applications, explores the basic principles of fluid mechanics, waves, light, acoustics, and heat transfer. Prerequisite: either MATH 126 or QSCI 292, which may be taken concurrently; either PHYS 114 or PHYS 121.

OCEAN 295 Chemistry of Marine Organic Carbon (5) NW Explores how organic carbon cycles through the global carbon cycle, in the context of earth sciences and marine biogeochemical cycles. Prerequisite: either CHEM 152 or CHEM 120. Offered: S.

OCEAN 300 Exploring Opportunities in Marine Science (1) Explores academic, research, and career opportunities in the field of marine science and helps prepare students for graduation. Intended for junior and transfer students studying marine science. Credit/no-credit only. Offered: jointly with FISH 300/MARBIO 300; A.

OCEAN 351 Foundations of Ocean Sensors (5) NW, QSR D. GRUNBAUM Experiential learning giving students foundational knowledge of methods used to observe key quantities that characterize marine environments. Includes theory and application of sensor design and construction principles, in the context of inferences and hypothesis-testing about key physical, biological, chemical, and geological dynamics in the oceans. Prerequisite: OCEAN 215; OCEAN 285, which may be taken concurrently. Offered: W.

OCEAN 355 From Big Bang to the Blue Planet (3) NW Sachs Explores the origin and evolution of the Earth, ocean, atmosphere, and life, with an emphasis on climate as the integrator of changes in the biosphere, cryosphere, hydrosphere, atmosphere, and lithosphere. Prerequisite: either CHEM 120 or CHEM 142; either PHYS 114 or PHYS 121; either BIOL 161, or BIOL 180.

OCEAN 361 Ocean Technology I: Introduction to Underwater Observational Sensor Design and Build (2) NW M. LOGSDON Combines ocean science and technology in a design and build course utilizing the ERIS cabled observatory at the UW Oceanography dock. Students apply the basics of sensor design, power, and data communication to individual underwater observatory projects. Prerequisite: OCEAN 261, which may be taken concurrently. Offered: S.

OCEAN 365 Practicing Sustainability Science (8) I&S/NW S. Veirs, V. Veirs Intensive off-campus experience. Studies sustainability science, marine policy, and "clean" technologies. Includes interaction with community stakeholders for five weeks and experimentation with sustainable technologies and practices in the marine environment during a five-week cruise aboard an energy-efficient sailing catamaran. Offered: Asp.

OCEAN 370 Marine Evolutionary Biology (5) NW Emphasizes geobiological patterns of marine evolutionary biology environment; processes of evolution; marine prokaryote and eukaryote diversity; and applications of evolutionary principles to ocean change, and conservation and management of marine biodiversity. Prerequisite: either FISH 270/OCEAN 270/MARBIO 270 or BIOL 220. Offered: jointly with FISH 370/MARBIO 370; Sp.

OCEAN 400 Chemical Oceanography (4) NW Physical and chemical properties of seawater and marine products; processes determining the chemical makeup of the oceans. Prerequisite: either CHEM 152 or CHEM 155; OCEAN 210. Offered: W.

OCEAN 401 Special Topics in Chemical Oceanography (3) NW

OCEAN 409 Marine Pollution (3) I&S/NW R. KEIL Explores anthropogenic impacts on the oceans and marine organisms. Examines how scientific understanding informs environmental management, thereby linking science and society. Students develop a detailed understanding of the major categories of anthropogenic impacts on marine systems, their mechanisms of effect, their sources, and fates. Prerequisite: either OCEAN 200 or OCEAN 250; OCEAN 210. Offered: W.

OCEAN 410 Marine Geology and Geophysics (4) NW Explores the geological and geophysical processes that form and shape the ocean basins and continental margins. Prerequisite: either ESS 210, ESS 211, or ESS 212. Offered: jointly with ESS 410; A.

OCEAN 411 Special Topics in Marine Geology and Geophysics (3) NW

OCEAN 412 Seismic Exploration and Stratigraphy (5) NW Introduction to theory and practice of seismic exploration. Application of refraction and reflection techniques to problems in engineering geology and mineral exploration. Constraints in the interpretation of subsurface structure. Prerequisite: either ESS 311 or OCEAN 410; either MATH 126 or MATH 136; PHYS 123. Offered: jointly with ESS 467.

OCEAN 420 Physical Processes in the Ocean (4) NW Physical properties and processes of the ocean: methods of describing ocean currents, waves, tides, and mixing and their effect on movement of water parcels. Prerequisite: either PHYS 114 or PHYS 121; either MATH 125 or Q SCI 381, which may be taken concurrently; OCEAN 210. Offered: W.

OCEAN 421 Special Topics in Physical Oceanography (3) NW

OCEAN 423 Ocean Circulation and Climate (3) NW Quantitative treatment of ocean basin to global scale ocean circulation systems and their interaction with climate variability. Prerequisite: PHYS 123; MATH 125.

OCEAN 430 Biological Oceanography (4) NW Examines marine organisms, their quantitative distribution in time and space, and their interactions with the ocean. Emphasizes dominant pelagic forms of phytoplankton, bacterioplankton, and archaeoplankton; and their predators, viruses, and zooplankton. Case studies explore extreme

environments, coral reefs, influence of climate change on oceanic ecosystems, and the coastal ocean. Prerequisite: BIOL 200; OCEAN 210. Offered: A.

OCEAN 431 Special Topics in Biological Oceanography (3) NW Reviews current research. Topics include global change effects on marine organisms, marine pathogens and emerging diseases, introduced species, marine viruses, astrobiology, hydrothermal vents, symbiosis, animal physiology, larval forms and dispersal, biogeography, and environmental ethics. Prerequisite: either OCEAN 430 or any 400-level BIOL, FISH, or MICROM course.

OCEAN 443 Undergraduate Thesis: Proposal (3) NW

OCEAN 444 Undergraduate Thesis: Research (2) Work closely with faculty mentors to conduct thesis research as designed in OCEAN 443 in a field, laboratory, or other guided research setting. Prerequisite: OCEAN 443. Offered: W.

OCEAN 445 Undergraduate Thesis: Data Analysis and Writing (3) NW Analyze results from senior thesis experiments and present results in a series of drafts and a final paper. Results are presented at a two-day long public research symposium and on the students; individual web sites. Prerequisite: OCEAN 444. Offered: Sp.

OCEAN 450 Climatic Extremes (4) NW Course examines Earth history for extreme climatic conditions to predict future climate changes. Numerical climate models use PC-based computer programs to identify processes and feedbacks that control climate. Offered: W.

OCEAN 452 Spatial Information Technology in Ecosystem Sciences (3) NW *Logsdon* Introduces the use of Geographic Information Systems (GIS), remote sensing, and spatial analysis in the ecosystem sciences. Emphasizes sampling and analysis of spatially-referenced data about the coastal and marine environments, integrating these technologies in an applied research setting. Offered: jointly with FISH 452; A.

OCEAN 453 Geospatial Pattern Analysis and Geostatistics (3) NW *Logsdon* Focuses on the application of geospatial pattern analysis and geostatistics in earth science research. Develops understanding in detecting, describing, and estimating spatial pattern and trends. Prerequisite: either Q SCI 381 or Q SCI 482; OCEAN 452. Offered: jointly with FISH 453; W.

OCEAN 454 Hydrothermal Systems: An Interdisciplinary View (3) NW *Lilley* Provides a general, interdisciplinary overview of seafloor hydrothermal systems including important geological, chemical, and biological processes. Topics include tectonic and volcanic controls on hydrothermal systems, water/rock reactions, phase separation, temporal variability, fluxes to the deep sea, micro- and macro biology. Offered: W.

OCEAN 455 Introduction to Modeling in Oceanography (3) NW, QSR *Grunbaum* Explores roles of ocean models in understanding past, current, and future conditions in marine environments. Focuses on active learning using models to ask and answer questions about biotic and abiotic processes in marine environments. Prerequisite: either OCEAN 200, FISH 250, OCEAN 250, BIOL 250, or ATM S 211. Offered: A.

OCEAN 460 Marine Field Research (10) NW, QSR *S. Veirs, V. Veirs* Intensive off-campus marine research experience. Includes five weeks designing a field experiment and a five-week cruise aboard a sailing research vessel to implement it. Offered: ASp.

OCEAN 461 Advanced Ocean Technology - Project Design and Management (2) NW *M. LOGSDON* Project management practicum in the design, build, operations, and management of observational ocean science technology. Students oversee and mentor ongoing design and build projects, with attention to design criteria and deployment timelines. Prerequisite: OCEAN 361. Offered: S.

OCEAN 475 Current Research in Climate Science Seminar (3, max. 6) Weekly lectures focusing on a particular aspect

of climate from invited speakers, complemented by class discussion, readings, and final paper. Promotes interdisciplinary understanding of climate concepts. Prerequisite: either ESS 201, ATM S 211, or ATM S 321. Offered: jointly with ATM S 475/ESS 475; A.

OCEAN 477 Seminar in Marine Biology (3) NW *Roccap* Reviews current research in marine biology. Emphasizes critical readings and discussion of primary literature. Prerequisite: FISH 250, OCEAN 250, or BIOL 250; Q SCI 381, STAT 220, or STAT 311. Offered: jointly with BIOL 477/FISH 477; W.

OCEAN 479 Research in Marine Biology (1-15, max. 15) Individual research on topics in marine biology. Research projects supervised by an individual faculty member. Projects may include laboratory work, fieldwork, and literature surveys. Prerequisite: BIOL 250/FISH 250/OCEAN 250; Q SCI 381. Offered: jointly with BIOL 479/FISH 479; AWSpS.

OCEAN 481 Puget Sound and Estuarine Oceanography (3) NW *Keister, MacCready* Explores fundamental physical-biological processes in estuarine systems, using Puget Sound as a primary example. Topics include effects of circulation and mixing on residence time, nutrients, phytoplankton, zooplankton, and fish. Also covers hypoxia, the estuarine turbidity maximum, the intertidal zone, harmful algal blooms, and effects of climate change. Offered: W.

OCEAN 482 The Changing Arctic Ocean (3) NW *Deming, Woodgate* Investigates the interacting physical, chemical, and biological components of the Arctic ocean-ice-atmosphere system, including the most recent advances and considering the impacts of Arctic Change on Arctic and global climate, marine organisms and ecosystems, native communities, and future exploitation of an ice-free summer ocean. Offered: Sp.

OCEAN 492 Friday Harbor Apprenticeship (9/15) NW Intensive, full-time research training experience where teams of students work on focused research problems guided by a group of faculty, postdoctoral, and graduate student mentors. Research questions vary.

OCEAN 494 Field Experiences in Marine Science (1-15, max. 30) NW For participants in oceanography field work. Specific content varies and is individually evaluated. Credit does not apply to major requirements without approval.

OCEAN 496 Study Abroad: Oceanography (1-15, max. 30) NW For participants in UW study abroad program. Specific content varies and is individually evaluated. Credit does not apply to major requirements without approval.

OCEAN 497 Advanced Special Topics in Oceanography (1-15, max. 15)

OCEAN 499 Undergraduate Research (1-15, max. 24) Individual research supervised by a faculty member. May involve laboratory work, fieldwork, or literature surveys. Offered: AWSpS.

OCEAN 500 Current Problems in Oceanography (1, max. 10) Discussion of research topics that are currently being investigated within the school. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AW.

OCEAN 502 Spatial Information Technology in Ecosystem Sciences (3) *Logsdon* Introduces the use of Geographic Information Systems (GIS), remote sensing, and spatial analysis in the ecosystem sciences. Emphasizes sampling and analysis of spatially-referenced data about the coastal and marine environments, integrating these technologies in an applied research setting. Offered: jointly with FISH 502; A.

OCEAN 503 Geospatial Pattern Analysis and Geostatistics (3) *Logsdon* Focuses on the application of geospatial pattern analysis and geostatistics in earth science research. Develops understanding in detecting, describing, and estimating spatial pattern and trends. Offered: jointly with FISH 503; W.

OCEAN 506 Interdisciplinary Seminar in Oceanography (1-3, max. 12) Lectures, discussions, and work on selected

problems of an interdisciplinary nature. Prerequisite: permission of instructor.

OCEAN 507 Puget Sound and Estuarine Oceanography (3) *Keister, MacCready* Explores fundamental physical-biological processes in estuarine systems, using Puget Sound as a primary example. Topics include effects of circulation and mixing on residence time, nutrients, phytoplankton, zooplankton, and fish. Also covers hypoxia, the estuarine turbidity maximum, the intertidal zone, harmful algal blooms, and effects of climate change. Offered: W.

OCEAN 508 The Changing Arctic Ocean (3) *Deming, Woodgate* Investigates the interacting physical, chemical, and biological components of the Arctic ocean-ice-atmosphere system, including the most recent advances and considering the impacts of Arctic Change on Arctic and global climate, marine organisms and ecosystems, native communities, and future exploitation of an ice-free summer ocean. Offered: Sp.

OCEAN 509 Seminar (1, max. 30) Introduction to current research topics for beginning graduate students. Credit/no-credit only. Offered: AWSp.

OCEAN 510 Physics of Ocean Circulation (3) Structure of ocean basins; physical properties of seawater and the equation of state; heat, salt, fresh water budgets; tidal potential; Coriolis effect and geostrophic balance; major current systems and water masses; mixing, stirring in the ocean; simple waves; modern experimental methods in physical oceanography. Prerequisite: permission of instructor. Offered: A.

OCEAN 511 Introduction to Fluid Dynamics (4) Eulerian equations for mass-motion; Navier-Stokes equation for viscous fluids, Cartesian tensors, stress-strain relations; Kelvin's theorem, vortex dynamics; potential flows, flows with high-low Reynolds numbers; boundary layers, introduction to singular perturbation techniques; water waves; linear instability theory. Prerequisite: either a course in partial differential equations or permission of instructor. Offered: jointly with AMATH 505/ATM S 505; A, odd years.

OCEAN 512 Geophysical Fluid Dynamics I (4) Dynamics of rotating stratified fluid flow in the atmosphere/ocean and laboratory analogues. Equations of state, compressibility, Boussinesq approximation. Geostrophic balance, Rossby number. Poincare, Kelvin, Rossby waves, geostrophic adjustment. Ekman layers. Continuously stratified dynamics: Inertia-gravity waves, potential vorticity, quasigeostrophy. Prerequisite: OCEAN 511 or ATM S 505/AMATH 505. Offered: jointly with ATM S 509; W.

OCEAN 513 Geophysical Fluid Dynamics II (3) Theories, models of large-scale dynamics of oceans, atmospheres. Potential vorticity, Q principles; Rossby waves, ray tracing, Green's function, setup of general circulation; atmospheric "channels" versus ocean "basins"; wave-mean flow interaction, mountain drag, internal momentum flux; "Lagrangian" motion of particles, tracers; cascades, eddy flux of heat, moisture, Q. Prerequisite: OCEAN 512. Offered: Sp.

OCEAN 514 Waves (3) Application of marine hydrodynamics principles to wave motion in oceans. Offered: W.

OCEAN 515 Ocean Circulation: Observations (3) Modern large- and mesoscale ocean observations, interpreted in terms of contemporary circulation theories. Spectrum of temporal variability; eddies and eddy fluxes; ventilation; advection and diffusion in the abyss; transports of heat and salt; climatic scale of variability; modern methods for determining circulation. Prerequisite: OCEAN 510 or permission of instructor. Offered: Sp.

OCEAN 517 Methods and Measurements in Physical Oceanography (3) Principal instruments and experimental methods of physical oceanography. Devices and systems that measure pressure, temperature, electrical conductivity, sea state, and velocity. Prerequisite: permission of instructor.

OCEAN 518 Scientific Writing and Graphics (2) *Waddington, Warren* Covers principles of scientific writing; meth-

ods of ensuring clarity in writing for scientific journals and research proposals; principles of graph construction; and authorship, peer review, and citations. For graduate students in Earth-science related fields. Credit/no-credit only. Offered: jointly with ATM S 519/ESS 519; Sp, odd years.

OCEAN 520 Marine Chemistry (3) Processes controlling the chemical composition of seawater. Chemical distributions in the ocean, marine physical chemistry, chemical equilibrium, and concepts of mass balance. Mechanisms and models used to explain distributions of stable and radioactive isotopes, gases, trace metals, and biochemicals in the world's oceans. Offered: A.

OCEAN 521 Aquatic Chemistry (3) Application of physical chemistry and thermodynamics to processes that control chemical composition of natural waters. Equilibrium approach. Acid/base chemistry, the carbonate system, dissolution and precipitation, metal ions in solution, oxidation-reduction chemistry, silicate mineral reactions. Prerequisite: OCEAN 520 or permission of instructor. Offered: A.

OCEAN 522 Marine Organic Geochemistry (3) Sources, reactions, and fates of organic molecules in the marine environment along with the stable isotope geochemistry of marine organic substances. Prerequisite: CHEM 237 and CHEM 239 or permission of instructor.

OCEAN 523 Geochemical Cycles (4) Descriptive, quantitative aspects of earth as biogeochemical system. Study of equilibria, transport processes, chemical kinetics, biological processes; their application to carbon, sulfur, nitrogen, phosphorus, other elemental cycles. Stability of biogeochemical systems; nature of human perturbations of their dynamics. Prerequisite: permission of instructor. Offered: jointly with ATM S 508/CHEM 523.

OCEAN 529 Seminar on Chemical Oceanography (*, max. 30) Lectures, discussions, and readings on selected problems of current interest. Prerequisite: permission of instructor. Offered: AWSp.

OCEAN 530 Marine Bacteria, Archaea, and Viruses (3) Explores the role of marine microorganisms in transformations of dissolved and particulate organic matter. Covers the functional and phylogenetic diversity of bacteria, archaea, and viruses in the marine environment; the fate of organic carbon in the microbial loop; and the interrelationship of the carbon cycle with other biogeochemical cycles. Prerequisite: permission of instructor. Offered: W, odd years.

OCEAN 531 Marine Phytoplankton and Biogeochemistry (3) Covers phytoplankton in the marine environment: evolution, ecology, primary productivity, and physiology, emphasizing their role in the global carbon cycle; spatial and temporal distributions of phytoplankton and how these patterns may change as ocean conditions change; and methods for determining distributions and rates in different ocean ecosystems. Prerequisite: permission of instructor. Offered: W, even years.

OCEAN 532 Marine Zooplankton Ecology (3) Examines the role of zooplankton in ecosystems and biogeochemical cycles. Covers the distribution and abundance of zooplankton in space and time; small-scale distributions; morphology and behavior; population dynamic, energetics, and secondary production; trophic structure and dynamics; biogeography; impacts of climate change; and models of populations and food chains.

OCEAN 533 Marine Benthic Ecology (3) Analyzes marine communities associated with the porous boundaries of the ocean, from sedimented seafloor and hydrothermal vents to sea ice (inverted benthos); emphasizing nutrition to these communities, including sinking organic aggregates, themselves porous habitats, and the role of symbiosis. Prerequisite: permission of instructor. Offered: W, even years.

OCEAN 535 Biological Oceanography (3) Examines major patterns and processes in upper ocean pelagic ecosystems, emphasizing quantitative analysis of mechanisms

controlling production and abundances of organisms, from plankton to fish. Introduces interdisciplinary study of effects of anthropogenically induced changes in climate and ocean chemistry on organisms, ecosystem processes, and biogeochemical cycles. Offered: A.

OCEAN 539 Seminar in Biological Oceanography (*, max. 30) Lectures, discussions, and work on selected problems of current interest. Prerequisite: permission of instructor. Offered: AWSp.

OCEAN 540 Marine Geology and Geophysics Processes (3) *Nittrover, Solomon* Synthesis of processes that form ocean basins and fill them with sediment, including: plate tectonics and the creation, evolution, and subduction of ocean crust; accumulation of terrestrial, biogenic, and authigenic sediments; and the history of paleoceanographic events recorded in the seafloor. Offered: W.

OCEAN 541 Marine Sedimentary Processes (3) Investigates fundamental process of marine sedimentation, including equations characterizing boundary-shear flows, initiation of grain motion, bedload and suspended-load transport, and sediment accumulation. Applies concepts to sediment dispersal in rivers, deltas, estuaries, beaches, continental shelves, slopes, and rises, with emphasis on the relationships between active processes and resulting deposits.

OCEAN 544 Subseafloor Hydrogeology and Geochemistry (3) *Soloman* Introduces the occurrence, composition, and movement of groundwater in the ocean crust and its role in a wide range of geologic and biogeochemical processes. Includes basic theories of groundwater motion, heat transport, solute transport, and hydromechanics with applications to diverse subseafloor environments ranging from mid-ocean ridges to subduction zones. Offered: Sp.

OCEAN 545 Oceanic Lithosphere (3) Basic principles of elasticity, fluid flow, and heat transport with specific applications to the formation and evolution of the oceanic lithosphere. Includes deformation of the earth, flow in porous media, heat transport, and marine seismological and potential field techniques. Prerequisite: OCEAN 540. Offered: jointly with ESS 568.

OCEAN 546 Continental-Margin Sedimentation (3) Detailed evaluation of recent studies into processes forming strata on continental margins, including the diverse time scales ranging from sediment transport to sequence stratigraphy. Highlights the linkages with physical oceanographic processes, the fates of geochemical components, and the relationship to biological communities. Offered: jointly with ESS 546.

OCEAN 549 Seminar in Geological and Geophysical Oceanography (*, max. 30) Lectures, discussions, and field and laboratory work on selected problems of current interest. Prerequisite: permission of instructor. Offered: AWSp.

OCEAN 550 Geochemistry and Geophysics of Melt Generation (3) Mantle flow beneath mid-ocean ridges and hotspots, major element systematics, constraints from trace elements and isotopes on melting and mantle reservoirs, melt extraction, and crustal thickness and axial topography. Prerequisite: OCEAN 544 or permission of instructor.

OCEAN 552 Seminar in Geophysics and Geological Data Analysis (1) Practical geophysical data analysis, map projections, gridding multibeam bathymetry processing, gravity and magnetic anomalies, downward continuation, magnetic inversion, seismic refraction and reflection, and microearthquake locations. Prerequisite: permission of instructor.

OCEAN 554 Paleoclimate Proxies (3) *Alexander, Sachs* Provides a critical evaluation of the most commonly applied paleoclimate proxies from the ocean, land, and ice sheets. Offered: jointly with ATM S 554/ESS 554.

OCEAN 558 Climate Modeling (3) *Bitz, Thompson* Principles of Earth system modeling. Emphasis on atmosphere, ocean sea ice, and land-surface components. Climate forc-

ing. Appropriate use of models. Topics of current interest including carbon cycle, atmosphere chemistry, and biogeochemistry. Prerequisite: either ATM S 587/OCEAN 587/ESS 587, ATM S 504 or ATM S 505. Offered: jointly with ATM S 559/ESS 559.

OCEAN 559 Advanced Seminar on Mid-Ocean Ridge Processes (*, max. 9) Lectures, discussions, and practical work on selected topics of current interest in mid-ocean ridge research. Prerequisite: permission of instructor.

OCEAN 560 Atmosphere/Ocean Interactions (3) Observations and theory of phenomena of the coupled atmosphere-ocean system. El Nino/Southern Oscillation; decadal tropical variability; atmospheric teleconnections; midlatitude atmosphere-ocean variability. Overview of essential ocean and atmospheric dynamics, where appropriate. Prerequisite: ATM S 509/OCEAN 512. Credit/no-credit only. Offered: jointly with ATM S 560.

OCEAN 569 Topics in Physical Oceanography (1-4, max. 30) Lecture series on topics of major importance in physical oceanography. Offered: AWSp.

OCEAN 570 Marine Microbial Interactions (1-3, max. 9)

OCEAN 572 Marine Protist Ecology (1-3, max. 9) Examines the phagotrophic (protozoa) and mixotrophic (both photosynthetic and phagotrophic) protists, including: interactions with predators and prey; and adaptations to changing environments, evolutionary, and ecological implications of mixotrophy. Prerequisite: OCEAN 532 or permission of instructor. Offered: Sp.

OCEAN 578 Advanced Topics in Biological Oceanography (*, max. 18) Specialized research areas. Topic varies each year. Offered at Friday Harbor Laboratories. Prerequisite: permission of director of Friday Harbor Laboratories. Offered: S.

OCEAN 580 Aquatic Kinetics (3) Reaction rates and mass transport in water. Theories of chemical kinetics; experimental results from: CO₂ hydrolysis, Fe, Mn, and H₂S oxidation, stable isotope fractionation, mineral dissolution; homogeneous, heterogeneous, microbial catalysis; reaction and transport at air-water, sediment-water, and O₂/H₂S interfaces. Prerequisite: permission of instructor.

OCEAN 582 River Basin Biogeochemistry (3) The function of rivers and river basins in transporting materials to the oceans and their importance in biogeochemical cycles. Origin of water and water routing within drainage basins, sources and modification of dissolved and particulate materials in transport, ecological theory, and estuarine mixing zone transformations. Prerequisite: permission of instructor.

OCEAN 583 Isotope Biogeochemistry (3) The use of stable isotopes to study biogeochemical cycles in the oceans and atmosphere; specifically carbon, nitrogen, and sulfur cycles. Isotopic effects during photosynthesis, respiration, organic matter degradation. CaCO₃ dissolution, methanogenesis, nitrification/denitrification, and sulfate reduction. Prerequisite: permission of instructor.

OCEAN 584 Ocean Tracers and Mixing (3) The applications of tracers to studies of ocean circulation and ventilation. Processes within the ocean for which tracers have provided important information include gas exchange, mixed layer dynamics, thermocline ventilation, deep water formation and spreading, and mixing. Knowledge of partial differential equations suggested.

OCEAN 586 Current Research in Climate Change (2, max. 20) Weekly lectures focusing on a particular aspect of climate (topic to change each year) from invited speakers (both UW and outside), plus one or two keynote speakers, followed by class discussion. Credit/no-credit only. Offered: jointly with ATM S 586/ESS 586.

OCEAN 587 Fundamentals of Climate Change (3) Examines Earth's climate system; distribution of temperature, precipitation, wind ice, salinity, and ocean currents; fundamental processes determining Earth's climate; energy

and constituent transport mechanisms; climate sensitivity; natural climate variability on interannual to decadal time scales; global climate models; predicting future climate. Offered: jointly with ATM S 587/ESS 587.

OCEAN 588 The Global Carbon Cycle and Climate (3) *Emerson* Oceanic and terrestrial biogeochemical processes controlling atmospheric CO₂ and other greenhouse gases. Records of past changes in the earth's carbon cycle from geological, oceanographic, and terrestrial archives. Anthropogenic perturbations to cycles. Develop simple box models, discuss results of complex models. Offered: jointly with ATM S 588/ESS 588; W.

OCEAN 589 Paleoclimatology: Data, Modeling, and Theory (3) Evidence for past changes in land and sea surface temperature, in precipitation and atmospheric dynamics, and in ocean circulation: both long and interannual timescales. Paleoclimate modeling and theory. Time series analysis and climate noise. Rapid climate change. Statistical reconstruction of interannual variability. Offered: jointly with ATM S 589/ESS 589.

OCEAN 590 Advanced Topics in Oceanography (9-18, max. 18) Advanced topics examining specialized and interdisciplinary areas of oceanographic research. Offered at Friday Harbor Laboratories. Prerequisite: permission of Director of Friday Harbor Laboratories. Offered: S.

OCEAN 591 Marine Science in the Coastal Zone (3) *R. KELLY* Presentation and analysis of the marine science of estuarine, coastal, and open ocean systems, including evaluation and interpretation of scientific information necessary for management. Lectures, discussions, and readings emphasize the relevance of natural processes to marine environmental management and decision-making. Offered: jointly with SMEA 591; A.

OCEAN 592 Communicating Ocean Sciences (4) *Robigou* Explores improving communicating scientific knowledge through instruction of inquiry-based science in school classrooms. Students practice communicating science, and receive mentoring on how to improve their presentations. Prerequisite: Marine sciences studies background. Offered: Sp.

OCEAN 593 Climate Science Seminar (1) *Mote* Focuses on how to communicate climate science to many different audiences through careful construction of figures and through written and oral communication. Credit/no-credit only. Offered: jointly with ATM S 593/ESS 593; W.

OCEAN 596 Climate Science Capstone Project (1-5, max. 5) *Mote* Climate capstone directed by a mentor, may be a group effort, and may encompass curriculum development, internships, workshop organization, etc., capturing interdisciplinary aspects of climate science and effective communication of climate science. Offered: jointly with ATM S 596/ESS 596; AWSpS.

OCEAN 600 Independent Study or Research (*-) Offered: AWSpS.

OCEAN 700 Master's Thesis (*-) Offered: AWSpS.

OCEAN 800 Doctoral Dissertation (*-) Offered: AWSpS.

Quantitative Science

The Center for Quantitative Science is an interdisciplinary program administered by the College of Environment with cooperation from the School of Aquatic and Fishery Sciences and the School of Environmental and Forest Sciences. It provides high-quality instruction in mathematical and applied statistical methods for undergraduate students who major in the biological and ecological sciences, renewable resources management, and environmental studies. The center provides instruction in an atmosphere that emphasizes the use of quantitative methods to better understand a variety of scientific phenomena. Faculty represent various applied scientific disciplines within the School of Envi-

ronmental and Forest Sciences and the School of Aquatic and Fishery Sciences.

Students in environmental, biological, ecological, and resource management majors may wish to complete a minor in quantitative science to document their understanding of the mathematical and statistical methods used in these competitive and increasingly quantitative fields.

UNDERGRADUATE PROGRAM

Adviser

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(206) 543-1191

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The Center for Quantitative Science offers the following program of study:

- A minor in quantitative science

Minor

Minor Requirements: A minimum of 27 credits, as follows:

1. *Core Courses (24-25 credits):* Q SCI 291, Q SCI 292 (or MATH 124, MATH 125); Q SCI 381, Q SCI 482; Q SCI 483 (or Q SCI 403/STAT 403)
2. *Electives (3-5 credits):* Selected from an approved list of electives, a partial list of which includes Q SCI 210/ENVIR 210, Q SCI 403/STAT 403 (if not taken as part of core courses, above), Q SCI 454/FISH 454, Q SCI 480/STAT 480, Q SCI 483 (if not taken as part of core courses, above), Q SCI 486/STAT 486. See adviser for possible additional qualifying courses.
3. A minimum 2.0 grade is required in each course taken as part of the minor.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

Q SCI 210 Introduction to Environmental Modeling (4) NW, QSR D. GRUNBAUM Explores strengths and limitations of diverse modeling approaches, and strategies for using models in quantitative critical analysis of past, current and future conditions in terrestrial and marine environments. Focus on active learning use of models to ask and answer questions about biotic and abiotic environmental processes, management strategies and policy decision-making. Offered: jointly with ENVIR 210.

Q SCI 291 Analysis for Biologists I (5) NW, QSR J. JOHNSON Introduction to differential calculus, emphasizing development of basic skills. Examples promote understanding of mathematics and applications to modeling and solving biological problems. Topics include optimization and curve analysis. Prerequisite: either MATH 120, Q SCI 190, a minimum score of 2 on advanced placement test, or a score of 153-163 on MPT-AS placement test. Not available for credit to students who have completed MATH 124 with a 2.0 or higher. Offered: AWS.

Q SCI 292 Analysis for Biologists II (5) NW, QSR V. GALLUCCI, J. JOHNSON Introduction to integral calculus, emphasizing development of basic skills. Examples promote understanding of mathematics and applications to modeling and solving biological problems. Topics include areas under curves, volumes, and differential equations. Prerequisite: minimum grade of 7 in either Q SCI 291 or MATH 124. Not available for credit to students who have completed MATH 125 with a 2.0 or higher. Offered: WSpS.

Q SCI 381 Introduction to Probability and Statistics (5) NW, QSR B. BARE, V. GALLUCCI, J. HORNE Applications to biological and natural resource problems stressing the

formulation and interpretation of statistical tests. Random variables, expectations, variances, binomial, hypergeometric, Poisson, normal, chi-square, "t" and "F" distributions. Prerequisite: either MATH 120, MATH 124, MATH 125, MATH 126, Q SCI 190, or Q SCI 291, or a minimum score of 2 on advanced placement test, or a score of 153-163 on the MPT-AS placement test. Offered: AWSpS.

Q SCI 403 Introduction to Resampling Inference (4) NW V. MININ Introduction to computer-intensive data analysis for experimental and observational studies in empirical sciences. Students design, program, carry out, and report applications of bootstrap resampling, rerandomization, and subsampling of cases. Experience programming in R is beneficial. Credit allowed for STAT 403 or STAT 503 but not both. Prerequisite: either STAT 311/ECON 311, STAT 341, STAT 390/MATH 390, STAT 481/ECON 481, or Q SCI 381 and Q SCI 482. Offered: jointly with STAT 403; Sp.

Q SCI 454 Ecological Modeling (5) NW T. ESSINGTON Examines concepts in ecological modeling focusing on the rationale, interpretation, and motivation for modeling in ecological sciences. Explores individual, population, and ecosystem-based models. Excel-based computer exercises, model building and interpretation, readings. Offered: jointly with FISH 454; W.

Q SCI 458 Modeling and Estimation in Conservation and Resource Management (4) NW T. BRANCH Explores the use of models in the evaluation of alternative management policies for natural resources, including modeling approaches, fitting models to data, and evaluating alternative management policies. Emphasizes calculating risk of extinction, and design of biological reserves. Offered: jointly with FISH 458; Sp.

Q SCI 480 Sampling Theory for Biologists (3) NW J. SKALSKI Theory and applications of sampling finite populations including: simple random sampling, stratified random sampling, ratio estimates, regression estimates, systematic sampling, cluster sampling, sample size determinations, applications in fisheries and forestry. Other topics include sampling plant and animal populations, sampling distributions, estimation of parameters and statistical treatment of data. Prerequisite: Q SCI 482. Offered: jointly with STAT 480; W, odd years.

Q SCI 482 Statistical Inference in Applied Research I: Hypothesis Testing and Estimation for Ecologists and Resource Managers (5) NW Analysis of variance and covariance; chi square tests; nonparametric procedures multiple and curvilinear regression; experimental design and power of tests. Application to biological problems. Use of computer programs in standard statistical problems. Prerequisite: either STAT 311 or Q SCI 381. Offered: AW.

Q SCI 483 Statistical Inference in Applied Research II: Regression Analysis for Ecologists and Resource Managers (5) NW J. SKALSKI Analysis of linear regression models and introduction to nonlinear models. Model selection using generalized F-tests; residual analysis. Application to categorical, count, binomial, transformed variables. Introduction to matrix formation of regression models and applications. Prerequisite: Q SCI 381; Q SCI 482. Offered: Sp.

Q SCI 486 Experimental Design (4) NW Emphasizes data modeling using structured means resulting from choice of experimental and treatment design. Examines experimental designs, including crossed, nested designs; block; split-plot designs; and covariance analysis. Also covers multiple comparisons, efficiency, power, sample size, and pseudo-replication. Prerequisite: Q SCI 482. Offered: jointly with STAT 486; W, even years.

Q SCI 497 Special Topics in Quantitative Science (1-15, max. 15) NW Topics not normally offered in regular curriculum. Format ranges from seminar/discussion, formal lectures, laboratory or modeling work. Offered: AWSpS.

Q SCI 498 Internship (1-15, max. 15) NW Internship experience with a public agency or private company, supervised and approved by a faculty member. Preparation of profes-

sional report reflecting on the experience is required. Offered: AWSpS.

Q SCI 499 Research Experience (1-15, max. 15) Special studies in quantitative ecology and resource management for which there is not sufficient demand to warrant the organization of regular courses. Credit/no-credit only.

Quaternary Research Center

19 Johnson

Quaternary studies focus on the processes that presently shape the natural environment and have operated over approximately the past two and a half million years (Quaternary period). A knowledge of Quaternary events facilitates an understanding of earth history in relation to the modern environment and has predictive value with regard to present-day and future environmental changes.

Quaternary research is typically interdisciplinary, and thus it commonly involves related interests of two or more academic units. The Quaternary Research Center was established in 1967 to foster such interdisciplinary studies on a cooperative basis.

The center has the following goals:

1. To understand environments and climate changes of the past two and a half million years in the context of modern surface processes, which include historical changes, prehistoric postglacial environments, and Ice Age events.
2. To serve as a catalyst in fostering interdisciplinary studies in the fields of atmospheric sciences, archaeology/anthropology, botany, engineering, fisheries, forestry, geology, geophysics, oceanography, pedology, and zoology.
3. To provide a scientific perspective on the scale of modern and man-made environmental changes, including climate changes, in the context of recent earth history.
4. To conduct a curriculum jointly with other disciplines in the training of graduate students in Quaternary-oriented studies.
5. To seek applications of quaternary studies to modern environmental problems that help predict consequences of policy decisions.

GRADUATE PROGRAM

Students associated with the center obtain their degrees through cooperating departments. Students interested in graduate work at the center should apply to the department of their choice but plan to do their research in a Quaternary-related subject.

RESEARCH FACILITIES

The research laboratories of the center provide an array of modern facilities for investigation of Quaternary problems.

QRC Resource Center

This specialized collection, dealing with a wide range of Quaternary topics, is among the most extensive in North America. It includes books, monographs, theses, journals, and maps, and houses a large, diverse reprint collection. Searches for library material can be conducted via the QRC web page.

Cosmogenic Nuclide Laboratory

John Stone, Director

The UW Cosmogenic Nuclide Laboratory analyses rare radionuclides produced by cosmic ray bombardment of the Earth's surface. These nuclides are useful for surface exposure dating and the study of geomorphic rates and processes. Current projects include work on Quaternary glaciations of Antarctica, Europe, and North America; dating of landslides and volcanic eruptions; and studies of erosion in both tectonically active and ancient, stable landscapes. The laboratory has sample preparation facilities and clean labs for extraction of Al-26, Be-10, and Cl-36. For additional information, visit the laboratory's website.

Geochemistry Library

Ronald S. Sletten, Director

The Geochemistry Library conducts analyses of natural waters, soil, and sediment. Instrumentation includes ICP-OES, ICP-MS, laser diffraction particle size analyzer, and total organic/inorganic carbon analyzer for water samples. The library also conducts C-13 CP-MAS-NMR for natural organic and pulsed field gradient PFG-NMR for diffusion studies of water in porous media. The primary research foci are weathering, elemental cycling, and studies of permafrost soils. Current projects include investigation of biocomplexity of carbon cycling in Arctic soils in Greenland and physicochemical soil processes in Antarctica and Alaska.

Periglacial Laboratory

Bernard Hallet, Director

Research in the Periglacial Laboratory focuses on diverse processes at the interface between glaciology and geomorphology that are fundamental to understanding landscapes and soils in alpine and polar regions. Founded by Link Washburn, the laboratory has a long history of experimental research on periglacial processes with special attention given to the complex phenomena associated with freezing soils and rocks. Recently the lab has also served as a base of support for extensive field work involving electronic instrumentation to monitor surface processes in the Arctic, Antarctica, the Himalayas, southeast Tibet, and other regions across the globe.

Stable Isotope Laboratory

Eric J. Steig, Director

The Stable Isotope Laboratory is the main center for stable isotope studies for the QRC. The current emphasis in the laboratory is the development of high-resolution climate records covering the last ten millennia, from ice cores in the Canadian Arctic, Greenland, and Antarctica. Facilities in the laboratory include off-line and online preparation systems for D/H and 18O/16O on water 13C/12C on carbonates and organic materials, and 15N/14N on nitrate and organics. Additional information, data, and other resources are available via the laboratory's website.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

QUAT 501 Seminar/Conference in Quaternary Environments (1, max. 6) Interdisciplinary seminar or conference in the changing natural environments of the Quaternary Period, with emphasis on climatic changes and their effects. Speakers from the University and elsewhere present lectures on their specialties, followed by discussion. Credit/no-credit only.

QUAT 502 Interdisciplinary Quaternary Investigations (2, max. 6) Research course for interdisciplinary investigation of Quaternary problems. Student attends sessions of QUAT

501 and pursues a problem-oriented case study concurrently under faculty direction. Required paper on case study. Prerequisite: graduate standing. Credit/no-credit only.

QUAT 504 Special Topics in Quaternary Sciences (1-3, max. 3) Environments and climate changes of past two million years (Quaternary Period) in context of modern surface processes, including historical changes, prehistorical environments of postglacial period, and Ice Age events. Provides scientific perspective on scale of modern and man-made environmental changes, including those of climate, in context of recent earth history. Prerequisite: background courses in earth sciences and ecology. Credit/no-credit only.

The Information School

370 Mary Gates Hall
Box 352840

Dean

Harry Bruce

Associate Deans

Cheryl Metover, Research

Matthew Saxton, Academics

Never in our society's history has there been such a great need to manage so much information quickly and efficiently. The Information School is dedicated to preparing a rising generation of information leaders to embrace the challenges associated with the way we create, find, store, manipulate, and share information.

The School offers four degree programs, leading to the Bachelor of Science in Informatics, Master of Library and Information Science, Master of Science in Information Management, and PhD in Information Science. The School also offers certificate programs, continuing education opportunities for professionals, and service courses for undergraduates in information fluency, research strategies, and technology. Graduates of the School assume a variety of professional roles in the public, private and non-profit sectors, with positions that span from information architects to children's librarians, from web developers to information technology (IT) managers, from network and information assurance professionals to researchers and faculty in the information field.

The community is interdisciplinary, bringing together a variety of social science traditions, including: library and information science, computer science, sociology, communication, philosophy, and engineering. Most research addresses topics in the following broad categories:

- Ethics and Information
- Personal Information Management
- Human-Computer Interaction and Design
- Information Management
- Knowledge Organization
- Information Literacy
- Access to Information
- Information in Everyday Life

The School's work remains focused on the human impact of information. The research and curriculum of the school examines information systems and technology from a user-centered perspective. By retaining a focus on the human impact of information systems and technology, we build on our community values of trust, transparency, and mutual respect.

History

Originally established in 1911, the Information School has the oldest library and information science program west of the Mississippi, and continues to offer the most extensive American Library Association-accredited library and information science degree in the Northwest region of the United States.

In 1998, the University set out to transform the School by charging it with a new mission, to become what it is today: a broad-based information school that meets the challenges and opportunities of the information age. With the addition of three new degree programs, a new dean, faculty, and state of the art facilities, the Information School became

the University's sixteenth independently organized school/college in 2001.

The School seeks to explore the theoretical and applied cutting edges of the information field and to nurture the best of both worlds: traditional library values and ever-changing information frontiers.

Passion

The School is inspired by information, wanting everyone to know how vital information is in all aspects of life.

Vision

The School envisions a world where more effective use of information helps everyone discover, learn, innovate, solve problems, have fun, and make a better world. Information changes lives.

Mission

The School prepares information leaders through researching the problems and opportunities of information, designing solutions to information challenges, and making information work.

Informatics students design, build, implement, and secure information systems that meet human, organizational, and societal needs.

Students have a strong people focus and they excel as user experience designers, business analysts, data managers, information architects, web developers, and information assurance professionals.

UNDERGRADUATE PROGRAM

Adviser

470 Mary Gates Hall

Box 352840

(206) 543-1794

informatics@uw.edu

The Information School offers a Bachelor of Science degree with a major in Informatics, with options in human-computer interaction and information architecture.

Bachelor of Science

Suggested First- and Second-Year College Courses: INFO 101, INFO 200, an English composition course (selected from the University list), CSE 142, CSE 143, and STAT 221, STAT 311, STAT 293, or Q METH 201; courses that develop strong analytical, qualitative, and quantitative reasoning skills; courses that develop strong written and oral communication skills; courses that provide exposure to a variety of social science fields such as psychology, sociology, anthropology, or philosophy.

Program Admission Requirements

Regular Admission

1. INFO 200; CSE 142; either STAT 221, STAT 311, STAT 390, or QMETH 201; one English composition course selected from the University list, with a minimum 2.0 grade in each course. Departmentally approved transfer equivalents may be used to substitute for prerequisite courses.
2. Minimum 2.00 cumulative college GPA.
3. Admission is competitive, based on the following criteria:
 - a. Overall academic performance
 - b. Grades in courses required for admission to the major
 - c. Personal statement reflecting an interest in and commitment to becoming a major in this field

- d. Other evidence of interest in and commitment to the field (e.g., work experience, internships).

Meeting the above criteria does not guarantee admission.

4. Application deadline is June 15. Students apply online at www.ischool.uw.edu. Admission is for autumn quarter only.
5. Admission is done annually and new students enter the program autumn quarter. Most students apply spring of their sophomore year and begin the program the following autumn quarter as a junior.
6. There is not an equivalent course to INFO 200 taught elsewhere; therefore, transfer students can apply to the program and be admitted with the provision that they complete INFO 200 with a minimum 2.0 grade before the end of their first year in the program.

Freshman Direct Admission Program (FDAP)

Designed to recruit top high school students to the program and to the UW. Students who indicate an interest in the Informatics program are automatically considered for FDAP participation upon application to the UW. They are evaluated based on careful review of qualitative and quantitative factors, including high school GPA, SAT scores, personal statement, and any additional information provided in their application file. Students selected for FDAP are involved in the academic and social life of the Information School, participating in courses, activities, and research opportunities as appropriate during their freshman and sophomore years.

The number of early admission (FDAP) students does not exceed 10 percent of the number of majors admitted each year.

Major Requirements

94-99 credits as follows:

1. Courses required for admission to the program (18-19 credits, as shown above)
2. *Core Courses (55 credits):* INFO 330, INFO 340, INFO 343, INFO 360, INFO 380, INFO 450, INFO 470, INFO 481, INFO 490 (8), INFO 491, CSE 143, CSE 373
3. *Areas of Study (16-20 credits):* Students may choose a transcriptable option in either human-computer interaction (HCI) or information architecture (IA). (See below.) Alternatively students may work with their adviser to select a minimum of four classes (16-20 credits) to create a customized program aligned with their personal interests or career goals. For example, networking and information assurance, as well as social computing/social informatics, are additional areas of strength within the School.
4. *Free Elective (5 credits):* At least one additional 300- or 400-level INFO elective in any area, totalling at least 5 credits.

General Education and Areas of Knowledge:

1. English composition (5 credits)
2. Quantitative/Symbolic Reasoning (5 credits)
3. Writing courses (10 credits)
4. Natural World (20 credits)
5. Individuals & Societies (20 credits)
6. Visual, Literary, & Performing Arts (20 credits)

Up to 15 credits of INFO-prefix courses from the University Areas of Knowledge list may be counted toward the UW Areas of Knowledge requirement (Natural World; Individuals & Societies; Visual, Literary, & Performing Arts).

Options

Human-Computer Interaction (HCI) Option (16-20 credits)

Minimum four courses from the areas listed below, with the following distribution:

1. At least one course in two of the following areas: user interface software and technology; design; usability and user research; social and ethical dimensions. See department website for approved area courses.
2. At least one course from the approved area list from a participating department outside the Information School (Art, Computer Science, or Human Centered Design & Engineering). See department website for approved area courses.
3. Special topics courses such as INFO 498, CSE 190, HCDE 490, and HCDE 496 may be approved within any of the course areas below on an individual, per-course basis, depending on subject matter.

Course Areas:

- Foundations: ART 383, CSE 440, HCDE 319
- User Interface Software and Technology: CSE 441, INFO 344, HCDE 438
- Design: ART 483, ART 484, INFO 424, HCDE 455
- Usability and User Research: INFO 310, HCDE 317, HCDE 318
- Social and Ethical Dimensions: INFO 444, INFO 447

Information Architecture (IA) Option (16-20 credits)

Minimum four courses from an approved list. See department website for list.

Information Assurance and Cybersecurity Option (16-20 credits)

See department website for list.

1. *Foundation Course*: INFO 310 or equivalent
2. Minimum three additional courses from an approved list (11-15 credits). Includes courses at participating departments on all three UW campuses. See program website for list: ischool.uw.edu/academics/informatics/degree-options. No more than one of these three may be a networking course (INFO 341, T INFO 250, or CSS 432).

Continuation Policy

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

Student Outcomes

- *Learning Objectives and Expected Outcomes*: The informatics program prepares students for a wide range of endeavors in the information field including information management and technology, research and information services, interactive system design, human-computer interaction, and information science.

Graduates of the informatics program are qualified for jobs in the information and technology industry and in business, public service, and other professions. Possible job titles include user experience designer, business analyst, consultant, usability engineer, data manager, information architect, web developer, network manager, project manager, and information assurance professional.

The program also provides strong preparation for graduate studies. Graduates are successfully placed in prestigious graduate schools and pursue a variety of programs, including information and management science, information science, biomedical informatics, business and accounting, and information technology.

Informatics student-learning outcomes include the ability to assess people's information needs and behavior; ability to design information systems to meet people's information needs; ability to work with information technologies (e.g., database, networks, Internet-based, interface design); ability to evaluate the impact of infor-

mation technologies on people; ability to communicate effectively; ability to manage projects; ability to build working systems; ability to organize and manage information; ability to work effectively individually and as part of a team; and ability to understand the research process and its implication for information systems design and use. All informatics courses are designed to produce these outcomes through a rigorous experiential learning approach that emphasizes group work, research, writing, oral presentations, and technology.

- *Instructional and Research Facilities*: Located on the third and fourth floors of Mary Gates Hall, the School offers an extensive software collection, a state-of-the-art computer classroom, an innovative Technology Exploration (TE) Lab, and excellent network connectivity. Students have access to software applications including titles for database and text management, programming, graphics, multimedia production, web development, Internet exploration and collaboration, and office productivity. Students also have access to a large number of bibliographic databases and commercial information services.

The School also has a dedicated information science research facility at the Roosevelt Commons Building. The research space comprises 7,000 square feet of offices, workstations, research labs, and meeting spaces.

- *Honors Options Available*: With College Honors; With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). Distinction (Departmental Honors). See adviser for requirements.
- *Research, Internships, and Service Learning*: Internships are encouraged, but not required. Students participate in a variety of internships, paid and non-paid. A significant number of students also work part-time in Informatics or technology-related positions, and participate in public service.

Informatics students are extensively engaged in faculty research and internships. A significant percentage of informatics students participates in the University's Undergraduate Research Symposium each year. Students have co-authored publications with faculty, had their research accepted for presentation at national conference poster sessions, and been recognized with various awards, including the Mary Gates Research Training Endowment for three consecutive years (2001-03).

- *School Scholarships*: The Henry Scholarships, in the amount of approximately \$1500 each, are awarded to three second-year majors in recognition for academic achievement, leadership, and service to the School and in professional/student activities. Students to be considered for the award are nominated by the Information School faculty and Undergraduate Program Committee members. The merit-based awards, named after the founder of the school and first director, William Henry, are intended to recognize and honor student achievement.
- *Student Organizations/Associations*: Undergraduates participate in a number of the School's many student organizations, including the UW Informatics Undergraduate Association (IUGA) and the student chapter of the American Society of Information Scientists and Technologists (ASIST).
- *Of Special Note*:
 - *Capstone Projects*: Students often use their capstone projects to identify interest areas, develop skills, and prepare for future pursuits. Through capstone projects, students demonstrate the skills, understanding, and competencies they can successfully use to prepare for employment and graduate studies.
 - *Information Sessions*: Prospective students are encouraged to attend an Informatics information ses-

sion. For a schedule of information sessions, visit the School website at ischool.uw.edu/informatics/prospective/more_info.

GRADUATE PROGRAMS

The School offers graduate programs leading to the Master of Library and Information Science (MLIS), the Master of Science in Information Management (MSIM), and the Doctor of Philosophy (PhD) in Information Science.

Master of Library and Information Science

MLIS Adviser

470 Mary Gates Hall, Box 352840

(206) 543-1794

mlis@uw.edu

Admission Requirements

The MLIS program is offered in two delivery modes: residential (on-campus, two-year program) and distance (online with quarterly residencies, three-year program). When applying, applicants must indicate for which program they are applying. Applications should also include:

1. A current resume highlighting any relevant work experience, volunteer activities, and honors, awards, and presentations
2. Three letters of recommendation
3. Personal statement of educational and professional goals and responses to two supplemental questions
4. Official transcript from each relevant institution attended
5. GRE scores. Applicants with an earned doctorate (PhD, MD, JD) are not required to submit GRE scores.
6. TOEFL score (for international students)

Degree Requirements

63 credits, as follows:

1. *Core Curriculum (34 credits)*: LIS 500, LIS 510, LIS 520, LIS 530, LIS 540, LIS 550, LIS 560, LIS 570, LIS 580
2. *Electives (29 credits)*
3. *Portfolio or Thesis Option*: MLIS students must complete either a portfolio or thesis in order to graduate.
4. *Directed Fieldwork*: LIS 590 is an elective course designed to provide students an opportunity to work in an information environment under the supervision of an experienced professional mentor.

Master of Library and Information Science, Law Librarianship

The Law MLIS program is designed to prepare lawyers with an existing JD degree to serve as law librarians in courts, federal and state units of government, law schools, corporations, and law firms.

Admission Requirements

1. A current resume highlighting any relevant work experience, volunteer activities, and honors, awards, and presentations
2. Three letters of recommendation
3. Personal statement of educational and professional goals and responses to two supplemental questions
4. Official transcript from each relevant institution attended
5. Earned JD prior to enrollment in the MLIS program
6. TOEFL score (for international students)

Degree Requirements

44 credits, as follows:

1. *Core Curriculum (23 credits)*: LIS 500, LIS 510, LIS 520, LIS 530, LIS 540, LIS 550
2. *Law Librarianship Courses (17 credits)*: LIS 591, LIS 592, LIS 593, LIS 594, LIS 595
3. *Directed Fieldwork (4 credits)*: LIS 590

Master of Science in Information Management

MSIM Adviser

470 Mary Gates Hall, Box 352840

(206) 543-1794

msim@uw.edu

Admission Requirements

1. A current resume highlighting any relevant work experience, volunteer activities, and honors, awards, and presentations
2. Three letters of recommendation
3. Personal statement of educational and professional goals
4. Official transcript from each relevant institution attended
5. GRE or GMAT scores. Applicants with an earned doctorate (PhD, MD, JD) are not required to submit GRE or GMAT scores.
6. TOEFL score (for international students)

Degree Requirements, Day Option

65-71 credits, to include:

1. *Core Curriculum*:
 - a. *Foundational Core Courses*: IMT 480, IMT 440, IMT 500
 - b. *Technology Core Courses*: IMT 540, IMT 541, IMT 542
 - c. *Management Core Courses*: IMT 580, IMT 581, IMT 582
 - d. *Integrating Core Courses*: IMT 598, IMT 595
2. *Electives (24 credits)*: Beyond the required core courses, students have the option of crafting a program of study, in collaboration with their faculty adviser, specific to their interests and career goals. MSIM course electives include, among others, principles of information retrieval systems, strategic planning and evaluation, and marketing foundations for information professionals.
3. *Internship*: MSIM internships are structured around a course (IMT 590) and are designed to provide students an opportunity to work in an information environment under the supervision of an experienced professional mentor. During the internship placement (lasting a minimum of two academic quarters), the student works to meet meaningful learning objectives that have been mutually defined by student and internship supervisor.

Degree Requirements, Executive Option

47-53 credits, to include:

1. *Core Curriculum*:
 - a. *Foundational Core Courses*: IMT 480, IMT 440, IMT 500
 - b. *Technology Core Courses*: IMT 540, IMT 541, IMT 542
 - c. *Management Core Courses*: IMT 580, IMT 581, IMT 582
 - d. *Integrating Core Courses*: IMT 598, IMT 595

2. *Electives*: Students complete a minimum of 11 credits of electives, which includes advanced MSIM courses, relevant upper-level coursework in other academic disciplines, or an independent study (IMT 600).

Doctor of Philosophy in Information Science

PhD Adviser

470 Mary Gates Hall, Box 352840

(206) 543-1794

ischoolphd@uw.edu

Admission Requirements

90 credits minimum, to include:

1. Current curriculum vitae highlighting any academic and/or work experience, honors, publications, presentations, and research experience
2. Three letters of recommendation
3. Personal statement of educational and professional goals
4. Official transcript from each relevant institution attended
5. GRE Scores. Applicants with an earned doctorate (PhD, MD, JD) are not required to submit GRE scores.
6. TOEFL score (for international students)

Degree Requirements

90 credits minimum, to include:

1. *Required Courses*: INSC 501, INSC 570, INSC 572, INSC 500; two research practica; two teaching practica; at least one of the following quantitative methods courses: BIOST 502, BIOST 517, COM 520, CS&SS 507, PSYCH 524
2. Additional elective coursework selected in consultation with faculty advisers
3. 18 graded credits in courses at the 500 level and above (taken prior to general examination)
4. 60 credits taken prior to general examination
5. 27 dissertation credits (INSC 800)
6. Preliminary review determined by a School-based advisory committee at the end of the required first-year of full-time study
7. General examination upon completion of coursework and practica components to attain formal candidacy for the PhD program (candidate's certificate)
8. Successfully defend a dissertation before a Supervisory Committee (final examination)

Financial Aid

The University of Washington Financial Aid Office administers a variety of government and University funded financial aid programs for which applicants must submit the Free Application for Federal Student Aid form (FAFSA). For more information, contact the UW Financial Aid Office, 105 Schmitz Hall. Information on the FAFSA is also available online.

Graduate Assistantships and Scholarships

Financial aid options for full-time students may include graduate assistantships and scholarships. Graduate assistants generally work 220 hours per quarter, and receive a tuition waiver as well as a monthly salary and medical benefits. Prospective MLIS and MSIM students are encouraged to apply during the admission process and throughout the year as other positions become available. Visit the Student Employment Opportunities page at ischool.uw.edu/jobs/students to apply for open positions. PhD stu-

dents are automatically considered for graduate student service appointments.

MLIS scholarships are awarded on a basis of financial need, based on information from the Free Application for Federal Student Aid (FAFSA), and academic merit.

Information regarding additional sources of financial aid, from sources outside the Information School, is available at the Information School Financial Aid Resources web page.

Special Research Facilities

Located on the third and fourth floors of Mary Gates Hall, one of the University's high-technology buildings, the School offers an extensive software collection, a state-of-the-art computer classroom, an innovative Technology Exploration (TE) Lab, and excellent network connectivity. Students have access to software applications including titles for database and text management, programming, graphics, multimedia, web development, Internet exploration and collaboration, and office productivity. Students also have access to a large number of bibliographic databases and commercial information services.

The School also has a dedicated information science research facility at the Roosevelt Commons Building. The research space comprises 7,000 square feet of offices, workstations, research labs, and meeting spaces.

For more information, please visit the School's website at www.ischool.uw.edu/resources/technology/help.

Continuing and Professional Education

The Information School works with University of Washington Educational Outreach to offer classes, workshops, and certificate programs for continuing education and professional development. Current certificate programs include web technology solutions; information assurance and cybersecurity; and school library professional. Those interested in continuing education or certificate programs should contact UW Professional & Continuing Education, 4311 11th Avenue NE, Box 354978, University of Washington, Seattle, WA 98105. Phone: (206) 543-2320 or see www.pce.uw.edu/.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

Informatics

INFO 101 Social Networking Technologies (5) I&S/NW Explores today's most popular social networks, gaming applications, and messaging applications. Examines technologies, social implications, and information structure. Focuses on logic, databases, networked delivery, identity, access privacy, ecommerce, organization, and retrieval.

INFO 102 Gender and Information Technology (5) I&S, DIV Explores the social construction of gender in relation to the history and contemporary development of information technologies. Considers the importance of diversity and difference in the design and construction of innovative information technology solutions. Challenges prevailing viewpoints about who can and does work in the information technology field. Offered: A.

INFO 200 Intellectual Foundations of Informatics (5) I&S Information as an object of study, including theories, concepts, and principles of information, information seeking, cognitive processing, knowledge representation and restructuring, and their relationships to physical and intellectual access to information. Development of information systems for storage, organization, and retrieval. Experience in the application of theories, concepts, and principles.

INFO 240 Database Management Fundamentals I (5) Covers database overview and history, the relational model, entity-relationship diagrams, database design and normalization, and Structured Query Language (SQL). Through labs, tests, and a project, students develop both theoretical and practical knowledge of relational database systems.

INFO 245 Database Management Fundamentals II (5) Covers conceptual, logical, and physical database design: distributed databases; web technology and databases; advanced queries; and enterprise database administration. Through labs, tests, and a project, students develop both theoretical and practical knowledge of relational database systems. Prerequisite: INFO 240.

INFO 310 Information Assurance and Cybersecurity (5) Provides a theoretical and practical introduction to information assurance and cyber-security (IAC). Includes methods and practices for securing information and information systems. Covers how vulnerabilities arise, recognizing evolving threats, and mitigating them. Explores the role of risk analysis, information privacy, accountability, and policy.

INFO 312 Enterprise Risk Management (4) Examines the risk inherent in use of technology, and how to manage risk to information, data, and technology in organizations. Topics include risk management frameworks, risk tolerance, key risk indicators, the legislative and regulatory environment, compliance, and new avenues of risk such as social media and mobile.

INFO 320 Technical and Social Perspectives on Search (5) Fundamentals of search including data acquisition and processing, index construction, query processing, ranking and display. Covers building a customized search service, search engine optimization, individual and social perspectives on search. Prerequisite: CSE 142; INFO 343 (may be taken concurrently).

INFO 330 User Experience and Information Architecture (5) Introduction to the methodologies utilized to create a user interface. Discusses user experience (UX), what makes an interface effective, and provides an overview of the tools and theories that are foundational to Information Architecture (IA). Discusses project scoping, wireframes, sitemaps, information design and formulating a UX strategy. Prerequisite: minimum grade of 2.0 in INFO 360.

INFO 340 Introduction to Relational Database Management Systems (5) NW Introduction to relational database management systems, focused on relational theory and the application of conceptual, logical, and physical database modeling. Key topics include the relational model, SQL, entity-relationship modeling, three-tier architectures, implementation of database applications, and related topics in information systems. Prerequisite: CSE 142.

INFO 341 Computer Networks and Distributed Applications (5) NW Basic concepts of local and wide-area computer networking including an overview of services provided by networks, network topologies and hardware, packet switching, client/server architectures, network protocols, and network servers and applications. Also addresses management, security, authentication, and policy issues associated with distributed systems. Prerequisite: CSE 142.

INFO 343 Client-Side Web Development (5) NW Introduction to client-side web development including markup, programming, protocols, libraries, frameworks, and techniques for creating effective, usable, dynamic, and responsive applications that meet user needs. Includes an introduction to web development roles within organizations, content management systems, and other tools to build and manage websites and applications. Prerequisite: CSE 142.

INFO 344 Server-Side Web Development (5) Introduces server-side web development programming, services, tools, protocols, best practices and techniques for implementing data-driven and scalable web applications. Con-

nects topics from human-centered design, information architecture, databases, data analytics and security to build a solution. Prerequisite: CSE 142; either INFO 343 or CSE 154; INFO 340 (may be taken concurrently).

INFO 360 Design Thinking (5) I&S Introduces design methods for identifying user needs, devising new design concepts, prototyping these concepts, and evaluating their utility and usability. Introduces the theory and practice of user-centered design. Examines methods for identifying users' needs, understanding users' behaviors, envisioning and prototyping new systems, and evaluating the usability of systems. Emphasis on incorporating people in the design process from initial field observations to summative usability testing.

INFO 362 Visual Information Design (5) VLPA Build fluency in expressing information visually as diagrams, charts, maps, and icons. Learn to solve design problems; give and receive critique; follow an iterative process of design refinement; and learn technical skills. Understand the nature of visual potential, visual design principles, and the impact of color and typography.

INFO 370 Introduction to Data Science (5) QSR Introduction to methods, concepts, and opportunities in data science. Topics include storage and scaling of large heterogeneous data, statistical inference, probability, experimental design, machine learning, network analysis, information visualization, and data ethics and policy. Assignments and projects are based on contemporary problems in data science from industry and research. Prerequisite: CSE 142; either STAT 221/CS&SS 221/SOC 221, STAT 311, STAT 390/MATH 390, or QMETH 201.

INFO 380 Information Systems Analysis and Design (5) Prepares students to participate in structured systems analysis and design efforts. Students learn how to analyze system context, behavior, and structure; identify stakeholders; gather requirements; and redesign systems to make them more beneficial to the organization.

INFO 386 Professionalism in Informatics (4) Examines professionalism, communication, teamwork, leadership, and interpersonal networking to strengthen students as they seek to excel professionally. Covers developing and presenting business cases and project plans, personal branding, conducting informational interviews, and effective written and oral communication.

INFO 415 Emerging Topics in Information Assurance and Cybersecurity (1-5, max. 15) Explores emerging topics and unique subjects in information assurance and cybersecurity (IAC) not otherwise covered in the IAC curriculum. Prerequisite: INFO 310.

INFO 424 Information Visualization and Aesthetics (5) VLPA Examines the visualization of information: the effects of human perception, the aesthetics of information design, the mechanics of visual display, and the semiotics of iconography. Examples may include census, epidemiological, crime, earth satellite, and medical data in the contexts of special computer applications, user populations, and cultures.

INFO 430 Knowledge Organization and Representation (5) Advanced study of knowledge organization using classificatory structures and creation of metadata element sets for representation. Conceptual and practical foundations for creating systems for information organization and representation. The creation, application, and use of a variety of systems and techniques for information organization and representation. Prerequisite: INFO 200; INFO 330.

INFO 431 Metadata Design (3) Explores principles of metadata schema and application profile design and implementation using XML technologies. Examines syntactic and semantic interoperability among diverse schemas and application profiles. Prerequisite: INFO 330; INFO 340.

INFO 432 Ontology Design (3) Covers concepts and technologies supporting semantic interoperability among different metadata and ontologies including topic maps, RDF,

schema, and Web Ontology Language (OWL). Includes advanced semantic modeling of complex data. Prerequisite: INFO 431.

INFO 433 Content Strategy in Information Architecture (4) I&S Introduces key concepts in understanding the content lifecycle in context of an organization's web, mobile, and other communication channels. Provides knowledge of key theories and principles in information architecture and practical application of skills including user research; information collection and analysis; and information organization and presentation.

INFO 444 Value-Sensitive Design (5) Introduction to value-sensitive design (VSD), information system design that accounts for human values in a principled and comprehensive manner. Examination of existing systems from a VSD perspective. Explores VSD research methods including conceptual, technical, empirical investigations. Key values include accountability, autonomy, consent, privacy, property, trust, sustainability. Prerequisite: either INFO 360, DESIGN 383, CSE 440, or HCDE 419.

INFO 445 Advanced Database Design, Management, and Maintenance (5) Advanced perspectives on DBMS theory, architecture, and implementation. Conceptual, logical, physical modeling. Index structures, query optimization and performance tuning, relational algebra, transaction processing, and concurrency control. Operational databases, decision support systems, and data warehousing. Projects in database implementation and integration. Social implications of large distributed database systems. Prerequisite: INFO 340.

INFO 446 Advanced Search Engine Systems (5) Focus on design, development, and evaluation of search engines. Theories and models in information retrieval for text and multimedia databases, web search engines, recommendation systems, and digital libraries. Topics include language issues, data-mining, machine learning, user-profiling, visualization, user interfaces, usability. Coursework involves analytical comparisons of search engines. Prerequisite: INFO 340.

INFO 447 Computer Supported Cooperative Work (5) I&S Focuses on design and use of collaboration technologies to communicate, share information, and coordinate activity. Emphasis on behavioral and social aspects of adopting and using these technologies. Topics include the history of work in this and related fields, collaboration support for teams, organizations, and communities.

INFO 450 Information Ethics and Policy (5) I&S Provides a framework for analyzing the ethical, legal, economic, and socio-political issues surrounding information, information technologies, and the information industries. Explores policy and ethical issues of information access and control including: intellectual property, file sharing, free speech, privacy, and national security.

INFO 454 Information Policy: Domestic and Global (5) I&S National and international information policy: public and private sector policy in terms of privacy, access, and exploitation; technology infrastructures and policies supporting the information industries; digital convergence and the emerging mega-industries.

INFO 461 Cooperative Software Design (5) Introduces the theory and practice of cooperative user-centered software design, applying fundamental theories and techniques from social psychology, computer-supported collaborative work, and software engineering. Prerequisite: INFO 360.

INFO 463 Input and Interaction (5) Introduces input and interaction techniques for desktop, mobile, and other computing environments. Combines motor and perceptual psychology, interaction design, and input devices and software in the study of human-computer systems. Emphasizes using human performance models to inform the design of new interaction techniques. Prerequisite: INFO 360.

INFO 466 Immersive Information Environments (5) VLPA/I&S Introduction to immersive technologies and approach-

es to analyzing, designing, and building immersive worlds utilizing game theory, 3D interactive design, environments, and learning theory. Conducted exclusively in a virtual world environment through an hands-on and practical educational approach.

INFO 467 Immersive Information Environment Design (5) VLPA Design, build, and curate immersive environments in a hands-on studio. Learn tools and techniques for contributing to immersive information environments such as virtual worlds, 3D simulations, and serious games. Utilize 3D information architecture to create personalized, community based environments for education, business and entertainment. Prerequisite: INFO 466.

INFO 470 Research Methods in Informatics (5) Introduction to the research methods used in informatics for understanding technology, information, and human behavior. Methods incorporate those from design, engineering, and social science. Topics include science and invention, research contribution types, research through design, theory, ethics, and qualitative/quantitative empirical methods. Prerequisite: either CS&SS 221/SOC 221/STAT 221, STAT 311, or QMETH 201.

INFO 474 Interactive Information Visualization (5) VLPA, QSR Techniques and theory for visualizing, analyzing, and supporting interaction with structures data like numbers, text, and relations. Provides practical experience designing and building interactive visualizations for the web. Exposes students to cognitive science, statistics, and perceptual psychology. Uses empirical approach to design and evaluate visualizations. Prerequisite: CSE 143; either INFO 343 or CSE 154; one of STAT 221/SOC 221/CS&SS 221, STAT 311, or MATH 390/STAT 390.

INFO 481 Project Management in Informatics (4) Introduces project management principles within the context of Informatics. Provides knowledge that managers need to implement information systems on time and within budget. Concentrates on methods and issues in organizing, planning, and controlling projects, and the use of computer-based project management tools.

INFO 490 Project Capstone I (4) Student-driven team project including definition of an information problem, a method of investigation, creating of a project proposal, and completion of project deliverables. Prerequisite: INFO 360; INFO 470; INFO 481.

INFO 491 Project Capstone II (4) Includes design and implementation of a system or development of a research question intended to solve an information problem. Incorporates stakeholder and peer feedback, creation of project deliverables, presentation of the project in a public forum, and final assessment. Prerequisite: INFO 490.

INFO 495 Internship in Informatics (1-5, max. 12) Internship in the private or public sector, as approved by faculty member. Work jointly supervised by faculty member (or approved academic sponsor) and an on-site work supervisor.

INFO 497 Informatics Study Abroad (1-8, max. 18) International seminar, led by Information School faculty or researchers. Addresses a specialized area of informatics. Topics vary. May require language proficiency.

INFO 498 Special Topics in Informatics (1-5, max. 25) Various topics in informatics.

INFO 499 Independent Study (1-5, max. 15) Readings, design projects, or research under faculty supervision.

Information Management and Technology

IMT 500 Foundations of Information Management (3) Examines the role and function of information and information management in individual, organizational, community, and social contexts. Topics include information and information management concepts; methods of managing information and information flows within organizations; and

internal and external communication in professional settings.

IMT 501 Teamwork for Information Professionals (1) Introduces the theory and skills that support functional working groups, preparing students to work together effectively in the classroom and the workforce. Major topics include: theoretical perspectives on teams; processes and structural characteristics that influence team effectiveness; dynamics of individual behavior and interpersonal relationships in team interactions; and team leadership.

IMT 502 Effective Written Communications for Information Professionals (1) Provides the theory and skills necessary to communicate in writing in a manner that will accomplish the writer's goals. Major topics include: basic communication theory; effective organization; use of visuals; making writing accessible; managing tone; and writing online.

IMT 503 Effective Oral Communications for Information Professionals (1) Provides the theory and skills necessary to make effective oral presentations that will accomplish the presenter's goals. Major topics include: basic communication theory; preparing effective presentations; presentation best practices; and nonverbal communication cues.

IMT 510 Human Aspects of Information Systems (4) Social, organizational, cognitive, behavioral, and contextual aspects of information, including basic concepts in human information behavior, conceptual and practical frameworks used to study human-information interaction, and social responses to information technology. User-based and work-based evaluation and design of information systems. Exposure to experimental and interview methodologies.

IMT 520 Information Services and Resources (4) Concepts, processes, and skills of information involving creation, production, distribution, selection, collection, and services to facilitate access. Analysis of the information mediation process, including determining information needs; searching for, evaluation, and presentation of appropriate results; and modalities for delivery of services.

IMT 525 Information Management and Technology in Sports (3) Explores the information perspective, including the role and the use of information, information management, and information technologies applied to the sports context. Examines modern and emerging information management and technology systems and their design and use in administering intercollegiate athletic functions.

IMT 530 Organization of Information Resources (4) Introduction to issues in organization of information and information objects including analysis of intellectual and physical characteristics of information objects; use of metadata and metadata standards for information systems; theory of classification, including semantic relationships and facet analysis; creation of controlled vocabularies; and display and arrangement.

IMT 535 Introduction to Information Architecture (5) Introduces concepts and methods of front- and back-end information architecture. Covers back-end topics including data and content modeling, taxonomy, controlled vocabulary, SEO, search, and analytics. Covers front-end topics including design thinking, design process, design patterns, navigation, workflow, labeling, orientation, and information scent. Unifies front- and back-end IA.

IMT 540 Design Methods for Interactive Systems (4) Introduction to the theory and practice of user-centered design. Examines design methods for identifying and describing user needs, specifying and prototyping new systems, and evaluating the usability of systems. Examines design methodologies such as contextual design and value-sensitive design, giving specific emphasis to human-information interaction. Prerequisite: permission of instructor.

IMT 541 Enterprise Information Systems Analysis and Design (4) Theoretical and practical examination of information systems analysis and design processes as they apply in the workplace. Explores techniques for assess-

ing system and technology needs, defining information and work specifications, process and data modeling, and stakeholder analysis process; and input and output design, database design, test plans and implantation strategies in the design process.

IMT 550 Policy and Ethics in Information Management (4) Explores a range of information issues in the social and organizational context of information professionals, including professional ethics, privacy, freedom of expression, and intellectual property. Gives students tools for analysis of the kinds of social and ethical issues that will arise in their future lives as information professionals.

IMT 551 Foundations of Organizational Information Assurance (3) Examines concepts, elements, strategies, skills related to the life cycle of information assurance - involving policies, practices, mechanisms, dissemination, and validation - that ensure the confidentiality, integrity, and availability of information and information systems. Analysis of the information assurance planning process, including determination and analysis of information assurance organization goals, the threat spectrum, risk, and legal and ethical issues.

IMT 552 Information Assurance Risk Assessment and Management (3) Examines the concepts, processes, and skills related to risk management in information assurance involving risk assessment, risk analysis, and mitigation planning. Analysis of the risk management process through several structured approaches that facilitate information assurance decision-making. Prerequisite: IMT 551.

IMT 553 Establishing and Managing Information Assurance Strategies (3) Applies and combines information assurance concepts, processes, and skills to solve case studies from practitioner experiences and explore the role of policy in creating a successful information assurance program. Prerequisite: IMT 551, IMT 552.

IMT 554 Information Economics (3) Theoretical and practical examination of how information economics impacts design decision in the context of information systems and information organizations. Explores issues of how information is priced, commoditized, exchanged, and preserved in economic transactions. Exposes students to how strategic decisions within organizations are made through concepts such as information and strategic games, information signaling, information strategies, information-based network economics, and information incentives.

IMT 556 Information and Operational Risk (3) Examines the information dimensions of the most common types of operational risk including: internal and external fraud, regulatory noncompliance, processing errors, information security breaches, and technology failures; practical application of operational risk frameworks where the intersection of people, information, processes, systems, and external events can lead to financial loss.

IMT 557 Operational Risk Management in the Public and Private Sectors (3) Learn to identify, monitor, and mitigate operational risk exposures in corporations and government agencies, analyze risk appetites, and drive risk awareness at each level of corporate or government hierarchies. Examines technology failure and information sharing in crisis management, intellectual property, and data risk in various infrastructure sectors. Prerequisite: IMT 556.

IMT 570 Analytic Methods for Information Professionals (4) Sharpens critical thinking processes by studying and applying scientific methods to problem solving in the information management area. Provides a framework to resolve information management research problems, interpret research findings, and to understand the interaction among the various parts of the research process.

IMT 576 Business Intelligence (4) Theoretical and practical concepts of business intelligence. Topics include Inmon and Kimball concepts of data warehouse and dimension modeling; online analytical processing and multidimensional cube for information processing and dissemination;

architecture of data acquisition, processing, and presentation layers; data governance and BI best practices, and future trends. Prerequisite: INFX 543. Offered: A.

IMT 580 Management of Information Organizations (4) Introduction to internal and external management issues and practices in information organizations. Examines key topics drawn from the fields of organizational theory and behavior, including planning and decision-making, organizational structure, leadership, and motivation. Reviews strategic and operational issues including human and organizational issues related to technology introduction, use, and management.

IMT 582 Strategic Information Initiatives (4) Covers tools, techniques, and approaches for identifying and planning entrepreneurial initiatives within organizations, including: business information assessments, organizational readiness assessments, alignment with organizational priorities, information audits, and processes for obtaining organizational investment in and commitment to new initiatives. Focuses on building business and economic justifications and leading strategic initiatives in organizations.

IMT 583 Finance and Accounting Foundations for Information Professionals (3) Introduction to financial accounting, including the principles of double-entry accounting, balance sheets, income, and cash flow statements. Covers key financial ratios and their use for various analytical purposes, along with the elements of a financial plan or budget.

IMT 584 Marketing Foundations for Information Professionals (3) Introduction to the principles of marketing. Looks at how to assess an environment from a marketing perspective, consumer and business behavior, market segmentation, product/service strategies, new product development processes, pricing, channels, retail/wholesale, marketing communication, and direct selling.

IMT 585 Human Resource Management Foundations for Information Professionals (3) Introduction to human resource management for information professionals. Covers the principles of job analysis, employee selection, interviewing, training, and appraisal.

IMT 586 Information Dynamics I (4) Introduction to the concepts and methods of information feedback, systems thinking, soft systems methodology (SSM), and “soft operations research,” as well as the quantitative modeling of complex dynamic systems by means of differential and integral equations (system dynamics). Offered: jointly with INSC 586.

IMT 587 Principles of Information Project Management (4) Introduces project management principles within information-related business contexts. Provides knowledge that managers need to implement information systems on time and within budget. Concentrates on methods and issues in organizing, planning, and controlling projects, and their use of computer-based project management tools.

IMT 588 Enterprise Project Management in Information Organizations (4) Explores roles, responsibilities, and methods of managing enterprise projects. Analyzes critical issues such as the relationship between project management and organizational culture, structure, and processes; cross-functional and globally distributed teams; project governance, metric, and risk and performance management; communication, decision-making, and conflict resolution; and organizational learning, change, and knowledge management. Prerequisite: introductory coursework in project management or permission of instructor. Offered: jointly with INSC 588.

IMT 589 Special Topics in Information Management (1-4, max. 12) Special study and research in topics of current concern to faculty and students.

IMT 590 Internship in Information Management (2-4, max. 12) Internship in the private or public sector, jointly supervised by faculty member and an on-site work spon-

sor. Prerequisite: enrollment in the MSIM program. Credit/no-credit only.

IMT 598 Emerging Trends in Information Management and Technology (3) Focus on emerging trends in information management and information technology. Attention given to their impact on the functions of the chief information officer and others managing the acquisition, retention, use, and disposition of information and the enabling technologies. Exploration of methods and resources for trend discovery and tracking. Prerequisite: permission of instructor.

IMT 600 Independent Study or Research in Information Management ([1-4]-) Supervised independent study or research. May be taken in as many as six consecutive quarters. Prerequisite: enrollment in the MSIM program. Credit/no-credit only.

Information School Interdisciplinary

INFX 501 Concepts in Algorithmic Thinking for Information (1) Presents programming concepts in the context of information science including the concepts of the algorithm, data storage, expressions, syntax, logic, objects, commands, and events. Introduces the algorithmic manipulation of information objects, and the mindset and methods of computer programming and application development. Credit/no-credit only.

INFX 502 Database Concepts for Information Professionals (1) Introduces the terminology and concepts of working with relational database management systems. Emphasizes working with tables and extracting information from data using Structures Query Language (SQL) commands and tools. Credit/no-credit only.

INFX 503 Website Design Concepts for information Professionals (1) Introduces the context and construction of websites presenting an integrated understanding of web design principles, information behavior, and technical skills. Emphasizes the roll of markup in information display and organization, the development of large sites, web strategy, and site construction. Credit/no-credit only.

INFX 504 Networking and Network Applications for Information Professionals (1) Introduces the concepts, terminology, and technologies of digital networks, including how networks operate and the influence networks have on the workplace and society. Includes preparation to think critically about the impacts of networking technologies on organizations, work groups, and information systems. Credit/no-credit only.

INFX 505 Project Management Basics for Information Professionals (1) Introduces the terminology, concepts, and skills used in working with project management and project management software. Emphasizes developing, refining, and monitoring work schedules using software tools. Credit/no-credit only.

INFX 508 Reading Seminar (2) Discusses theoretical works and contemporary research in areas related to information science, information management, or information technology and design. Introduces students to the intellectual traditions that underlie the field. Credit/no-credit only.

INFX 531 Metadata Design (3) Design principles of metadata schemas and application profiles - implementation of interoperable application profiles using XML technology. Focuses on achieving syntactic and semantic interoperability among diverse metadata schemas and application profiles. Prerequisite: either LIS 530 or IMT 530; INFX 542; or permission of instructor.

INFX 532 Ontology Design (3) Studies semantic interoperability among different metadata schemas and ontologies. Elaborates on concepts and technology related to Topic Maps, RDF Schema, and Web Ontology Language (OWL) to achieve advanced and semantic data modeling of complex data that exist in the real world. Prerequisite: INFX 531 or permission of instructor.

INFX 536 Metadata for Interactive Media (3) Explore new ideas and approaches for organizing and providing access to interactive media, particularly from a user-centered perspective. Design and conduct formative and evaluative user studies employing various qualitative and quantitative methods to determine information needs and seeking behaviors of various stakeholders in one or more interactive media domains.

INFX 537 Construction of Indexing Languages (4) Exploration of the design, construction, evaluation, and maintenance of controlled indexing languages, including studies of how users are integrated into the design process. Through completion of thesaurus construction project, prepares students to design index languages, plan and implement a design project, and evaluate indexing languages. Prerequisite: either LIS 530 or IMT 530. Credit/no-credit only.

INFX 538 Metadata Design Studio (4) Principles, skills and practices in the conceptualization and implementation of metadata systems with a focus on semantic web. Project-based exploration of domain and abstract data modeling, attribute/value space definition, and machine encoding decision. Prerequisite: either LIS 530 or IMT 530; INFX 542; or permission of instructor.

INFX 542 Information Structures Using XML (4) Introduces the concepts and methods used to analyze, store, manage, and present information and navigation. Equal weight given to understanding structures and implementing them. Topics include information analysis and organizational methods as well as XML and metadata concepts and application. Prerequisite: INFX 503.

INFX 543 Relational Database Management Systems (4) Introduction to relational database design and development theory, concepts, and skills, including traditional transactional database theory, architecture, and implementation in a user-centered systems context using SQL. Introduces database modeling, security, and privacy issues. Prerequisite: INFX 502 or permission of instructor.

INFX 544 Information Retrieval Systems (3) Introduction to theory and models in information retrieval and the systems for storage and retrieval of unstructured information. Examines information retrieval architectures, processes, retrieval models, query languages, and methods of system evaluation, methods and tools for document analysis, interfaces, and usability.

INFX 546 Data Communications and Networking (4) Covers local and wide-area computer networking including topologies and hardware, packet switching, client/server architectures, network protocols, and network servers and applications. Also addresses server operating systems, management, security, authentication, and policy issues associated with distributed networks.

INFX 547 Social Media Data Mining and Analysis (4) Explores techniques for collecting and analyzing social media. Students gain direct experience with methods for collecting a social media corpus, defining features of activity that are relevant for analysis, and analyzing those features. Prerequisite: either INFX 501 or permission of instructor.

INFX 551 Fundamentals of Data Curation (4) Examines principles, practices, and trends in the curation of digital research data. Provides a foundation in data management and data services for professionals in institutions involved with data intensive research, scholarship, and innovation. Emphasizes data sharing, preservation, open access, metadata, and policy for development of reusable and accessible data resources.

INFX 554 Information and Contemplation (4) Explores how contemplative practices and perspectives can offer insights into today's information-intensive culture and how they can provide guidelines and design principles for the development of new information practices and technologies. Students explore a variety of contemplative/atten-

tional practices and use these to investigate information trends, practices, and concerns.

INFX 563 Advanced Relational Database Management Systems (4) Advanced relational database design and development theory using SQL, concepts, and skills. Topics include advanced T-SQL; backup and recovery; and triggers and reporting services. Prerequisite: INFX 543; either INFX 501 or equivalent.

INFX 567 Strategic Management of Social Media (4) Offers an overview of social media use in organizations of any type. Covers a variety of social media platforms and technologies, business strategies, and uses and related issues. Gives a historical perspective on social media and its development. Students learn to develop social media strategies and implementation plans for organizations.

INFX 571 Research Seminar (2-4, max. 10) Students work in teams under the supervision of individual faculty members to engage in research or design activities and learn through hands-on participation and study. Learning activities include data collection, data analysis, building prototypes, testing or evaluation, or dissemination activities.

INFX 572 Introduction to Data Science (4) Introduces a broad, non-technical overview of key concepts, skills, and technologies used in "data science". Provides a high-level introduction to common data science pipelines, such as experimental design, data collection and storage, basic analytics, machine learning, and data visualization, focusing on analyzing in real-world datasets using industry standard statistical packages.

INFX 573 Data Science I: Theoretical Foundations (4) Provides an overview of key concepts, skills, and technologies used by data scientists, including inference; machine learning and pattern recognition; storage and scaling; experimental design; and data visualization. Prerequisite: either Q METH 201, IMT 570, or equivalent college coursework; either CSE 142, INFX 501, or equivalent college coursework.

INFX 574 Data Science II: Machine Learning and Econometrics (4) Provides skills required to analyze and derive insight from large-scale, heterogeneous data. Covers key concepts of functional and imperative programming for storing, extracting, analyzing, and presenting large data projects; and data analysis using inferential statistics, supervised and unsupervised machine learning. Students gain experience modeling social and behavioral data. Prerequisite: INFX 573.

INFX 575 Data Science III: Scaling, Applications, and Ethics (4) Advanced skills for analyzing and deriving insight from large-scale, heterogeneous data. Provides methods, tools, and frameworks for analyzing data, with topics including scaling and distributed computing, network analysis, and visualization. Student gain experience applying methods to real-world data. Prerequisite: INFX 574.

INFX 576 Social Network Analysis (4) Provide students with an understanding of the fundamental concepts, common methods, and analytical tools of social network analysis. Students gain experience applying both exploratory and inferential methods to real-work problems with in the social network domain.

INFX 583 Cross Cultural Approaches to Leadership (3) Explores alternative leadership models as reflected in the literatures of multiple cultures. Examines ethical dimensions of leadership in the context of complex relationships among the peoples and agencies that comprise the global environment. Uses imagination in the application of cross cultural forms of leadership. Prerequisite: permission of instructor.

INFX 594 Degree Research Project (3) Includes analysis, design, completion, documentation, and presentation of a faculty-defined individual or group research project demonstrating professional-level knowledge and skills. Meets culminating experience master's degree requirement. Prerequisite: completion of 30 credits and adviser approval of

an MLIS degree plan or completion of 38 MSIM core credits. Credit/no-credit only.

INFX 595 Capstone I - Project Planning (2) Analysis and preliminary design of an approved individual or group research or implementation project demonstrating professional-level knowledge and skills. Prerequisite: either completion of all MSIM core courses or completion of 30 credit hours and advisor approval of an MLIS degree plan. Credit/no-credit only.

INFX 596 Capstone II - Project Implementation (3) Implementation of a project demonstrating professional-level knowledge and skills based on a project plan developed in INFX 595. Prerequisite: INFX 595. Credit/no-credit only.

INFX 597 Information Science Study Abroad (1-8, max. 18) International seminar, led by Information School faculty or researchers. Addresses a specialized area of information studies. Topics vary. May require language proficiency.

INFX 598 Special Topics (1-4, max. 30) Introduces innovation and specialized topics relating to the study of information in any context.

Information Science

INSC 500 Faculty Seminar (2) Presentations by faculty concerning research projects in which they are involved. Credit/no-credit only.

INSC 501 Theoretical Foundations for Information Science (3) In-depth exploration of the philosophical, theoretical, methodological, and historical foundation of information science and the study of information.

INSC 518 Seminar in Human Information Interaction (4) Investigates conceptual frameworks, assumptions, analytical tools, concepts, models, and theories in human information interaction (HII). Topics may include theories of information behavior, information behavior in everyday life, social informatics, HII in organizations, or personal information management. Previous readings in HII preferred. Prerequisite: permission of instructor.

INSC 535 Classification Theory (3) Survey of classificatory principles from bibliographic, philosophical, socio-cognitive, and linguistic perspectives. Overview of history of bibliographic classification and exploration of some existing bibliographic classification systems. Ramification of theoretical approach for classification practice. Prerequisite: LIS 530. Offered: jointly with LIS 535.

INSC 538 Seminar in Information Organization (4) Seminar on information organization, focusing on any area of information organization, including classification theory, metadata, document theory, information organization in information systems; social and political aspects of classification, controlled vocabularies, and cataloging history.

INSC 541 HCI Design Foundations for Interactive Systems (4) Develops knowledge and skills for design-based inquiry of interactive systems. Students practice user-centered design methods and study theories of human-computer interaction, including but not limited to: goal-based design and task analysis, scenario-based design, soft systems methodology, value sensitive design, universal design, and participatory design.

INSC 542 HCI Design Studio for Interactive Systems (4) Develops knowledge and skills for design-based inquiry of interactive systems. Includes a quarter-long project using appropriate methods and iteratively engages research, design, prototyping, and evaluation activities. Opportunity to reflect upon practice and receive critical review of work throughout the quarter.

INSC 543 Value Sensitive Design (4) Develops knowledge and skills to account for human values in design, development, and deployment of information systems. In-depth examination of value sensitive design theory, methods, and practice, including stakeholder project. Prerequisite: permission of instructor.

INSC 546 Assistive Technology and Inclusive Design (4) Examines interactive technologies for users with alternative skills or in alternative contexts. Covers universal design, inclusive design, and assistive technologies. Addresses needs of users with physical limitations, children/elders, users in developing nations, and mobile users.

INSC 547 Collaborative and Social Computing (4) Seminar on the design of collaborative and social computing systems. Introduces theories for analyzing collaborative on-line and face-to-face. Student apply a theoretical perspective through the design of a social or collaborative application. Application domains include blogging, tagging, on-line communities, social recommending, ubiquitous computing, and collaboration in domestic settings.

INSC 555 Information and Values (4, max. 12) Explores value systems within a range of different social and technological environments.

INSC 557 Cultural and Ethnic Dimensions in Information Science (4) Examines ethnic and cultural dimensions of information storage and transfer, knowledge creation and exchange, and information-related values in an increasingly global world. Readings from anthropology, cultural learning, cross-cultural communications, and ethnic traditions provide the basis for discussions about conducting research across culturally distinct communities. Prerequisite: permission of instructor.

INSC 561 PhD Colloquium on Professional Issue (1, max. 12) Covers topics relating to the professional concerns of doctoral students and their future lives as academics and researchers. Credit/no-credit only.

INSC 565 Teaching Practicum I (3) Doctoral student participation in teaching in a faculty-taught course. Credit/no-credit only.

INSC 566 Teaching Practicum II (3) Doctoral student takes primary teaching responsibility for a course under supervision of a faculty liaison. Prerequisite: INSC 565. Credit/no-credit only.

INSC 570 Research Design (4) Introduction to empirical research, basics of theory construction and research design, types of research, ethical issues, instruments and techniques for descriptive research, measures of association. Employs an integrated (qualitative and quantitative) and focused approach.

INSC 571 Quantitative Methods in Information Science (5) Describes uses, characteristics, and theoretical bases of research methods and data analysis techniques used in quantitative research, emphasizing uses in information and library science. Topics include experimental design, descriptive and inferential statistics, the normal distribution, elementary probability, nonparametric statistics, and exploratory data analysis techniques. Prerequisite: INSC 570.

INSC 572 Qualitative Methods in Information Science (5) Principles and approaches to conducting qualitative research in information science, including how to design a qualitative study, role of context, methods of data collection and analysis, increasing the trustworthiness of data, minimizing observer effect, how to incorporate and build theory. Exposure to field research and data analysis. Prerequisite: INSC 570.

INSC 573 Design Inquiry and Methods in Information Science (5) Acquire theory, methods, and skills for design-based inquiry, focusing on making artifacts - technical, informational, managerial, or organizational - and devising courses of action that enable people to mobilize. Students develop knowledge for design in Information Science through practical application of design methods and scholarly investigation of selected literatures.

INSC 575 Research Practicum I (3) Students work with a researcher from the Information School as an active member of a research team. Credit/no-credit only.

INSC 576 Research Practicum II (3) Students work with an approved researcher as an active member of a research team. Prerequisite: INSC 575 or permission of instructor. Credit/no-credit only.

INSC 578 Research Seminar (1-2, max. 15) Research presentations on a wide variety of topics in information science. Credit/no-credit only.

INSC 579 Research Colloquium in Information Science (2, max. 30) Research colloquium on various research topics in information science. Faculty, visitors, and students present current research. Prerequisite: permission of instructor. Credit/no-credit only.

INSC 581 Organizational Theories of Information Systems (4) Surveys major strands of management of information systems research. Covers the behavioral, economic, strategic, and technical research perspectives of MIS research.

INSC 586 Information Dynamics I (4) Introduction to the concepts and methods of information feedback, systems thinking, soft systems methodology (SSM), and “soft operations research,” as well as the quantitative modeling of complex dynamic systems by means of differential and integral equations (system dynamics). Offered: jointly with IMT 586.

INSC 588 Enterprise Project Management in Information Organizations (4) Explores roles, responsibilities, and methods of managing enterprise projects. Analyzes critical issues such as the relationship between project management and organizational culture, structure, and processes; cross-functional and globally distributed teams; project governance, metric, and risk and performance management; communication, decision-making, and conflict resolution; and organizational learning, change, and knowledge management. Prerequisite: introductory coursework in project management or permission of instructor. Offered: jointly with IMT 588.

INSC 598 Special Topics in Information Science (1-5, max. 12)

INSC 599 Independent Study in Information Science (1-5, max. 15) Readings, design projects, or research under faculty supervision. Prerequisite: permission of instructor and Ph.D. program chair.

INSC 600 Independent Study or Research (*) Individual readings or study, including independent study in preparation for doctoral examinations, research, etc. Prerequisite: permission of Supervisory Committee or graduate program adviser. Credit/no-credit only.

INSC 800 Doctoral Dissertation (*-) Credit/no-credit only.

Information Technology Applications

ITA 340 Introduction to Web Publishing (3) Introduction to markup languages and publishing web content. Students gain understanding of HTML coding and extensions, image manipulation, information architecture, and web site publishing. Other topics include: the Web Accessibility Initiative, survey of Graphical User Interface (GUI) HTML editors, online privacy and security, and eXtensible Markup Language (XML).

ITA 341 Client-side Scripting and Design (3) Introduction to web browser design environment, scripting languages, JavaScript, Document Object Model (DOM), and creation of dynamic HTML web pages (DHTML) in combination with Cascading Style Sheets (CSS). Other topics include: client-server architecture and web design principles in the contexts of technical feasibility, usability, and accessibility. Prerequisite: ITA 340.

ITA 342 Introduction to SQL and Data Storage Technologies (3) Fundamentals of database design in a client-server architecture useful for web applications. Subsequent topics build upon foundation by introducing the Structured Query Language (SQL), open source tools MySQL and PHP for database processing, security issues in database appli-

cations, and XML as an alternate database storage technology. Prerequisite: ITA 341

ITA 343 Server-Side Programming and Web-data Integration (3) Provides framework to integrate server-side programming concepts and techniques, database technologies, and client-side scripting to design and implement dynamic web applications. Examines techniques using PHP, design and implementation of database (MySQL) connections, web application security, and XML data publication. Prerequisite: ITA 342.

Library and Information Science

LIS 462 Skills Approach to Information, Communications, and Technology (ICT) Literacy (3) Introduction to the Big6 TM Skills approach to information, communications, and technology (ICT) literacy for personal, school, district, or higher education settings. Includes technology within the Big6 framework, connection to standards, instructional design, assessment, curriculum mapping, peer collaboration, the parent connection, program planning, and implementation.

LIS 498 Special Topics (1-5, max. 15) Library service and information science subject matter in seminars, workshops, or other appropriate formats. Topics vary and may be repeated for credit.

LIS 500 The Question of Information (2) Provides an overview of the major questions, concepts, and challenges engaging library and information science through seminar discussion. Exploration of the social context in which these questions and challenges occur, and their implications for both research and practice. Credit/no-credit only.

LIS 501 History and Foundations of Libraries and Librarianship (3) Introduces the history of libraries, major issues in contemporary library and information work, and types of libraries. Examines the role of libraries in society, the development of professional librarianship, and the role of librarians.

LIS 505 Archival and Manuscript Services (3) Selection, organization, and uses of archival and manuscript collections. Emphasis on the principles and techniques; some attention to the administration of state archival and historical institutions' collections. Lecture, demonstration, and laboratory.

LIS 507 Preservation and Conservation of Library Materials (3) Consideration of the many factors contributing to the physical vulnerability of library materials of all kinds and an overview of resources and strategies for those who determine preservation policy or manage the application of such policy. No technical background necessary.

LIS 508 History of Recorded Information (4) Exploration of the history and ongoing transformation of recorded information within three broad spheres of human life: public communication, administrative and commercial operation, and personal communication.

LIS 510 Information Behavior (3) Introduction to the user-centered approach to information behavior. Theoretical foundations of need, creation, seeking, sharing, assessment, management, and use. Synthesis of information behavior studies, performance of information behavior field research, and application of the results of information behavior studies to design information systems, services, and policy. Prerequisite: LIS 500.

LIS 516 Youth Development and Information Behavior in a Digital Age (3) Introduction to major theories of human development from birth through age eighteen and application of these theories to examine youth's information behavior and digital media use at various developmental stages. Explores new research on the impact of digital media tools and practices on youth development. Prerequisite: either LIS 510 or permission of instructor.

LIS 520 Information Resources, Services, and Collections (4) Concepts, processes, and skills related to information, including production, distribution, selection, collection,

and services to facilitate access. Specific discussion topics include characteristics of recorded knowledge; organizations and services devoted to managing access to recorded knowledge; and principles associated with development of recorded knowledge and collections.

LIS 521 Principles of Information Services (4) Analysis of the information mediation process, including determination and analysis of information needs; searching for, evaluation, and presentation of appropriate results; modalities for delivery of services; and current and future techniques. Prerequisite: LIS 520.

LIS 522 Collection Development (3) Access to materials as context for development and management of library collections in academic, public, school libraries. Community analysis, library mission; collection development policies, criteria, levels, responsibilities; aids to selection; collection evaluation, use studies; controversial materials.

LIS 524 Adult Reader Services in the Public Library (3) Focuses on developing and performing readers' advisory services for contemporary adult fiction and non-fiction. Includes interpersonal and marketing skills necessary to promote reading including reading advocacy, readers' advisory interviewing, writing advisory annotations, presenting book talks, and conducting book discussion groups.

LIS 525 Genres for Adult Readers (3) Reviews characteristics of the most popular genres of fiction, including speculative fiction, mystery/thriller/suspense, romance, westerns, and graphic fiction/memoir. Helps to develop practice in book talking, preparing annotated booklists, and making reading suggestions to library users.

LIS 526 Government Publications (3) Introduction to government publications of the United States and their acquisition, organization, and use. Other topics covered include the public's right to know, the Federal Depository Library Program, government influences in our daily lives, and future directions in government information. Credit/no-credit only.

LIS 527 Business Information Resources (3) Survey of the extent and nature of business information and its sources, and of business information producers and consumers. Study and use of both print and on-line sources.

LIS 528 Health Sciences Information Needs, Resources, and Environment (3) S. FULLER Characteristics of users of health sciences information; health professionals, researchers, consumers and patients; environments (academic health sciences centers, hospitals, clinics, and public libraries); evaluation of information resources in health care; types and uses of health information management systems; policy issues, professional standards, education, and certification. Offered: jointly with BIME 570; Sp.

LIS 530 Organization of Information and Resources (4) Introduction to issues in organization of information and documents including: analysis of intellectual and physical characteristics of documents; principles and practice in surrogate creation, including standards and selection of metadata elements; theory of classification, including semantic relationships and facet analysis; creation of controlled vocabularies; and display and arrangement. Prerequisite: LIS 500, which may be taken concurrently.

LIS 531 Catalogs, Cataloging, and Classification (4) Develops an understanding of library catalogs as information retrieval systems. Introduces library cataloging and classification. Focus on principles and standards in the creation of catalogs and cataloging records. Includes practice in descriptive and subject cataloging and classification. User perspective emphasized throughout. Prerequisite: LIS 500, LIS 530.

LIS 533 Advanced Cataloging and Classification (4) In-depth theory and practice in library cataloging and classification. Includes introduction to cataloging materials in a variety of formats. Prerequisite: LIS 500, LIS 530, and LIS 531.

LIS 534 Indigenous Systems of Knowledge (3) Conceptual foundations and comparative analysis of indigenous knowledge organization systems. Feasibility and use of contemporary knowledge organization mechanisms including thesauri and ontologies in expressing the cultures and artifacts of indigenous peoples. Prerequisite: LIS 530 or permission of instructor.

LIS 535 Classification Theory (3) Survey of classificatory principles from bibliographic, philosophical, socio-cognitive, and linguistic perspectives. Overview of history of bibliographic classification and exploration of some existing bibliographic classification systems. Ramification of theoretical approach for classification practice. Prerequisite: LIS 530. Offered: jointly with INSC 535.

LIS 550 Information and Society (3) Covers concepts, processes, and issues related to the larger social context within which the life cycle of information and knowledge in society are investigated. Discussion topics include codes of ethics, professionalization, privacy, freedom of expression, intellectual property, social inequalities, and quality of life. Prerequisite: LIS 500, which may be taken concurrently.

LIS 551 Intellectual Freedom in Libraries (3) Analysis of issues related to intellectual freedom, particularly to implications for libraries and librarians. Consideration of current legal climate, conformity versus freedom in modern world, librarian as censor, social responsibility and individual freedom, intellectual freedom of children, prospects for future. Credit/no-credit only.

LIS 560 Instructional and Training Strategies for Information Professionals (3) Develops knowledge and skills in instruction while applying theories of information literacy, teaching, and learning to instruction in an information environment. Teaches students how to design, develop, and evaluate instructional programs for specific users. Prerequisite: LIS 500.

LIS 561 Storytelling in a Digital Age (3) Instruction in the art and technique of oral and digital storytelling for all ages. Addresses both traditional and contemporary modes of storytelling, including transmedia. Sources include personal and family stories, folktales, and literary stories. Also explores non-library storytelling: therapeutic storytelling, organizational storytelling, and storytelling for qualitative research.

LIS 564 Multicultural Resources for Youth (3) Facilitates development of cross-cultural competence through authentic resources for children, teens, and teens produced by or about ethnic minorities in the United States. "Issues" focus, providing knowledge in critical examination of various genres of multicultural resources as well as in strategies to use them.

LIS 565 Resources for Digital Age Children (3) Introduces selection and evaluation of traditional, digital, and transmedia resources used by public and school libraries for children, birth to age twelve. Applies theories from human development, information behavior, and digital media research to the identification of developmentally appropriate selections and provision of readers/users/ advisory for children. Prerequisite: LIS 516.

LIS 566 Resources for Digital Age Teens (3) Introduces selection and evaluation of traditional, digital, and transmedia resources used by public and school libraries for teens. Applies theories from human development, information behavior, and digital media research to the identification of developmentally appropriate selections and provision of readers/users/ advisory for teens. Prerequisite: LIS 516.

LIS 567 Libraries as Learning Labs in a Digital Age (3) Application of theories and research on youth development to inform practice about programming and resources for youth. Create programs based on current research, including programming such as story times, book talks, and maker spaces. Prerequisite: LIS 516.

LIS 568 Information Literacy in a Digital Age (3) Explores theories, process, and practical applications of informa-

tion literacy. Examines the development of information literacy programs for libraries, community agencies, business, education, and other information settings. Explores the integral relationship between technology and information literacy, and assessment and evaluation of programs. Prerequisite: LIS 560.

LIS 569 Special Topics in Instructional and Training Strategies for Information Professionals (1-5, max. 18) Introduction to innovative and specialized topics in instructional and training strategies for information professionals. Prerequisite: LIS 560.

LIS 570 Research, Assessment, and Design (4) Students recognize research and design opportunities, translate them into researchable frameworks, and conduct research in libraries and other information agencies. Covers problem definition, data collection and analysis, design and validation of alternative solutions, and reporting of results. Prerequisite: LIS 500, which may be taken concurrently.

LIS 580 Management of Information Organizations (4) Introduction to internal and external management issues and practices in information organizations. Internal issues include organizational behavior, organizational theory, personnel, budgeting, planning. External issues include organizational environments, politics, marketing, strategic planning, funding sources. Prerequisite: LIS 500, which may be taken concurrently.

LIS 581 Marketing and Planning for Libraries (3) Approaches to planning and marketing library products/services. Examines partnerships that can be forged between elements of marketing and appropriate futures strategies for libraries. Discusses marketing and planning as integrated processes with attention to short- and long-term goals and objectives. No particular library institutional setting is assumed. Prerequisite: LIS 500, which may be taken concurrently.

LIS 584 Knowledge Management (3) Introduction to contemporary topics in management of knowledge creation and use in organizations. Discussion topics include knowledge generation, knowledge taxonomy, knowledge transfer, organizational knowledge management practice, and knowledge management systems. Prerequisite: LIS 500; LIS 580, or permission of instructor

LIS 585 Administration of the School Library Media Program (3) Develops competency in administering materials, equipment, and services of library media program as integral part of educational process of school. Focuses on developing skills in acquiring, organizing, and managing full range of learning resources for access and use, and communicating the program to users. Required for school library media specialists. Prerequisite: LIS 580.

LIS 586 Public Libraries and Advocacy (3) Examines the purpose and role of public libraries in an information society. Includes governance, services, and planning with special emphasis on advocacy for the library and community.

LIS 587 Library Technology Systems (4) Developing criteria for selection and design of information technology systems for libraries and information centers. Applying criteria in evaluation of hardware and software. Examining related management challenges, such as vendor relations, financing options, personnel requirements, and design of auxiliary activities. Prerequisite: LIS 580.

LIS 588 Special Librarianship (3) Seminar in the practice of special librarianship in business and commercial firms, government agencies, other non-profits, and the independent consultant sector. Emphasis on management of non-traditional information organizations and the targeted information role.

LIS 590 Directed Fieldwork (2-5, max. 8) Professional, supervised fieldwork in a library or professional information setting. Prerequisite: 30 credits in MLIS program. Credit/no-credit only.

LIS 591 Legal Research I (3) Introduction to legal bibliography and law librarianship. Basic primary and secondary le-

gal bibliographic tools. Integration of manual and computer resources for effective legal research. Emphasis on state materials. Offered: jointly with LAW A 598.

LIS 592 Legal Research Methods (3/4) Legal tools that answer more complex legal research problems, such as federal legislative histories, sources of administrative law, specialized subject research. Federal emphasis. Builds on skills and techniques taught in LIS 591/LAW A 598. Extensive work with online resources. Prerequisite: LIS 591 or permission of instructor. Offered: jointly with LAW A 599.

LIS 593 Selection and Processing of Law Library Materials (3) Study of tools for collection development and collection development plans in law libraries. All law library technical processes, including acquisitions, budgeting, cataloging, and serials. Prerequisite: LIS 591 or permission of instructor.

LIS 594 Law Library Administration (4) Administration in law libraries, including organization, personnel, and management issues (e.g., interviewing, hiring, firing), communications, library planning, and bookkeeping. Prerequisite: LIS 591 or permission of instructor. Credit/no-credit only.

LIS 595 Current Issues in Law Librarianship ([0-4]-, max. 4) From a list of current topics in law librarianship, students select a topic, research it fully, write a major paper, and present their paper. Topics may include citation reform, ethics, and publisher practices. Prerequisite: law librarianship majors or permission of instructor. Credit/no-credit only.

LIS 596 Professional Portfolio (3) Preparation and presentation of reflective working and presentation portfolios representing the student's goals, achievements, knowledge and skills, experience, and professional objectives. Development of plans for ongoing professional development. Prerequisite: completion of 30 credit hours and adviser approval of MLIS degree plan. Credit/no-credit only.

LIS 598 Special Topics in Information and Library Science (1-6, max. 18) Seminar dealing with various topics in information and library science. Offered by visitors or resident faculty. Topics are changed from quarter to quarter. May not be offered every quarter. Prerequisite: determined by specific course.

LIS 600 Independent Study or Research (*-) Credit/no-credit only.

Interdisciplinary Graduate Degree Programs

These programs are administered by interdisciplinary groups of the Graduate School. Certain courses carrying the particular program prefix appear below; other courses with the same prefix appear elsewhere as indicated. Other courses included in these programs are selected from many disciplines throughout the University and carry the prefix of the respective discipline.

Astrobiology

C319 Physics-Astronomy Building

Astrobiology -- the study of life in the universe -- investigates the wide range of multidisciplinary factors that may influence the origin and evolution of life on Earth and beyond. Such investigation demands intense interdisciplinarity, for which the astrobiology program at the University of Washington is creating a new community of scholars, investigators, and educators -- a community skilled in multidisciplinary methods and thinking that pushes boundaries beyond the commonplace with intellectual vigor, creativity, and rigorous methodology.

Astrobiology at the University of Washington builds on the strengths of traditional academic structure to transcend the limits of specialization through the synergy of multidisciplinary cooperation in both research and education.

The internationally recognized graduate certificate program offers a rigorous, interdisciplinary curriculum in cooperation with the PhD programs of participating departments. The program's unique features bond students and faculty from widely disparate departments. Participating graduate students gain the personal and professional skills necessary to successfully engage in multidisciplinary collaborations.

The emerging field of astrobiology benefits from and is shaped by the perspectives of multiple disciplines directed at a common problem. It benefits also from the breadth of perspective offered by diversity in culture and race among the program's participants.

GRADUATE PROGRAM

Graduate Program Coordinator

C304 Physics-Astronomy, Box 351580

(206) 685-2392

office@astro.washington.edu

Graduate Certificate Program

Admission Requirements

UW academic departments participating in the graduate certificate program in astrobiology provide expertise in the following primary collaborating disciplines:

- Aeronautics and Astronautics
- Astronomy
- Atmospheric Sciences
- Biochemistry
- Biology
- Genome Sciences
- Earth and Space Sciences

- History (of Science)
- Microbiology
- Oceanography

Students wishing to participate in the astrobiology graduate certificate program must be accepted for admission by the PhD program of one of these departments. Contact the appropriate participating department for PhD program application requirements and deadlines.

Certificate Requirements

15 credits minimum, to include:

1. ASTBIO 501, ASTBIO 502
2. Three astrobiology-only seminar series (1 credit)
3. One cognate course approved by the student's advisory committee to ensure sufficient breadth (see program website for current list of cognate courses)
4. One quarter of a research rotation in an area outside the student's home discipline (3 to 10 credits)
5. Participation in a minimum of three workshops comprising the capstone experience (non-credit)
6. Astrobiology ethics seminar (variable credits)

Additional credits may be earned through:

- Other approved cognate courses
- Astrobiology public lecture series (1 credit)

Successful completion of the certificate requires a minimum cumulative 3.00 GPA for all required courses and a minimum 2.7 grade for each elective course.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

ASTBIO 115 Astrobiology: Life in the Universe (5) NW R. BUICK, D. CATLING, V. MEADOWS, W. SULLIVAN Introduction to the new science of astrobiology, study of the origin and evolution of life on Earth, and the search for microbial and intelligent life elsewhere in the Universe. Designed for non-science, liberal arts majors. Offered: jointly with ASTR 115/BIOL 114/ESS 115/OCEAN 115.

ASTBIO 501 Astrobiology Disciplines (4) R. BUICK, D. CATLING, V. MEADOWS Review of research and subject matter relevant to astrobiology from within the disciplines of biology, astronomy, oceanography, atmospheric science, chemistry, planetary science, and geology. Offered: A, even years.

ASTBIO 502 Astrobiology Topics (4) R. BUICK, D. CATLING, V. MEADOWS Investigation in detail of research topics of current interest. Offered: A, odd years.

ASTBIO 550 Professional Development for Astrobiology (2) Seminar in preparation for the academic job market; writing and reviewing grant proposals; building and managing interdisciplinary research teams; understanding the multiple career paths available in astrobiology; interdisciplinary teaching; and professional ethics. Credit/no-credit only. Offered: W, odd years.

ASTBIO 575 Seminar in Astrobiology (1, max. 10) Discussion of recent research in astrobiology. Credit/no-credit only. Offered: W, even years.

ASTBIO 576 Astrobiology Colloquium (1, max. 15) Current research topics in astrobiology. Credit/no-credit only. Offered: ASP.

ASTBIO 600 Independent Study or Research (*) Study or research under the supervision of individual faculty members.

Biology Teaching

The Graduate School Biology Teaching Group offers an interdisciplinary program that leads to the degree of Master of Science in science for teachers. Although designed specifically for biology teachers in K-12 schools and community colleges, other life science educators, such as those in environmental learning centers, may find the program especially worthwhile. The program emphasizes broadening the student's understanding of the various fields of biological science, with the improvement of the student's effectiveness as a teacher as the primary goal. Opportunities for coursework within the departments of the University in biological science and science education are provided. Each student is asked to perform an in-depth study of a biological science problem in the context of its relevance to the teaching of biological science. Facilities and guidance are provided by a sponsoring professor and advisory committee drawn from the Biology Teaching Group and the several biological science departments of the University.

GRADUATE PROGRAM

Graduate Program Coordinator

222 Hitchcock, Box 355320

(206) 543-1689

Master of Science

Admission Requirements

1. Secondary teaching certificate or evidence of professional involvement in K-12 or public education
2. Bachelor's degree in biology or closely related field. Students in related fields must have adequate preparation in science.
3. Minimum 3.00 GPA in the most recent 90 graded quarter credits (60 semester credits)
4. Graduate Record Examination test scores
5. Two or three letters of recommendation
6. Statement of professional experience and objectives

Degree Requirements

36 credits, to include:

1. Minimum 18 credits at the graduate level: minimum 18 must be graded. These categories are not mutually exclusive.
2. All coursework must be at or above the 400 level.
3. Each student plans a program to meet his or her own educational objectives, selecting at least one course from each of the following areas: botany, genetics, microbiology, zoology, and from the College of Education. One course in biochemistry is also required unless already completed in prior academic work. Courses in biomedical history, fisheries, forest resources, environmental studies, etc. may be appropriate for the student's interests. The Graduate Program Coordinator assists the student in this planning.

Biomolecular Structure and Design

N107 Foege, Box 355061

The department's graduate program is directed toward the education of doctoral students who anticipate careers that involve teaching or research in the biomedical sciences. Graduates from the program have a broad knowledge of biological structure at all levels, from the molecular to the

human anatomical, with a major emphasis on the cellular level.

Graduate students select research and teaching options in their program. The research options are designed to provide training for a student in one or two of the following areas: cell and developmental biology, neurobiology, quantitative biology, cellular immunology, molecular biology, and macromolecular structure. Teaching options prepare the student to teach in one of the anatomical sub-disciplines: human anatomy, neuroanatomy/neurobiology, histology, embryology/developmental biology, cell biology, and macromolecular structure.

GRADUATE PROGRAM

Graduate Program Coordinator

G514 Health Sciences, Box 357420

206-543-5474

Master of Science

Admission Requirements

1. Minimum 3.00 GPA
2. A bachelor's degree in one of the following or a related area: chemistry, biology, physics, biochemistry, or biophysics.
3. GRE
4. Minimal course requirements for successful applicants:
 - a. *Chemistry*: General, organic, and physical
 - b. *Physics*: One year
 - c. *Mathematics*: One year of calculus; multivariable calculus and/or linear algebra are strongly recommended
 - d. *Biology and/or Biochemistry*: One year general biology plus one advanced course in biology or biochemistry
5. Undergraduate research experience strongly recommended.
6. International students must have a minimum score on one test as follows: 7.0 IELTS; 92 TOEFL iBT; 237 TOEFLC; 580 TOEFL; 90 MLT.
7. International students hoping to study with BMSD faculty in the Chemistry Department must have a minimum score on one test as follows: 26 on the speaking portion of the TOEFL iBT; 7.0 on the speaking portion of the IELTS; 70 on the Versant English Test; 55 on the TSE; 230 on the SPEAK test administered at the UW.

Degree Requirements

36 credits, to include:

1. *Required Courses*: BIOC 530; BMSD 540, BMSD 541, BMSD 542; BMSD 520 to be taken every quarter
2. 12 graded credits of elective courses covering at least three of the four BMSD categories of topics: biomolecular structure, techniques in biomolecular structure, molecular and cellular biology, and chemistry
3. At least one sequence of Biomedical Research Integrity workshops in the first or second year of the program. The Biomedical Research Integrity (BRI) series is a sequence of lectures and workshops offered during summer quarter each year.
4. *Teaching*: In order to gain practical teaching experience, students in the program serve as teaching assistants for two quarters.
5. *Research*: Students rotate through a minimum of two and a maximum of three participating laboratories during their first year. The opportunity exists for students to do an early rotation during summer quarter.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

BMSD 520 Research Seminar (1, max. 9) Group conferences on graduate student research. Prerequisite: BMSD graduate student or permission of instructor. Offered: AWSp.

BMSD 541 Literature Review in Biomolecular Structure and Design (2) Emphasizes critical evaluation of original articles in literature from all fields relevant to biomolecular structure and design. Scientific writing and oral presentations emphasized. Prerequisite: first-year BMSD student or permission of instructor. Offered: W.

BMSD 542 Literature Review in Biomolecular Structure and Design (2) Emphasizes critical evaluation of original articles in literature from all fields relevant to biomolecular structure and design. Scientific writing and oral presentations emphasized. Prerequisite: first-year BMSD student or permission of instructor. Offered: Sp.

BMSD 599 Introduction to Research in Biomolecular Structure and Design (3-6, max. 24) Student works with one of the research groups within the Biomolecular Structure and Design program for one quarter and then rotates to another laboratory for one additional quarter. Minimum two quarters, maximum four. Prerequisite: BMSD student or permission of instructor. Offered: AWSpS.

Environmental Management

274 Mary Gates Hall

The graduate certificate in Environmental Management (EM) is an interdisciplinary program designed to prepare students to contribute to sustainable utilization and enhancement of the natural and human environment. Through coursework, seminars, and a culminating two-quarter-long keystone project, students acquire the tools to solve real-world environmental problems via the three avenues of science, policy, and business. Keystone projects provide a unique opportunity for graduate students to gain practical experience working in an interdisciplinary team with students from a variety of disciplines, a faculty mentor, and in collaboration with a community partner. The EM program provides education and training opportunities for a diverse array of graduate students preparing for management careers in the non-profit, for-profit, and public sectors, as well as for those who contribute legal, scientific, and technical expertise to environmental decision making locally, nationally, and internationally. Key benefits of the program include:

- Broadening knowledge, perspectives, and skills beyond the academic home discipline through core courses, keystone projects, and participation in a community of faculty and students from various departments that share the common goal of environmental stewardship and sustainability.
- Gaining practical experience crafting interdisciplinary solutions to real-world environmental issues and making connections with community partners outside the University.
- Receiving a printed certificate and record on the transcript from the Graduate School to document completion of the interdisciplinary program in Environmental Management.

The flexible curriculum is suitable for students from many backgrounds, such as engineering, physical and natural sciences, public policy, economics, geography, public

health, and political science, to name a few. There is no other comparable interdisciplinary educational experience currently available to graduate students at the University of Washington.

GRADUATE PROGRAM

Graduate Program Coordinator

274 Mary Gates Hall

Box 352802

(206) 221-6129

envirmgt@uw.edu

Admission Requirements

1. Enrollment in a graduate and professional degree program in any school of the University of Washington
2. Completion of a one-quarter upper-level or graduate-level course in applied quantitative methods (e.g., microeconomics, numerical modeling, applied statistical methods) or pure quantitative methods (e.g., mathematics or statistics); or social or natural science
3. Facility with written argument and communication. This skill is demonstrated in the letter of application

The program is governed by the steering committee for Environmental Management.

The certificate's courses and projects prepare students to contribute legal, scientific, social science, and technical expertise to environmental decision making at the local, national, and international scales. Students are required to broaden their knowledge and skills base beyond their home discipline; to read material from other fields with critical facility; to understand and appreciate the goals and analysis methods common to other fields; and to appreciate, communicate with, and collaborate with experts from other fields, who have different perspectives and priorities.

Certificate Requirements

Minimum 20 credits, to include:

1. *Three Core Courses (9+ credits)*: Courses vary by year
2. *Team-based Keystone Project (8 credits)*: ENVIR 511, ENVIR 512
3. *Electives (3+ credits)*: Selected in consultation with the Graduate Program Coordinator and approved by the EM director

Graduate School

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

GRDSCH 200 Preparing for Graduate Education (2) Explores graduate education and its structure and organization. Students use interactive assignments, individual reflective work, and professional portfolio development to explore their preparation for graduate education, and develop strategies for pursuing graduate school. Credit/no-credit only.

GRDSCH 525 Interactive Theater as Pedagogy (3) Students build skills in social change interactive theater to challenge institutional oppression, advance community dialogue, and promote inclusive educational environments. Emphasizes political education; storytelling; collaborative playwriting; rehearsal of plays and interventions; discussion; and self-reflection. Culminates in student-organized, public interactive theater performance and dialogue workshops. Previous acting experience not required.

GRDSCH 610 Teaching Mentorship (3, max. 6) Individualized project, under the direction of a faculty member, focused on issues of teaching and learning at the college/university level and designed to enhance the student's ability to make innovative contributions in teaching. Prerequisite: permission of faculty member, graduate program coordinator, and the Associate Dean of the Graduate School. Credit/no-credit only.

GRDSCH 615 Teaching Assistant and Research Assistant Preparation (1-6, max. 6) Instruction and teaching, learning, research, and resources for teaching and research assistants. Credit/no-credit only.

GRDSCH 620 Teaching Mentorship Seminar (2) Credit/no-credit only.

GRDSCH 630 Special Topics in College/University Teaching (2, max. 6) Interdisciplinary discussion of topics related to college/university teaching, with an emphasis on innovative teaching and preparing for faculty careers. Designed to address topics across disciplines, as a complement to discipline-specific courses offered in departments. Credit/no-credit only.

Health Services Administration

GRADUATE PROGRAM

Graduate Program Coordinator -- In-Residence and Executive Programs

H660 Health Sciences, Box 357660

(206) 543-8778

mhaph@uw.edu

The graduate program in Health Services Administration offers two tracks for earning a Master of Health Administration (MHA) degree: a traditional day program (MHA) and an executive program (EMHA).

Accredited by the Commission on Accreditation of Healthcare Management Education (CAHME), the MHA provides the educational foundation for careers in management, planning, consulting, and policy-making in ambulatory care organizations, hospitals, long-term care facilities, mental health care organizations, government agencies, planning agencies, and other organizational settings in the health-care field.

Interdisciplinary by design and innovative in its approach to curriculum delivery, the program develops leaders prepared strategically and effectively to transform healthcare organizations and systems at the local, regional, and national level. The MHA program's interdisciplinary priority is evidenced by faculty that has been assembled from the graduate schools of Public Health, Foster School of Business, Public Affairs, Nursing, Medicine, and Law, as well as from the community of healthcare administration leaders in the Seattle metropolitan area.

Concurrent degree programs combining health administration with business, medicine, law, public health, or public administration are also an option for in-residence students. Many concurrent programs can be completed in three years of intensive academic study.

For in-residence MHA students, the two-year academic experience is augmented by a career development program with opportunities for mentorships with regional healthcare leaders, an internship experience in a health facility or agency -- typically under the preceptorship of the administrator or director of that organization.

The Executive Master of Health Administration (EMHA) is designed primarily for mid-career physicians and other clinical practitioners, as well as experienced health services

managers, who have demonstrated interest or competency in administration or management. Best-practice healthcare is a team process, and the team-based learning model, especially emphasized in year one, positions students for leadership roles within such an environment. Executive students build critical competencies while benefiting from the broad expertise already held among the working professionals in the classroom. EMHA classes convene in Bellevue, Washington, for a three-day period (Thursday through Saturday) once each month for 24 months. Additionally, once each week faculty lead students in a web-based session, ideal for practicing professionals who plan to continue their careers while gaining a graduate degree.

Both the MHA and EMHA programs operate under a fee-based structure and are administered in collaboration with UW Professional & Continuing Education. Complete application details can be viewed at www.mha.uw.edu and www.executivemha.edu.

Financial Aid

Students enrolled in both the MHA and EMHA programs are eligible for federal financial aid, as well as most other types of financial support that are not funded by state tuition revenues. When exploring financial aid options, students should emphasize they are applying for a fee-based program. Financial aid questions should be directed to the UW Office of Student Financial Aid (206) 543-6101, osfa@uw.edu.

Human-Computer Interaction Design

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsat/.

HCID 510 Designing Interactive Systems (3) Covers issues relating to the design and interactive technologies, favoring design thinking in lieu of implementation concerns. Skills include design processes, design rationale, adductive reasoning, structured brainstorming, design techniques, and design critiques.

HCID 511 Ideation Studio (5) Introduces student to ideation: the systematic process of generating design ideas, developing idea variations, and identifying ideas that open promising design directions; with hands-on exercises that give students the skills to participate in and lead ideation processes on their own.

HCID 520 User Interface Software and Technology (3) Covers fundamental skills in user interface prototyping and implementation, including tools for low and high fidelity prototyping, software architectures for implementing graphical user interfaces on desktop and mobile platforms, and the toolkits that use these software architectures.

HCID 521 Prototyping Studio (5) Examines user-interface prototyping as a foundational skill in user-centered design. Introduces the tools and uses hands-on exercises to enable students to create and refine user-interface prototypes as part of a design process.

HCID 530 Usability and User Research (3) Teaches concepts on engaging with users in the context of a technology design project. Covers both empirical and analytic evaluation techniques. Methods include user interviewing, in-lab usability testing, field deployments, heuristic evaluation, and cognitive walkthrough.

HCID 531 Evaluation Studio (5) Teaches concepts related to conducting user research and usability evaluations. Introduces students to the methods and hands-on exercises

that will enable them to determine user needs and usability and acceptability of interactive system designs.

HCID 540 Capstone Planning (1) Students conduct initial research on topic themes, learn to form effective project teams, and identify appropriate industry sponsors, delivering formal project proposals. HCID students only. Offered: W.

HCID 541 Capstone Studio (8) Team-based capstone design an interactive product relevant to industry challenges. Students apply iterative design, prototyping and research techniques in an studio format, with peer, faculty, and industry sponsor reviews of deliverables, culminating in a portfolio presentation documenting process and final solutions. Studio content supplemented by demonstrations and guest lecturers.

HCID 590 Design, Use, Build Seminar (1, max. 10) Covers the latest research in human-computer interaction and design, through talks by both UW and outside researchers. Credit/no-credit only. Offered: AWSpS.

HCID 598 Special Topics (1-5, max. 6) Studies of emerging areas and specialized topics in human-computer interaction and design.

HCID 599 Special Projects (1-5, max. 6) Individual graduate projects in human-computer interaction and design.

Molecular and Cellular Biology

The Molecular and Cellular Biology program (MCB) is a leader in applying the techniques of molecular and cellular biology to advance the understanding of basic biological sciences. The goal of the doctoral program is to broadly train students to think about science in a rigorous and critical manner. Since scientific methods, equipment, and knowledge are changing rapidly, students learn to focus on important issues in an evolving research environment. This program is appropriate for students interested in future careers in research and teaching in academia as well as biotechnology and pharmaceutical companies.

Twelve departments across three schools have faculty members actively pursuing research in molecular and cellular biology. The departments participating in the program include Biochemistry, Bioengineering, Biological Structure, Biology, Environmental Health, Genome Sciences, Immunology, Microbiology, Pathobiology, Pathology, Pharmacology, and Physiology and Biophysics.

At the Fred Hutchinson Cancer Research Center (FHCRC), the divisions of basic sciences and molecular medicine participate in the joint Molecular and Cellular Biology graduate program. Shared FHCRC facilities are available for electron microscopy, flow cytometry, tissue culture, and image analysis. A biotechnology center for DNA and protein synthesis and sequencing, animal facilities, a biological production facility that focuses on monoclonal antibody production, extensive libraries, and a biocomputing center provide further support for the research effort.

Recently the MCB Program has established relationships with the Institute for Systems Biology (ISB) as well as Seattle Biomed. These collaborations allow MCB students access to labs conducting research using a systems approach to biology or a global focus on infectious disease.

Faculty Interests

Over 250 faculty members from the UW, the FHCRC, the ISB, and Seattle Biomed are researching molecular and cellular biology and are skilled in the training of graduate students. Faculty research interests are categorized into eight areas of interest: cancer biology; genetics; genomics and evolution; microbiology, infection and immunity; mo-

molecular structure and computational biology; and neuroscience.

GRADUATE PROGRAM

Graduate Program Coordinator

T466 Health Sciences, Box 357275

(206) 543-0253

mcb@uw.edu

Doctor of Philosophy

Admission Requirements

1. Applicants must have completed a baccalaureate or advanced degree by the time of matriculation; degrees emphasizing biology, physical or natural sciences, and mathematics are preferred.
2. GRE scores. General Test. A Subject Test (e.g., biology, biochemistry, chemistry) is not required but recommended.
3. Letters of recommendation
4. Statement of purpose
5. Personal resume

Degree Requirements

90 credits, including:

1. *Credit Requirements:* MCB students complete 21 graded credits of coursework with 9 credits of the CONJ series and 12 credits of graded elective courses. M.S.T.P. students receiving a Ph.D. through the MCB Program are required to have 18 graded credits, and should petition the MCB directors to accept medical school courses in lieu of the remaining 3 credits.
2. *First Year:* Students complete most of their formal course requirements, select a permanent adviser, and establish a doctoral Supervisory Committee. A typical first-year class schedule includes six five-week modules of the MCB conjoint series, three lab rotations, three quarters of literature review and one or more graded elective classes. Following the third rotation, students generally choose a permanent adviser in whose lab they pursue research for the rest of their educational career, generally three to four years. During the summer, students complete the biomedical research integrity lecture series.
3. *Second Year:* Students form their doctoral Supervisory Committee by the end of December, define their doctoral projects, take additional elective courses, participate as teaching assistants for a minimum of one quarter, complete either a second academic teaching assistantship or an alternative education experience, and hold their first committee meeting.
4. *Third Year and Beyond:* By the end of spring quarter of the third year, the student completes the general examination and is conferred official Ph.D. candidacy by the Graduate School. The student then focuses on the dissertation research and continues to meet with the Supervisory Committee each spring quarter to report on research progress and plans for the coming year. When the Supervisory Committee agrees that a student is ready, the final examination is scheduled. Upon successful completion of the final examination and acceptance of the completed dissertation by the Graduate School, a student is conferred the degree of Doctor of Philosophy.

Financial Aid

The MCB Program provides a stipend plus tuition and health benefits for the first year of study. At the end of the first year of study, students choose a doctoral committee, and subsequent years of support are provided by the de-

partment of the committee chair. Students maintaining satisfactory academic progress receive funding for the duration of their graduate training.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

MCB 511 Cell Cycle Control (3) Breeden, Roberts, Edgar Studies recent advances in understanding cell-cycle control, arising from genetics and biochemical studies of fission and budding yeast, marine invertebrates, *Drosophila*, amphibians, and cultured cells. Addresses the biochemical processes and molecular interactions and the rate-limiting events in the cell cycle, and the coupling of those events to physiological signals. Offered: A.

MCB 512 Scientific Speaking Seminar (1.5) Biggins, Peichel Teaches how to effectively give a scientific seminar about research. Offered: jointly with CONJ 512; W.

MCB 513 Development Journal Seminar (1, max. 12) Moens, Soriano, Swalla Examines current literature about specific topics in developmental biology. The seminar chooses current monthly topics and the group meets weekly to discuss published research papers. Topics may include: germ cell specification; cell migration and morphogenesis; axis formation; somitogenesis and stem cells. Offered: AWSp.

MCB 514 Molecular and Cellular Biology Literature Review (2) Raible Emphasizes critical evaluation of the original literature orally and in writing. Open only to first-year students in the Molecular and Cellular Biology program.

MCB 515 Molecular and Cellular Biology Literature Review (2) Emerman Emphasizes critical evaluation of the original literature orally and in writing. Open only to first-year students in the Molecular and Cellular Biology Program. Offered: W.

MCB 516 Molecular and Cellular Biology Literature Review (2) Emerman Emphasizes critical evaluation of the original literature orally and in writing. Open only to first-year students in the Molecular and Cellular Biology Program. Offered: S.

MCB 517 Topics in Molecular and Cellular Biology (1-5, max. 12) Advanced in-depth coverage of specific areas of molecular and cellular biology of current interest. Lectures by University of Washington faculty and invited speakers involved in research in this area. A basic knowledge of principles of molecular and cellular biology assumed.

MCB 519 Topics in Cancer (1, max. 6) Examination of ways to integrate basic, clinical, and public health sciences to increase understanding of human biology and disease. Seminars in introduction to cancer research as viewed by basic, clinical, and public health sciences, origins of cancer, cancer prevention, cancer progression, and therapies for cancer. Credit/no-credit only.

MCB 520 Tutorial in Molecular and Cellular Biology (1-2, max. 2) Emerman Special topics reading and discussion. Offered: A.

MCB 522 Development I: The Developmental Basis of Human Disease (3) Moens Uses recent discoveries in human genetics to guide student learning about animal development. Explores the normal developmental function of genes that have been identified as causal in human developmental disorders such as skeletal dysmorphologies, ciliopathies, autism, and cancer. Offered: A, odd years.

MCB 529 Cell Migration (1.5) Cooper, Moens Explores mechanisms of cell migration in vivo and in cell culture. Discusses the cell biology of different forms of cell migration, the extracellular cues that direct migration, and how these cues are integrated by the migrating cell. Offered: jointly with CONJ 529; W.

MCB 532 Human Pathogenic Viruses (3) Emerman Replication, regulation, and pathogenesis of several groups of human viruses, including human immunodeficiency virus and papillomaviruses. Emphasis on the unique aspects of the viral-like cycles as they relate to effects on infected cells and organisms. Guest lecturers focus on viral immunology, measles, herpes simplex virus, and HHV-8. Offered: A.

MCB 533 Evolutionary Genetics and Genomics (3) Malik, Peichel Introduces classic concepts and approaches in evolutionary genetics. Familiarizes students with genomic approaches, tools and resources, and demonstrates how evolutionary approaches and modern genomic tools are brought to bear on important biological questions. Offered: A.

MCB 539 Biological Basis of Neoplasia (3) Kemp, Zarbl Introduces the major themes in research in the biology of neoplastic change. Covers principle molecular mechanisms responsible for tumor initiation and progression, with a specific emphasis on intracellular signaling, DNA repair, cell cycle checkpoints, and loss of normal tissue homeostasis. Offered: Sp.

MCB 540 Nucleic Acid Enzymes (1.5) Stoddard Surveys a wide variety of enzymatic process that control the structure and modification of DNA and RNA, with particular focus on structure, function and mechanism. Unifying features of major reaction types (such as phosphoryl transfers and base modifications) constitute core material. Offered: W.

MCB 543 Logic Constructs and Methodologies of Biological Research (3) Explores the logic and methods of general scientific practice, from historical, logical, and practical points of view. Covers philosophical and methodological matters upon which there is consensus, and cutting issues of ongoing controversy. Includes both theoretical and practical application of scientific method.

MCB 560 Biotechnology Externship (2-12, max. 12) Moon Supervised research in a biotechnology company. Prerequisite: permission of instructor and doctoral candidacy. Offered: AWSpS.

MCB 580 Teaching Practicum in Molecular and Cellular Biology (2, max. 4) Supervised training in the teaching of molecular and cellular biology. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

MCB 599 Introduction to Research in Molecular and Cellular Biology (*, max. 20) The student rotates through one research laboratory involved in the Molecular and Cellular Biology Program per quarter. Open only to first-year students in the Molecular and Cellular Biology Program. Credit/no-credit only. Offered: AWSpS.

MCB 600 Independent Study or Research (*-)

MCB 700 Master's Thesis (*-) Offered: AWSpS.

MCB 800 Doctoral Dissertation (*-)

Molecular Engineering

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

MOLENG 510 Molecular Engineering Principles (3) Covers molecular aspects of condensed organic materials, particularly molecular and collective interactions and resulting interfacial forces, entropic phenomena and condensation to systems of higher complexity. Includes the exploration of molecular system constraints and the molecular origin of resulting macroscale properties. Provides introduction into computer modeling.

MOLENG 520 Seminar in Molecular Engineering (1, max. 30) Weekly seminars on current topics in molecular Engineering. Credit/no-credit only. Offered: AWSp.

MOLENG 599 Current Topics in Molecular Engineering (1-5, max. 30) M. SARIKAYA Readings, lectures, and discussions on topics of current interest in the field of molecular engineering. Offered: AWSpS.

MOLENG 600 Independent Study/Research (*) Study and research under the supervision of an affiliated faculty member.

MOLENG 800 Doctoral Dissertation (*) Study and research under the supervision of an affiliated faculty member.

Museology

GRADUATE PROGRAM

Graduate Program Coordinator

Burke Museum, Box 353010

(206) 616-8280

The museology graduate program is designed to provide the generalized training, knowledge, and skills necessary to pursue a professional career in museum work. The program is directed toward the training of a broad range of museum professionals interested in curation and management of collections in anthropology, art, botany, geology, history, and zoology as well as in interpretive programs and museum administration.

Courses include required core museology subjects as well as a range of classes offering students the chance to specialize in interest areas. Coursework is divided between the theoretical and practical aspects of museum operations. Classes take the form of lecture courses, seminars, special lectures by guest speakers, field trips, laboratory and collection management courses, practicums, and internships.

Practical experience, an essential component of the program, is provided by several museological institutions at the University of Washington, including the Thomas Burke Memorial Washington State Museum, the Henry Art Gallery, the Herbarium, the Arboretum, the Fish Collection, and the University Libraries. The Burke Museum acts as host of the museology program. Located on the campus of the University of Washington, the Burke Museum is Washington state's natural-history and anthropology museum, and is the oldest and largest natural-history museum in the Northwest. It has nationally and internationally ranked collections focusing on the anthropology, geology, and zoology of the Pacific region and Pacific Rim.

Master of Arts

Admission Deadline

The application deadline for autumn quarter admission is February 1. Applications completed and postmarked on or before this date are reviewed by the appropriate admission committee. Late applications may be submitted until April 15, although consideration is not guaranteed if enrollment targets have been met.

Degree Requirements

Minimum 36 credits

The museology graduate program takes two years to complete, consisting of six quarters of academic study and research. During the first year, students carry on average between 10 and 15 credits each quarter; during the second year, the number of credits may vary depending on research, practicum, and internship work. Students may enroll part time with permission from the program director

1. Minimum 36 quarter credits, including 27 course credits and 9 thesis or thesis-project credits, with at least 18 credits of coursework numbered 500 or above, including a thesis or thesis project
2. Minimum three quarters of full-time residence credit or part-time equivalent
3. Reading competence in one foreign language, if required by the student's supervisory committee because of the student's area of specialization
4. Internship in an off-campus museum or related agency approved by the supervisory committee prior to submission of the student's thesis or thesis project
5. Thesis proposal presented by the beginning of the fourth quarter of study
6. Oral examination, covering both the thesis topic and the field of museology in general, following submission of the thesis or thesis project
7. All degree requirements completed within six years.

The following courses are required of all students unless exempted by petition to the program coordinating committee or credited for relevant coursework completed at other universities: MUSEUM 580, MUSEUM 581; MUSEUM 583 or MUSEUM 584 or MUSEUM 585; MUSEUM 582, MUSEUM 598, MUSEUM 590, MUSEUM 593, MUSEUM 594, MUSEUM 595; MUSEUM 700 or MUSEUM 710. In addition, two or more courses are required in an academic discipline relevant to the area of specialization.

The museology program also offers a graduate certificate in museum studies as an option for graduate students in other degree programs at the University. To qualify, students must take a specified minimum set of key courses in areas that emphasize either collection research and management, or museum administration and interpretation, to include hands-on work experience. Information and application materials for the certificate can be obtained from the museology program office.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsclat/

MUSEUM 500 Introduction to Museology (5) Museum history, philosophy, and basic operations, including organization, income, collection management, conservation, exhibition, security, education, research, and ethics.

MUSEUM 524 Seminar in Museum Exhibition (5) Theory, methodology, and fundamental principles of museum exhibition process. Exhibition elements include planning, conceptual development, interpretation, design, production, installation, evaluation, and community impact of museum exhibitions. Application of exhibition principles through term exhibit project.

MUSEUM 528 Advocacy and Social Change (3) K. MORRISSEY Explore the ways museums have engaged in representing and advocating for social change and the implications of that engagement. Readings, discussion, and assignments consider the fragile and interesting boundaries between museums and society and the changing expectation of museums to contribute to the common good of society. Offered: A.

MUSEUM 540 Preservation and Management of Collections (5) Lecture and demonstration of fundamental principles of collection management issues, emphasizing collection management needs of museum collection of all types. Application of principles through integrated collection management lab experiences addressing concerns of artifact handling, cataloging, photo-documentation, storage, and registration.

MUSEUM 542 Preservation of Collections II (5) Lecture and demonstrations in the recognition and treatment of

museum conservation problems for specimens of all types. Application of basic principles to specific preventive and active conservation and restoration problems encountered by curatorial personnel.

MUSEUM 544 Philosophy and Ethics of Museum Collections (3) Explores ethics and issues related to collections housed in contemporary museums, addressing collections of many types including tangible and intangible aspects. Explores the meaning of "preserving cultural/natural significance": what museums, zoos, aquaria, and botanical gardens preserve, what they do not preserve, for whom, and how.

MUSEUM 560 Museum Administration and Leadership (5) Principles and practices of museum administration and leadership. Organizational structures and policies; management and leadership theory; board issues; organizational conflicts; planning issues; collection concerns; financial constructs; professional standards; and museum/community relations from an organizational and management perspective.

MUSEUM 562 Legal Issues in Museums (4) Explores the legal issues faced by art and science museums. Topics include copyright/trademark law, how the First Amendment protects controversial exhibits, repatriating Native American remains and cultural artifacts, donor rights, art appraising, wartime looting, and the ongoing debate over stewardship and ownership of the world's natural and cultural resources. Offered: jointly with LAW E 562.

MUSEUM 566 Grant Writing in Museums (3) Students learn how to identify relevant grant funding opportunities for museums and determine the fit for a particular institution or project; gain familiarity with the components of a grant proposal; understand how proposals are reviewed, what funders typically look for, and the characteristics of a high quality grant proposal.

MUSEUM 570 Research Design and Museology Practice (4) K. MORRISSEY Prepares students to identify, interpret, analyze, and design research that advances the field of museology.

MUSEUM 574 Introduction to Museum Evaluation (3) Provides an introduction to the field of evaluation as it relates to museum practice. Introduces basic types, ethics, and practices of evaluation and practices them through readings, reflective fieldwork, mentorships, and discussions.

MUSEUM 575 Museum Evaluation Project I (3) N. VISSCHER Applies museological training in Museum Evaluation. Students participate in a quarter-long evaluation project, designed by instructors to further student skills in data collection, and provide an introduction to data management, analysis and presentation within a variety of museum settings. Credit/no-credit only. Offered: Sp.

MUSEUM 576 Evaluation Project II (3, max. 9) N. VISSCHER Applies museological training in museum evaluation. Includes design and implementation of a yearlong-long evaluation project, intended to further student skills in evaluation planning, outcome development, instrumentation design, data analysis, and reporting in a variety of museum settings. Prerequisite: MUSEUM 574; MUSEUM 575 Credit/no-credit only. Offered: AWSp.

MUSEUM 583 Directed Fieldwork in Museum Operations (1-5, max. 15) Application of general museological training in one or more areas of supervised operation areas, including registration, education, exhibition, development, marketing or public relations. Credit/no-credit only.

MUSEUM 584 Directed Fieldwork in Archaeological Collections (1-5, max. 15) Application of museological training in curation of archeological collections at the Burke Museum. Supervised work ranges from fundamental collection documentation and research to preventive conservation, storage, and other special curation projects. Prerequisite: MUSEUM 581.

MUSEUM 585 Directed Fieldwork in General Collections (1-5, max. 15) Application of museological training in the

curation of art, historic, botanical, geological, zoological, or other collections. Supervised work ranges from fundamental collection documentation and research to preventive conservation or storage, and other special curation projects. Credit/no-credit only.

MUSEUM 588 Special Topics in Museology (1-5, max. 15) In-depth examination of selected current issues within the field of museology.

MUSEUM 594 Seminar in Museum Education (5) Focus on museums as educational institutions with consideration of the place of education in the mission of museums, the educational role of museums compared to that of other institutions, the museum's diverse audiences and their needs, and the educational methods and techniques museums may employ in pursuing their goals.

MUSEUM 597 Directed Fieldwork in Audience Research (1-5, max. 15) *Morrissey, Satwicz, Visscher* Applies museological training in visitor studies gained from audience research coursework. Includes implementation of audience research and evaluation projects within a variety of local museums, zoos, and aquaria. Students develop and practice skills in data collection, analysis, and reporting of results. Prerequisite: MUSEUM 596. Credit/no-credit only. Offered: AWSp.

MUSEUM 599 Careers and Social Capital (3-5) *O'Donnell* Prepares students to transition from the academic community of a world-class university to a place of responsibility within a professional community that is committed to stewardship of the vast natural and created resources of our global communities and environments, including our stories, values, knowledge, mistakes, questions, and aspirations. Offered: Sp.

MUSEUM 600 Independent Study or Research ([1-10]-)

MUSEUM 601 Internship (1-15, max. 15) Faculty supervised off-campus internships in museums and allied institutions. Each internship is individually established and provides students with practical experience and the opportunity to apply and learn new professional skills. Prerequisite: permission of instructor.

MUSEUM 700 Master's Thesis ([1-10]-)

MUSEUM 710 Master's Project ([1-10]-, max. 10) Credit/no-credit only.

Near and Middle Eastern Studies

The interdisciplinary PhD program in Near and Middle Eastern Studies is designed for students who wish to pursue research with a comparative perspective in Near Eastern languages and literature: Arabic, Hebrew, Persian (or Dari or Tajik), Turkish and Central Asian Turkic languages; Near Eastern linguistics; Islamic topics, namely, Islamic law, history, institutions, theology, and mysticism; comparative religion: Judaism, Christianity, and Islam; and interdisciplinary investigations of modern topics using the social sciences. The program, administered by an interdisciplinary Graduate School faculty group, includes courses offered in the Department of Near Eastern Languages and Civilization, the Jackson School of International Studies, and other departments on campus. Students must take courses in both the humanities and social sciences.

Doctor of Philosophy

Graduate Program Coordinator
311 Loew Hall, Box 352192
(206) 543-6398

Admission Requirements

1. MA or equivalent in a discipline or field directly related to the proposed PhD work

2. Third-year competence in a regional language, and reading knowledge of a second language pertinent to the PhD research
3. Application deadline for autumn quarter admission is February 1. Application procedures are at www.grad.washington.edu/students/interdisciplinary/nme/application.shtml.

Degree Requirements

Minimum 90 credits

Specific coursework and areas of concentration are determined by the student's interests within the framework of the degree and satisfactory progress requirements listed below.

1. Within 18 months of admission, demonstration of a general knowledge of history and culture in one of the following general fields: Islamic civilization; Arabic, Hebrew, Persian, Turkish, or Central Asian Turkic languages and literature; the modern Middle East; or comparative religion either through previous degree work or through examination administered by the program.
2. Within three years of admission, completion of two advanced courses in the humanities, one of which must be in the Department of Near Eastern Languages and Civilization (NELC), and two advanced courses in the social sciences, one of which must be in the Department of History. These courses are in addition to work the student may have done at the BA and MA level.
3. Within three years of admission, completion of a graduate seminar. Two graduate seminars are required if none was taken at the M.A. level.
4. A student is expected to have studied three languages, two of which must be regional languages and one of which must be a "Western" European language other than English, such as French, German, Italian, Russian, or Spanish. The student's Supervisory Committee decides whether a fourth language is required and whether the fourth required language is European or regional. Students pursuing language-related work may anticipate a fourth required language, whereas those pursuing social-science-related studies may not. Before the general examination (see below) may be taken, the student must complete the language requirements including the second-year level in a regional language different from the two languages offered at the time of admission if both were not regional languages.
5. Disciplinary method and theory requirements: For all students conducting fieldwork or working with documents, whether social science or humanities focused, and for all social science-oriented students, the following courses are strongly encouraged: (a) ANTH 550; and (b) POL S 491; or (c) their equivalents in appropriate disciplines.

For students doing humanities-oriented research but not conducting fieldwork, two method and theory courses in the appropriate discipline or disciplines (e.g., comparative literature, philosophy) are required.

6. *Disciplinary Core Courses:* Each student is required to take two disciplinary core courses in appropriate fields. Core courses (or field courses) survey the literature, methods, and theoretical issues involved in a broad field of inquiry, as opposed to elective topical courses, which cover a much smaller area. Core courses should be chosen according to the anticipated research interests and fields for preliminary examination of each student. For example, these core disciplinary courses might focus on comparative politics, comparative religion, feminist theory, ethnicity and nationalism, analysis of linguistic structures, seminar in cognitive anthropology, comparative legal institutions, or international political economy. Courses on a narrow field of inquiry (such as Arab-Israeli conflict) do not constitute field or core courses, though they may contribute to a student's general field.

PhD Examinations and Dissertation

1. Preliminary examinations, consisting of three written and an oral. The three written examinations include: area of specialization, theory and discipline, and a self-designated field, revolving around the student's interest. The oral examination, following the written examinations, is two hours in length and addresses all these areas.
2. General examination, consisting of a take-home part and an oral part.
3. Final examination, the PhD thesis defense.

Annual Review: A subcommittee of the Near and Middle Eastern Studies program faculty meets each spring to review the progress of all students in the PhD program. Either the chair of the student's committee, the program's graduate adviser, or the program's director informs students of the results of this annual review.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsat/

N&MES 800 Doctoral Dissertation (*-)

Neuroscience

Understanding the brain represents both a major scientific challenge and a wonderful research opportunity. Investigations into the mechanisms of neural function require an interdisciplinary approach using the knowledge base and techniques of anatomy, biochemistry, molecular biology, physiology, pharmacology, and the behavioral sciences. Neuroscientists and their students must use these different approaches in their research and training if they are to make inroads to solving the major questions in neuroscience.

The University of Washington has met this challenge by establishing the interdisciplinary graduate program in neurobiology and behavior. The laboratories of more than 120 faculty members in over 20 departments within the School of Medicine, College of Arts and Sciences, and College of Engineering have combined efforts to form the doctoral training program, continuing a long history of collaborative efforts that cross University boundaries.

The program is designed to allow students to obtain both broad training in the neurosciences and more intensive coursework in specific areas of interest. The program emphasizes flexibility and encourages students to take responsibility in the design of their own curriculum. Students have the opportunity to work with faculty whose interests span the breadth of neuroscience research. Graduates of the program are well prepared for a variety of careers involving academic, research, industrial, and public policy positions.

GRADUATE PROGRAM

Graduate Program Coordinator
T471Health Sciences, Box 357270
(206) 685-1647
neubehav@uw.edu

Doctor of Philosophy

Admission Requirements

1. Applicants must have completed a baccalaureate or advanced degree by the time of matriculation; degrees

emphasizing biology, physical or natural sciences, and mathematics are preferred.

2. GRE scores: general test required; subject test not required, but recommended
3. Minimum three (3) letters of recommendation
4. Statement of purpose and curriculum vitae
5. All must be submitted online via the Graduate School application process.

Applications received after the deadline are considered at the discretion of the directors.

Students who have emphasized either biological or physical sciences in their undergraduate careers are invited to apply. Applicants are requested to send a copy of their academic record, GRE scores (including, if possible, scores on a subject test such as chemistry, physics, molecular and cellular biology, psychology, or biology), and three letters of recommendation from the persons who can best evaluate their potential for success in graduate study. New students enter the graduate program September 15. Applications received on or before the deadline are given full consideration. Applications received after the deadline are considered at the discretion of the directors.

Degree Program Requirements

90 credits, to include:

1. **Credit Requirements:** 20 graded credits of coursework with NEUBEH core curriculum and 10 credits of graded/ungraded elective courses approved by the curriculum committee chairs and the student's advisers.
2. **First Year:** Students complete most of their formal course requirements, select a permanent adviser, and establish a doctoral Supervisory Committee. A typical first-year class schedule includes the NEUBEH 501, NEUBEH 502, NEUBEH 503, NEUBEH 504, NEUBEH 532, NEUBEH 559 series, three lab rotations, and three quarters of the seminar series and journal clubs. Following the third rotation, students generally choose a permanent dissertation adviser in whose lab they pursue research for the rest of their educational career, generally four to five years.
3. **Second Year:** Students form their doctoral Supervisory Committee by the end of winter quarter, define their doctoral projects, take additional elective courses, and participate in a teaching internship for a minimum of two quarters (or equivalent), and hold their first committee meeting.
4. **Third Year and Beyond:** By the end of autumn quarter of the third year, the student completes the general examination and is conferred official PhD candidacy by the Graduate School. The student then focuses on dissertation research and continues to meet with the Supervisory Committee annually. Annual student evaluations and progress reports are due each spring quarter. When the Supervisory Committee agrees that a student is ready, the final examination is scheduled. Upon successful completion of that examination and acceptance of the completed dissertation by the Graduate School, the student is conferred the PhD degree.

Admission Process

Students who have emphasized either biological or physical sciences in their undergraduate careers are invited to apply. Applicants are requested to send a copy of their academic record, GRE scores (including, if possible, scores on a subject test such as chemistry, physics, molecular and cellular biology, psychology, or biology), and three letters of recommendation from the persons who can best evaluate their potential for success in graduate study. New students enter the graduate program September 15. Applications received on or before the deadline are given full consideration. Applications received after the deadline are considered at the discretion of the directors.

Financial Aid

The neuroscience program provides a salary with benefits (insurance plus tuition) for the first three quarters of study during rotations. Once the student has entered a dissertation laboratory, support is provided by the department of the dissertation adviser. Students maintaining satisfactory academic progress receive funding for the duration of their graduate training.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

NEURO 501 Introduction to Neurobiology (3) *Carlson* Survey of molecular, cellular, and developmental neuroscience, including gene regulation, the cytoskeleton, protein sorting in the secretory pathway, growth factors, and neurotransmitter receptors. Includes lecture discussion of original literature.

NEURO 502 Introduction to Neurobiology (5) *Sherk* Systems level survey of vertebrate system, focusing on sensory system, on motor system, and on neuroanatomy. Lectures cover topics in sensory and motor systems. Laboratory includes brain dissection and study of intact, projected, and sectioned brain and spinal cord. Emphasis is on human nervous system.

NEURO 503 Cognitive and Integrative Neurobiology (4) *Phillips* Survey of all aspects of neuroscience, including a discussion of higher neural processes like motivation, decision making, attention, learning, and memory. Lecture and discussion of original literature.

NEURO 504 Biophysics of Nerve, Muscle, and Synapse (3) *Sullivan* Introduces biophysical properties of nerve and muscle cells. Topics include intrinsic electrical properties of neurons, ion channels, receptor signaling, calcium signaling, contraction of muscles, and synaptic function. Offered: jointly with P BIO 504.

NEURO 510 Seminar in Neurobiology and Behavior (0.5, max. 30) Biweekly seminar on current topics. Required for students in the graduate program in neurobiology and behavior and for students supported on Graduate Neuroscience Program Training Grant. Credit/no-credit only.

NEURO 511 Seminar in Advanced Neurobiology (1-3, max. 30) Weekly faculty lectures, student presentations, and discussions of past and current scientific literature in neurobiology and behavior.

NEURO 512 Readings in Advanced Neurobiology and Behavior (1-3, max. 30) Guided study of the primary literature of neurobiology and behavior. Emphasizes critical analysis, accuracy of expression, bibliographical technique, and other factors of good scholarship. Prerequisite: permission of instructor. Credit/no-credit only.

NEURO 515 Teaching Practicum in Neurobiology and Behavior (3-6, max. 30) Supervised training in the teaching of neuroscience and related scientific topics. Prerequisite: graduate standing in the neurobiology and behavior graduate program and permission of the instructor. Credit/no-credit only.

NEURO 526 Introduction to Laboratory Research in Neurobiology (4, max. 30) Students become familiar with, and assist in, the performance of research on ongoing projects in designated laboratories. Emphasis on employed methodology and techniques. Prerequisite: first-year graduate students in neurobiology. Credit/no-credit only.

NEURO 527 Current Topics in Neurobiology and Behavior (1, max. 30) *Rieke* Presentation and discussion of current research provides exposure to diverse areas of neurobiology and behavior research. Prerequisite: graduate student in neurobiology and behavior program or permission of instructor. Credit/no-credit only.

NEURO 528 Computational Neuroscience (3) Introduction to computational methods for understanding nervous systems and the principles governing their operation. Topics include representation of information by spiking neurons, information processing in neural circuits, and algorithms for adaptation and learning. Prerequisite: elementary calculus, linear algebra, and statistics, or permission of instructor. Offered: jointly with CSE 528.

NEURO 535 Research Opportunities in Neurobiology and Behavior (1)

NEURO 541 Neuroendocrinology (3) *Steiner* Emphasizes the cellular and molecular aspects of several topics in neuroendocrinology, including neuropeptide genes, reproduction, steroid hormone regulation of gene expression, mechanisms of hormone action, endocrine rhythms, and neural oscillations. Prerequisite: either BIOL 201, BIOL 202, and BIOL 203, or BIOL 180, BIOL 200, and BIOL 220; BIOC 440, BIOC 441, BIOC 442 or permission of instructor. Offered: jointly with P BIO 509; W, even years.

NEURO 545 Quantitative Methods in Neuroscience (3) *Rieke* Discusses quantitative methods applicable to the study of the nervous system. Revolves around computer exercises/discussion of journal papers. May include linear systems theory, Fourier analysis, ordinary differential equations, stochastic processes, signal detection, and information theory. Prerequisite: NEUBEH 501, NEUBEH 502, NEUBEH 503, or permission of instructor. Offered: jointly with P BIO 545.

NEURO 548 Molecular Mechanisms of Synaptic Plasticity (2) *Barria* Discusses recent primary literature on the molecular mechanisms underlying structural and functional changes of dendritic spines and synapses in the mammalian brain as result of synaptic activity and experience. Offered: jointly with P BIO 548; Sp, even years.

NEURO 550 Biophysics of Calcium Signaling (1) *Hille, Santana* Introduction to cellular calcium signaling including theoretical and technical issues of calcium signal detection and biological conclusions. Prerequisite: CONJ 531. Offered: jointly with P BIO 550; Sp, odd years.

NEURO 554 Motor Learning: Cellular and Network Mechanisms (1) *Fetz, Perlmuter* Five-week mini-course reviews the current state of research on cellular and network mechanisms of motor learning. After an introductory overview of behavioral and physiological examples of motor learning in various species and systems, students choose specific topics for discussion, using the primary literature as a source. Offered: jointly with P BIO 554.

NEURO 555 Sensory Receptors (1) *Detwiler, Rieke* Five-lecture mini-course examines how different kinds of sensory receptors detect and respond to different modalities of sensory stimuli. Discussion focuses on the cellular and molecular mechanisms of the underlying transduction processes and the experimental evidence that they are based on. Offered: jointly with P BIO 555.

NEURO 556 Axon Pathfinding Mechanisms (1) *Bothwell* Examines mechanisms governing axon growth cone behavior during embryonic development and during regeneration in the injured adult. Discusses approaches employing both invertebrate and vertebrate model systems. Offered: jointly with P BIO 556.

NEURO 557 Ion Channel Gating (1) *Zagotta* Compares and contrasts mechanisms of gating in ligand-gated and voltage-gated ion channels. Covers basics of ligand gating and voltage gating, kinetic schemes, inactivation and desensitization, gating currents and partial agonists, and ion channel structure. Offered: jointly with P BIO 557.

NEURO 559 Neurobiology of Disease (3) *Garden, Neumai, Weinstein* Introduces medically important neurological and psychiatric diseases and experimental approaches to understanding the basis for diseases and their treatments. Covers stroke, epilepsy, autoimmune diseases of the CNS, neurodegenerative diseases, autism, psychosis,

anxiety disorders, and mood disorders. Offered: jointly with NEURL 559/P BIO 559.

NEURO 561 From Biophysics to Neural Computation (2) Introduces the mathematics and methods of neuronal modeling. Develops, compares, and relates dynamical systems approaches and empirical characterizations of neuronal function. Includes lectures, student-led journal paper discussions, biweekly computational workshops on neuronal modeling packages, and a computations project. Offered: jointly with P BIO 561; Sp.

NEURO 600 Independent Study or Research (*-) Credit/no-credit only.

NEURO 700 Master's Thesis (*-)

NEURO 800 Doctoral Dissertation (*-)

Nutritional Sciences

UNDERGRADUATE PROGRAM

Adviser

305 Raitt, Box 353410

(206) 221-8526

ugnutr@uw.edu

Minor

The minor provides a foundation of knowledge in the study of nutritional sciences, with a unique focus on the intersection of food, food systems, and population health. Students pursuing the minor are presented with a multidisciplinary perspective on the field of nutritional sciences, including its metabolic/biochemical, behavioral, and public health aspects.

Minor Requirements: 25 credits, to include the following:

1. NUTR 300, NUTR 302, NUTR 303, NUTR 490 (10 credits)
2. 15 credits of approved electives, see website for list
3. Minimum 13 credits from School of Public Health
4. Minimum 15 credits of upper-division courses
5. Minimum 15 credits taken outside student's major requirements
6. Minimum 15 credits in residence through the UW
7. Minimum 2.0 cumulative GPA for courses applied toward the minor

GRADUATE PROGRAM

Graduate Program Coordinator

305 Raitt, Box 353410

(206) 543-1730

nutr@uw.edu

Nutritional Sciences is an interdisciplinary program in the School of Public Health that offers Master of Science (MS), Doctor of Philosophy (PhD), and Master of Public Health (MPH) degrees. The program is designed for the needs of students with a strong science background who wish to pursue (1) advanced training in nutritional science or clinical research, (2) advanced training in nutritional epidemiology and diet-disease interactions, or (3) training in public health nutrition practice.

The Graduate Coordinated Program in Dietetics (GCPD) combines the MS, MPH, and PhD programs with a supervised practice experience (internship equivalent), which gives students eligibility to take the national registration examination to become a Registered Dietitian (RD). The GCPD includes additional coursework and a nine-month

practice experience at regional community, clinical, and food service facilities.

Principal areas of study are biochemical and molecular nutrition, community or public health nutrition, food safety, nutrition and chronic disease, and clinical nutrition. Members of the core faculty represent the School of Public Health, the Fred Hutchinson Cancer Research Center, and the School of Medicine. The program also draws on a larger group of affiliate and clinical faculty from the College of Arts and Sciences, Schools of Medicine and Nursing, other units on campus, and from affiliated institutions in the Seattle area.

All students begin working on a research project under the supervision of an appropriate faculty member in the early stages of their graduate experience. Public health field placements, which follow the first year of required coursework, are an integral part of the MPH curriculum.

Students have access to faculty mentors and research facilities through the Medical Center, the South Lake Union Research Hub, and the Fred Hutchinson Cancer Research Center. Clinical facilities include UW Medical Center, Harborview Medical Center, Northwest Kidney Center, Seattle Children's hospital, Seattle Cancer Care Alliance, Northwest Hospital and Medical Center, Valley Medical Center, and the Center for Human Development and Disabilities.

Students may apply to the graduate degree program after completing a bachelor's or a master's degree. Prerequisite coursework in nutrition, chemistry, biochemistry, and human physiology is required. Students who wish to supplement their degree program with the Academy of Nutrition and Dietetics -accredited GCPD must also complete prerequisite coursework in microbiology, psychology, food science, and English. Students who have completed a didactic program in dietetics may apply to the graduate program and the GCPD.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

NUTR 200 Nutrition for Today (4) NW Examines the role of nutrition in health, wellness, and prevention of chronic disease. Topics include nutrients and nutritional needs across the lifespan food safety, and food security, wellness, body weight regulation, eating disorders, sports nutrition, and prevention of chronic disease. May not be taken for credit if credit earned in NUTR 300. Offered: AW.

NUTR 300 Nutrition for Today (3) NW *Averill, Kirk* Science of nutrition as it relates to individual food choices, health behaviors, public health. Health topics include wellness, obesity, eating disorders, sports nutrition, prevention of chronic disease. Nutrients and nutritional needs across the lifespan. Issues facing society including food safety, biotechnology, use of supplements and botanicals. Offered: AW.

NUTR 302 Food Studies: Harvest to Health (3) I&S/NW *Otten* Examines the many facets of the modern food supply from production and processing to distribution, marketing, and retail. Systems approach to foods studies considers geopolitical, agricultural, environmental, social, and economic factors along the pathway from harvest to health. Prerequisite: NUTR 200. Offered: Sp.

NUTR 303 Neighborhood Nutrition (3) NW *Drewnowski* Examines the food environment in the local community from the public health perspective. Explores where people get their food, what influences this decision and various aspects of the local food movement including access to healthy food, urban agriculture, farmers markets, and farm-to-school programs. Prerequisite: NUTR 200. Offered: W.

NUTR 310 Nutrition and the Life Course (4) NW Explores nutrient needs from infancy through adolescence and adulthood, including the physiological basis of nutrient requirements and the genetic, social, and environmental influences on food choices and nutrition status. Uses an evidence-based approach to assess the impact of nutrition across life stages and ways to improve population health by improving nutrition. Prerequisite: NUTR 200.

NUTR 400 Nutrition Seminar (1, max. 4) I&S *A. DREWNOWSKI* Examines emerging issues in food and nutrition as they relate to personal and public health. Reviews evidence in the context of health policy. Credit/no-credit only. Offered: AW.

NUTR 405 Physical Activity in Health and Disease (3) NW *Duncan* Impact of physical activity on individual and public health. Overview of physiological adaptations to activity, exercise prescription, exercise epidemiology, and prevention of chronic diseases. Public health recommendations for activity in the U.S. population, and the effects of the built environment on activity. Prerequisite: either BIOL 118 or BIOL 220. Offered: Sp.

NUTR 406 Sports Nutrition (3) NW *Kirk* Covers the essentials of human nutrition that improve and sustain optimal performance for sport and exercise. Discusses the effect of eating disorders (in both male and female athletes), weight management, and sport nutrition resources. Prerequisite: NUTR 200. Offered: Sp.

NUTR 411 Diet in Health and Disease (3) QSR Discusses advanced topics in nutritional sciences. Includes nutrition and health, chronic disease prevention and management, and in-depth discussion of dietary patterns. Draws on current topics in the media, impacts of public health policy on diet, and the most recent nutrition research. Prerequisite: NUTR 200. Offered: Sp.

NUTR 412 United States Food and Nutrition Policy (3) I&S *Otten* Offers a broad introduction to food and nutrition policies in the United States and their impacts on population health. Real-world controversies and debates used to illustrate policy principles, research tools, and policy analysis. Includes topics on public health nutrition, food policy related to population health, and food security. Prerequisite: NUTR 200. Offered: A.

NUTR 420 Global Nutrition: Challenges and Opportunities (3) I&S *J. GORSTEIN* Examines global dimensions of malnutrition; its assessment and classification, along with global policies and programs to improve nutritional status in developing countries. Emphasizes global consequences of poor nutrition on health, cognition, and development with a focus on the first 1,000 days from conception to age two. Prerequisite: NUTR 200. Offered: A.

NUTR 446 Food Safety and Health (3) *Rosenfeld* Presentation of emerging issues in food safety and toxicology, microbiology, sustainable agriculture, and biotechnology. Examines both domestic and global pressures on the food supply. Examines international and national policies that promote regional solutions for a safe food supply and access to nutritious foods. Offered: W.

NUTR 465 Nutritional Anthropology (3) I&S/NW Examines the interrelationships between biomedical, sociocultural, and ecological factors, and their influence on the ability of humans to respond to variability in nutritional resources. Topics covered include diet and human evolution, and nutrition-related biobehavioral influences on human growth, development, and disease resistance. Prerequisite: BIO A 201. Offered: jointly with BIO A 465.

NUTR 490 Special Topics in Nutritional Sciences (1-5, max. 10) Examines emerging issues in nutrition. Reviews the evidence and potential policy implications.

NUTR 499 Undergraduate Research (1-5, max. 10) Independent study and research supervised by a faculty member with appropriate academic interest. Credit/no-credit only. Offered: AWSpS.

NUTR 500 Graduate Seminar: Current Issues in Nutrition (1, max. 4) A review of current topics in nutritional science and public health nutrition. Provides a forum for student and faculty presentation, and review of current research efforts. Prerequisite: graduate student in nutrition. Credit/no-credit only. Offered: AWSp.

NUTR 505 Physical Activity in Health and Disease (3) Impact of physical activity on individual and public health. Overview of physiological adaptations to activity, exercise prescription, exercise epidemiology, and prevention of chronic diseases. Public health recommendations for activity in the U.S. population, and the effects of the built environment on activity. Prerequisite: human physiology. Offered: jointly with EPI 502; Sp.

NUTR 511 Survey of Advanced Nutrition (2-3) *Averill* Advanced introduction to nutritional sciences. Topics include macronutrient and micronutrient metabolism, energy balance and obesity, nutrient utilization in physical activity, nutritional needs and recommendations throughout the lifecycle, and the relationships between nutrition and atherosclerosis, diabetes, and cancer risk. Offered: A.

NUTR 512 United States Food and Nutrition Policy (3) *Otten* Offers a broad introduction to food and nutrition policies in the United States and their impacts on population health. Real-world controversies and debates used to illustrate policy principles, research tools, and policy analysis. Includes topics on public health nutrition, food policy related to population health, and food security. Prerequisite: NUTR 300. Offered: A.

NUTR 520 Nutrition and Metabolism I (3) *Rosenfeld* Metabolic/physiologic concepts related to energy balance, carbohydrate, and protein nutrition. Addresses energy producing pathways, as well as food sources, digestion, absorption, and utilization of carbohydrates, protein, and various micronutrients. Additional topics include low carbohydrate diets, vegetarianism, protein deficiency, and inborn errors in carbohydrate and protein metabolism. Prerequisite: biochemistry. Offered: A.

NUTR 521 Nutrition and Metabolism II (3) *Rosenfeld* Discussion of normal lipid components of animal tissues, with review of their metabolism and physiological functions. Topics include digestion, absorption, transport, and utilization of dietary fats, cholesterol, and fat-soluble vitamins. Discusses in-depth the roles played by lipids and various micronutrients in altering risk of atherosclerosis. Prerequisite: biochemistry. Offered: W.

NUTR 522 Nutrition and Metabolism III (3) *Rosenfeld* Advanced study of biologically essential minerals and vitamins. To include absorption, transport, function, storage, and excretion; imbalance, deficiency and toxicity; dietary structures; and role of these nutrients in prevention of diseases directly or indirectly. Prerequisite: biochemistry. Offered: Sp.

NUTR 526 Maternal and Pediatric Nutrition (4) Examines the influence of maternal, infant, and children's nourishment on growth, development, and health, including children with special healthcare needs, in both individual and population-based environments. Includes nutrition and assessment, critical evaluation of normative data, and evidence-based clinical and community nutritional care and family-centered care. Prerequisite: human nutrition and human physiology. Offered: A.

NUTR 527 Pediatric Nutrition (2-3) *Ogata* Addresses the influence of nourishment on growth, development, and behavior of children, including children with special health care needs, in both individual and population-based environments. Includes principles of nutrition and assessment, critical evaluation of normative data, clinical and community nutritional care, and family-centered care. Prerequisite: human nutrition and human physiology or permission of instructor. Offered: Sp.

NUTR 529 Nutrition Research Design ([1-3]-, max. 3) *Duncan* Critical review of selected nutrition literature. Evalua-

tion of experimental design, research protocols, data analyses, and data presentations. Prerequisite: BIOST 511. Credit/no-credit only. Offered: A.

NUTR 531 Public Health Nutrition (4) *Johnson* Explores the functions and essential services of public health as they apply to assuring access to a safe and nutritious food supply. Examines the practice of public health nutrition: nutrition environment, program planning, implementation, and evaluation; policy development, implementation, and evaluation; and links between basic science and public health nutrition practice. Prerequisite: introductory nutrition. Offered: W.

NUTR 532 Fieldwork in Public Health Nutrition (1-12, max. 12) *Lund* Experience and service learning in organizations that plan, deliver, and promote population-based nutrition education and nutrition services. Prerequisite: nutritional sciences graduate student and permission of instructor. Credit/no-credit only. Offered: AWSpS.

NUTR 536 Nutrition Education Principles and Practice (3) *Johnson* Examines theory-based design and delivery of nutrition education including conducting needs assessments and developing lesson plans, activities, visual aids, and evaluation material. Explores design features of written, oral, and technology-based nutrition education materials and initiatives. Addresses differing learning styles, cultural groups, and literacy levels. Offered: Sp.

NUTR 537 Laboratory Rotation (1-4, max. 6) Exposure to research being conducted in the laboratories of the graduate nutrition faculty. Provides hands-on experience in laboratory research. Introduces the student to ongoing research for preparation of dissertation topics. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

NUTR 538 Nutritional Epidemiology (3) *Beresford, Kratz* Application of epidemiological methods to studies of diet, nutrition, and chronic disease. A discussion of current issues and controversies enables students to design studies and read the literature in nutritional epidemiology. Prerequisite: EPI 511 or EPI 512 or permission of instructor. Offered: jointly with EPI 538; A.

NUTR 545 Food Safety and Health (3) Presentation of emerging issues in food safety, sustainable agriculture, and biotechnology. Examines both domestic and global pressures on the food supply. Examines international policies that promote regional solutions for a safe food supply and access to nutritious foods. Offered: jointly with ENV H 540; W.

NUTR 555 Nutrition in Developing Countries (3) *Gorstein* Introduces issues of nutrition in developing countries, with an emphasis on the control and prevention of under nutrition and micronutrient deficiencies. Offered: jointly with G H 555; Sp, odd years.

NUTR 559 Orientation to Clinical Dietetics Practice (3) *Averill* Provides an orientation to dietetics in clinical settings including the nutrition care process and integration of evidence-based practice. Offered: A.

NUTR 560 Nutritional Counseling for Chronic Disease (1-3) *Simon* Examines nutritional intervention strategies and counseling skills that pertain to chronic disease prevention and management. Builds knowledge and skills needed to create appropriate care plans and counseling strategies designed to meet individual client assessment/counseling situations. Offered: Sp.

NUTR 561 Graduate Coordinated Program in Dietetics (1-10, max. 35) *Lund* Focuses on the competencies for entry-level practice in dietetics. Includes supervised practice experience in wellness, public health, food services, ambulatory care, and clinical care. Prerequisite: GCPD students only. Credit/no-credit only. Offered: AWSpS.

NUTR 562 Nutrition and Chronic Disease (4) *Kirk* Epidemiology/pathophysiology of chronic disease related to nutrition (e.g., obesity, cardiovascular disease, osteoporosis, hypertension, diabetes). Examines nutritional risk/protect-

tive factors in relation to public health, individual nutrition, and clinical intervention. Prerequisite: physiology, biochemistry. Offered: Sp.

NUTR 563 Nutrition in Acute Care (4) *Averill* Assessment of the nutritional demands and hypermetabolic response of trauma, surgery, organ failure, burns, AIDS, and neoplastic disease. Examines specialized nutritional support and substrate requirements in the acute care setting. Prerequisite: either NUTR 562 or permission of instructor. Offered: A.

NUTR 564 Management of Nutrition Services (3) Examines healthcare policy and administrative issues that impact delivery of nutritional services in different healthcare settings. Topics include organizational behavior, productivity, project management, financial reporting, and human resources. Offered: S.

NUTR 590 Special Topics in Nutritional Science (1-4, max. 4) Examines emerging issues in nutrition. Reviews the evidence and potential policy implications. Prerequisite: permission of instructor. Credit/no-credit only.

NUTR 595 Nutritional Sciences Master's Practicum (1-12, max. 12) *Lund* Supervised practice experience providing students an opportunity to learn how nutritional sciences are applied to public health settings and in the formulation and application of public health policy. Prerequisite: HSERV 511; NUTR 531; EPI 511; NUTR 520; NUTR 521; NUTR 522. Credit/no-credit only. Offered: AWSpS.

NUTR 600 Independent Study or Research (*-) Credit/no-credit only. Offered: AWSpS.

NUTR 700 Master's Thesis (*-) Credit/no-credit only. Offered: AWSpS.

NUTR 800 Doctoral Dissertation (*-) Credit/no-credit only. Offered: AWSpS.

Pathobiology

GRADUATE PROGRAM

Graduate Program Coordinator
310C Harris Hydraulics, Box 357965
(206) 543-4338
pathobio@uw.edu

The Pathobiology graduate program offers graduate training in the application of basic biomedical research to diseases of public health interest. The program of study involves core courses to develop a fundamental understanding of basic cellular and molecular processes and techniques important in the application of basic biomedical research to diseases; laboratory experience to learn how to collect, analyze, interpret, and use data for solving problems; and opportunities to develop skills in communicating research findings through oral and written presentations.

Master of Science

The master's program is designed for students to develop an understanding of the applications of molecular biology to public health, epidemiology, and cellular or antigenic analysis, and microbiology or immunology. The focus in this two-year program is developing basic research skills and understanding the scientific method. Students are expected to fulfill their course requirements during the first year. Under the guidance of a faculty research mentor, students propose and complete a thesis that includes an original research project.

Admission Requirements

Students are admitted directly into the PhD program. The department does not currently accept applications for the Master of Science.

Degree Requirements

A minimum of 60 credits as follows:

- 21.5 credits of required courses: PABIO 550 (3), PABIO 551 (4), PABIO 552 (4), PABIO 553 (2), EPI 511 (4), PABIO 580 (1), PABIO 581 (1), PABIO 582 (1.5), PABIO 590 (1)
- Research Credits:** Sufficient credits of PABIO 600 and PABIO 700 to complete a research project.
- Electives:** Additional courses in pathobiology or the biomedical sciences may be taken to fulfill the graded course requirement, to encompass the interests of the student, or to fulfill any additional requirements set forth by the student's committee.

MS Thesis Research Proposal

The M.S. thesis research proposal should be done by the end of the fourth quarter of the first year and should contain the following, in this order:

- A brief synopsis of background relevant to the project.
- A summary of preliminary experiments.
- A description of experiments planned for the next year.

MS Thesis

The thesis must be provided to the MS advisory committee two weeks prior to the oral presentation. Corrections should be made following their review before submission of the document to the Graduate School.

MS Oral Presentation and Defense

Students give a formal seminar prior to the completion of the master's program.

Doctor of Philosophy

The doctoral program lasts four to five years and is designed for students to become capable of conducting independent research leading to the expansion of knowledge by developing skills to approach unfamiliar experimental systems and identify and explore important questions concerning pathogenesis and infection. Students develop familiarity with the paradigms for control, prevention, and treatment; develop an understanding of epidemiology and disease processes; learn basic methodologies used in this research including relevant areas of molecular biology, bacteriology, cell biology, virology, epidemiology, and biostatistics; and develop familiarity with the major classes of pathogens.

Admission Requirements

- Personal Statement:** The personal statement is a series of six short-answer questions. This statement plays an important role in admissions by providing the reviewers with a representation of the student's background and readiness for graduate studies in pathobiology.
- One official set of transcripts from all collegiate institutions attended.
- Three letters of recommendation.
- Curriculum vitae
- Official Graduate Record Examination (GRE) scores
- International applicants are in addition required to submit official Test of English as a Foreign Language (TOEFL) scores. The Pathobiology program does not admit international applicants who have a TOEFL score of less than 600 on the paper-based test or 250 on the computerized test. The department must receive an official score report from the Educational Testing Service. TOEFL scores cannot be more than two years old.

Degree Requirements

90 credits minimum, as follows:

- Required Courses:** PABIO 550 (3), PABIO 551 (4), PABIO 552 (4), PABIO 553 (2), EPI 511 (4), PABIO 580 (1), PABIO 581 (1), PABIO 582 (1.5), PABIO 590 (1), PABIO 598 (2), PABIO 500 (variable), PABIO 600 (variable), PABIO 800 (27); either IMMUN 441 (4) or IMMUN 532 (3).
- Students are required to attend Seminar (PABIO 580) and Journal Club (PABIO 581) every quarter of the academic year while enrolled, but may be excused for up to two quarters while writing the dissertation. Students give research presentations in the Graduate Research Symposium annually after the first year. 3 credits each of Seminar and Journal Club may be counted towards the degree.
- Electives:** The following are recommended tracks for elective credits:
 - Eukaryotic Pathogens:** PABIO 536, PABIO 548, CONJ 531 through CONJ 544, EPI 532, MICROM 444
 - Bacterial Pathogens:** PABIO 540, PABIO 568, EPI 520, EPI 529, MICROM 552, MICROM 555. (Students without a background in bacteriology are required to take MICROM 442 or an equivalent course as a prerequisite for entry into the Bacterial Pathogens track.)
 - Viral Pathogens:** Two or more of the following are strongly recommended: CONJ 531-CONJ 544, EPI 520, EPI 524, EPI 530, IMMUN 532, MICROM 540

Research Facilities

Research facilities are geographically dispersed and located in the Health Science Center of the School of Medicine, Fred Hutchinson Cancer Research Center, and Seattle Biomedical Research Institute. External support includes computer facilities and the Health Sciences Library with access to more than 345,000 volumes, 4,000 periodicals, and online bibliographic services for all national libraries of medicine and most commercial databases.

The Fred Hutchinson Cancer Research Center is a world-renowned research institution. Its mission for more than 20 years has been to eliminate cancer. Shared facilities are available, including electron microscopy, flow cytometry, tissue culture, image analysis, biotechnology center for DNA and protein synthesis and sequencing, animal facilities, biological production facility focused on monoclonal antibody production, extensive libraries, and a biocomputing center.

The Seattle Biomedical Research Institute is an independent nonprofit organization studying causes of and interventions to infectious diseases of worldwide impact, including targeted research producing leading-edge findings and applied research creating diagnostic tests and treatments.

Financial Aid

The department offers a twelve-month competitive salary, as well as paying tuition and health insurance, which includes medical, dental, and vision benefits. Students with satisfactory academic progress can anticipate funding for the duration of their studies.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

PABIO 498 Undergraduate Thesis (*)

PABIO 499 Undergraduate Research (*, max. 12)

PABIO 500 Introduction to Pathobiology Research (3-9, max. 15) Rotation through research laboratory. Credit/no-credit only. Offered: AWSpS.

PABIO 536 Bioinformatics and Gene Sequence Analysis (3) *T. ROSE* Nature and relevance of molecular sequence information, computer-based protein, and DNA sequence analysis, molecular sequence and genomic databases, and methods for database accession and interrogation. Prerequisite: background in molecular biology and permission of instructor. Offered: jointly with BIME 536/PHG 536; Sp.

PABIO 548 Molecular and Cellular Parasitology (3) *Feagin* Molecular and cellular biology of parasites of health-related significance, emphasizing current research topics unique to parasites, particularly well-suited for study in parasites, and especially important to study in host-parasite systems. Prerequisite: familiarity with molecular and cellular biology and permission of instructor.

PABIO 551 Biochemistry and Genetics of Pathogens and Their Hosts (4) *L. Campbell* Provides a strong foundation in biochemistry, molecular biology, and genetics for students interested in disease. Principles illustrated through examples focusing on pathogens, and infectious and non-infectious disease. Prerequisite: undergraduate-level coursework in molecular biology or biochemistry, or permission of instructor. Offered: jointly with G H 566; A.

PABIO 552 Cell Biology of Human Pathogens and Disease (4) Cell biology and immunology explored through diseases of public health importance. Examples of pathogen interaction with host cell biology and immune systems, unique aspects of the cell biology of pathogens, perturbations of these systems in non-infectious diseases, and design of therapeutics and vaccines to combat diseases of public health importance. Prerequisite: undergraduate-level coursework in biology or molecular biology or permission of instructor. Offered: W.

PABIO 553 Survival Skills for Scientific Research (2) Focuses on skills needed for scientific career: writing abstracts, curriculum vitae, research proposals; preparing for oral presentations; lab management skills; discussion of mentorship/trainee relationships; case-based discussions of various topics in ethics and scientific misconduct. Credit/no-credit only. Offered: W.

PABIO 580 Pathobiology Seminar (1, max. 21) Research from students, faculty members, and invited speakers presented and discussed. Topics include immunochemistry, viruses, membranes, infectious diseases, immune response, and other related topics. Offered: W.

PABIO 581 Current Literature in Pathobiology (1, max. 15) Develops skills in analyzing data and assessing conclusions through an analysis of current literature in pathobiology. Focuses on breadth and analytical skills. Prerequisite: enrollment in the pathobiology graduate program.

PABIO 582 Critical Thinking and Research Design in Pathobiology (1.5, max. 12) *Lingappa* Analysis of issues, hypothesis and experimental design and testing. Prerequisite: graduate standing in pathobiology. Credit/no-credit only. Offered: Sp.

PABIO 590 Selected Topics (1-20, max. 20) Individual offerings focusing on topics such as pathogenesis, immunology, virology, disease agents, bioinformatics and grant writing. Small lecture format. Prerequisite: permission of instructor.

PABIO 598 Didactic Pathobiology (*, max. 12) Supervised teaching experience in pathobiology courses for PhD candidates. Prerequisite: permission of instructor.

PABIO 600 Independent Study or Research (*-) Prerequisite: permission of Graduate Program Adviser. Credit/no-credit only.

PABIO 700 Master's Thesis (*-) Prerequisite: permission of Graduate Program Adviser. Credit/no-credit only.

PABIO 800 Doctoral Dissertation (*-) Prerequisite: permission of Graduate Program Adviser. Credit/no-credit only.

Public Health Genetics

F363 Health Sciences Building
331 Raitt Hall, Box 353410

Public health genetics is an emerging field that applies advances in human genetics, genomics, and molecular biotechnology to improve public health and prevent disease.

Founded in 1997, the University of Washington's Institute for Public Health Genetics (IPHG) is a leader in the emerging field of public health genetics. Alone among U.S. universities, the UW, through IPHG, offers graduate degrees at both the master's and PhD levels.

The mission of the IPHG is to provide broad, interdisciplinary training for future public health professionals, to facilitate research in public health genetics, and to serve as a resource for continuing professional education.

GRADUATE PROGRAM

Graduate Program Coordinator
331 Raitt Hall, Box 353410
206-616-9286
phgen@uw.edu

Master of Science, Genetic Epidemiology

An interdisciplinary field that draws on training in epidemiology, genetics, and biostatistics and examines how genes and environmental factors interact to influence health and disease in human populations. Training in genetic epidemiology focuses on methods to identify genetic influences on human diseases and interactions with environmental exposures in populations, emphasizing applied research skills.

Admission Requirements

1. Statement of purpose
2. Official sealed transcripts, including courses, grades, and degrees from all institutions attended after secondary school
3. Official Graduate Record Examination (GRE) scores. Required for all applicants, except those who hold a U.S. doctorate (neither the MCAT nor ECFMG are acceptable substitutes for the GRE).
4. International applicants: official TOEFL scores
5. Three letters of recommendation from professors, supervisors, or others who know the student's work reasonably well. At least two letters should be academic references.
6. Recent copy of resume or curriculum vitae

Degree Requirements

68 credits minimum, to include:

1. **Required Courses:** PHG 511/EPI 517 (3), PHG 518/EPI 518 (4), PHG 519/BIOST 516/EPI 516 (3), EPI 573/ENV H 573 (3), PHG 512/LAW H 504/B H 514 (3); EPI 512 (4), EPI 513 (4); BIOST 517 (4), BIOST 518 (4); PHG 536/MEBI 536/PABIO 536 (3), GENOME 552 (1.5)
2. **Elective Courses:** Elective courses (excluding independent study and thesis credits) must be in epidemiology, biostatistics, genetics, public health genetics, or be related to the biological, physical, or social/behavioral factors which affect health, in particular ethical, legal and social issues related to genetic epidemiology.
3. **Thesis:** PHG 700 (9 credits minimum)

Master of Public Health, Public Health Genetics

Public Health Genetics is an emerging, interdisciplinary field that applies the rapid advances in human genetics, genomics, and bioinformatics to improve public health and prevent disease on a population basis. Training focuses on two core knowledge areas: genomics in public health (genetic and molecular epidemiology, pharmacogenetics, clinical aspects of genomics) and implication of genetics for society (ethics and social science, law and policy, health economics, and outcomes research).

Admission Requirements

1. Statement of purpose.
2. Official sealed transcripts, including courses, grades and degrees from all institutions attended after secondary school
3. Official Graduate Record Examination (GRE) scores. Required for all applicants, except those who hold a U.S. doctorate (neither the MCAT nor ECFMG are acceptable substitutes for the GRE).
4. International applicants: official TOEFL scores
5. Three letters of recommendation from professors, supervisors, or others who know the applicant's work reasonably well. At least two letters should be academic references.
6. A recent copy of the applicant's resume or curriculum vitae

Degree Requirements

63 credits, as follows:

1. **Required Courses:** 53 credits as follows: EPI 511 (4), BIOST 511 (4), HSERV 511 (3), ENV H 511 (3), HSERV 510 (3); PHG 511 (3), PHG 512 (3), PHG 513 (3), three of PHG 521 (3), PHG 522 (3), PHG 523 (3), PHG 525 (3), and PHG 542 (3); PHG 580 (6); PHG 595(3); at least 9 credits of PHG 700
2. **Electives:** Remaining 10 credits may combine approved elective courses, PHG 600 credits, and PHG 700 credits

Doctor of Philosophy

Public Health Genetics is an emerging, interdisciplinary field that applies the rapid advances in human genetics, genomics, and bioinformatics to improve public health and prevent disease on a population basis. Training focuses on two core knowledge areas: genomics in public health (genetic and molecular epidemiology, pharmacogenetics, clinical aspects of genomics) and implications of genetics for society (ethics and social science, law and policy, health economics, and outcomes research).

Admission Requirements

1. Statement of purpose.
2. Official sealed transcripts, including courses, grades, and degrees from all institutions attended after secondary school.
3. Official Graduate Record Examination (GRE) scores. Required for all applicants, except those who hold a U.S. doctorate (neither the MCAT nor ECFMG are acceptable substitutes for the GRE).
4. International applicants: official TOEFL scores
5. Three letters of recommendation from professors, supervisors, or others who know the applicant's work reasonably well. At least two letters should be academic references.
6. A recent copy of the applicant's resume or curriculum vitae.

Degree Requirements

90 credits minimum, to include:

1. Additional writing courses may be required. Students should consult their faculty adviser.
2. **Human Genetics:** Required -- PHG 551 or GENOME 565 (4); highly recommended -- GENOME 552 (1.5), PHG 536 (3)
3. **Public Health:** Required -- EPI 511 (4); BIOST 511 (4) or BIOST 517 (4); ENV H 511 (3); HSERV 511 (3)
4. **Core Knowledge Areas**
 - a. Genomics in Public Health: PHG 511 (3), PHG 513 (3), PHG 542 (3), PHG 580 (1)
 - b. Implications of Genetics for Society: PHG 512 (3), PHG 521 (3), PHG 522 (3) or PHG 523 (3), PHG 525 (3)
5. PHG 580 is required each quarter for all PhD students until they pass the preliminary examination.
6. **Preliminary Examination:** Following completion of required courses, usually taken at the end of the second year of study.
7. **Selective Courses for Core Knowledge Areas and Development of Dissertation Topic:** Once students begin to develop their dissertation project, they are expected to take at least nine additional units related to that project. Students need to work with their Supervisory Committee to identify selectives that are most useful in completing their dissertation. A list of example selective courses is available on the program website.
8. General examination
9. Dissertation
10. Final examination/dissertation defense

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

PHG 200 Implications of Public Health Genomics for the Modern World (3-5) I&S/NW P. KUSZLER Introduces the field of public health genomics through examples of genetic, ethical, political, and social issues emerging in the wake of the Human Genome Project. Students develop the skills to analyze and critique public health, clinical, personal, and social implications resulting from emerging genomic technologies. Offered: A.

PHG 301 Introduction to Genetic Epidemiology (3) I&S/NW Explores basic approaches that are used to identify genetic and environmental factors in health and disease, and how application of this information can be used to improve population health. Discusses the relevant ethical, legal, and social implications that occur in research and translation to practice. Offered: W.

PHG 302 Forensic Genetics (3) I&S/NW, QSR B. WEIR Introduces the field of forensic genetics through discussion of genetic and statistical issues emerging since the introduction of DNA profiling. Students develop the skills to interpret the evidence of matching genetic profiles; to perform calculations relevant for parentage determination; the identification of remains; and to consider the implications of familial searching of DNA databases. Prerequisite: either BIOST 310, STAT 220, STAT 221/CS&SS 221/SOC 221, STAT 311, Q SCI 381, or Q METH 201. Offered: jointly with BIOST 302; W.

PHG 511 Genetic Epidemiology (3) Research methods for evaluating genetic influences on disease and risk factors and genetic-environmental interactions. Study designs and statistical methods include twin studies, family studies, population-based association studies, segregation analysis, and linkage analysis. Prerequisite: EPI 511, BIOST 511,

and GENOME 371, or equivalent. Offered: jointly with EPI 517; Sp.

PHG 512 Legal, Ethical, and Social Issues in Public Health Genetics (3) Equips the student to anticipate and assess potential legal, ethical, and social barriers complicating the incursion of new genetic advances, information, and technologies into public and private healthcare delivery efforts. Prerequisite: GENOME 361, GENOME 371, or equivalent. Offered: jointly with B H 514/LAW H 504; A.

PHG 513 Basic Concepts in Pharmacogenetics and Toxicogenomics (3) Addresses current technologies for DNA sequencing, genotyping, RNA and epigenetic analysis and basic concepts of pharmacogenetics and toxicogenomics. Emphasis placed on applications of genomic technologies to the understanding of "gene-environment interactions" that cause variability in drug treatment responses, as well as diseases of public health importance, including cancer, chronic neurological diseases, and adverse drug reactions. Offered: jointly with ENV H 513/PCEUT 513; W.

PHG 519 Statistical Methods in Genetic Epidemiology (3) Theory and application of statistical techniques used in genetic epidemiology. Includes discussion of association studies, linkages and segregation analyses. Examples stressed with reference to assumptions and limitations. Prerequisite: either BIOST 513 or BIOST 518; PHG 511/EPI 517; or permission of instructor. Offered: jointly with BIOST 516/EPI 516.

PHG 521 Culture, Society, and Genomics (3) B. MCGRATH Examines social and cultural issues of human genome sequencing and control of genetic expression. Attitudes and behaviors toward health, illness, and disability are studied using historical, contemporary, and cross-cultural case study material. Offered: jointly with ANTH 574/NURS 582; Sp.

PHG 523 Genetics and the Law (3) Explores and analyzes legal issues arising from genetic technologies and information. Statutes, regulations, and cases demonstrate the constitutional, contract, tort, criminal, and family law use of genetic science to determine rights, disputes, and controversies. Prerequisite: LAW H 504/B H 514/PHG 512 or permission of instructor. Offered: jointly with LAW H 520; Sp.

PHG 536 Bioinformatics and Gene Sequence Analysis (3) T. ROSE Nature and relevance of molecular sequence information, computer-based protein, and DNA sequence analysis, molecular sequence and genomic databases, and methods for database accession and interrogation. Prerequisite: background in molecular biology and permission of instructor. Offered: jointly with BIME 536/PABIO 536; Sp.

PHG 542 Genetic Discovery in Medicine and Public Health (3) Burke Addresses the implications of genetic science for clinical and public health practice, with an emphasis on health policy and ethics. Offered: jointly with B H 530; W.

PHG 551 Human Genomics: Science, Ethics, and Society (3) Fullerton Explores the ethical and social implications of human molecular genetics and genomics investigation. Recent research is critically evaluated for its potential impact on scientific practice, research participation, and societal understandings. Prerequisite: LAW H 504/B H 514/ PHG 512 or permission of instructor. Offered: jointly with B H 551/GENOME 573; A.

PHG 580 Interactive Seminar (1, max. 30) Lin Seminar series on topics related to public health genetics, including current bioethical, legal, medical, biotechnology, and public policy issues. Credit/no-credit only. Offered: jointly with LAW H 579; AWSp.

PHG 590 Selected Topics in Public Health Genetics (1-6, max. 6) Tutorials are arranged for a small number of students for in-depth examination of an area of public health genetics, usually of a current nature.

PHG 595 Master's Practicum (1-12, max. 12) Supervised practice experience providing students an opportunity to learn how genetics is applied in a public health setting and

in the formulation and application of public health policy. Prerequisite: practicum agreement.

PHG 600 Independent Study or Research (*-) Credit/no-credit only.

PHG 700 Master's Thesis (*-) Credit/no-credit only.

PHG 800 Doctoral Dissertation (*-) Credit/no-credit only.

Quantitative Ecology and Resource Management

The Quantitative Ecology and Resource Management (QERM) interdisciplinary graduate program offers students a unique opportunity to apply statistics, mathematics, and decision science to a broad range of problems in terrestrial and marine ecology, natural resource management, biometrics, and mathematical biology. The program attracts mathematically trained students interested in working on these problems, and biologically or environmentally trained students wishing to develop or enhance their quantitative skills.

The QERM program is interdisciplinary, bringing together diverse faculty from a wide range of academic areas such as statistics, applied mathematics, forestry, biology, aquatic and fishery sciences, oceanography, and marine affairs. This diversity provides strength to the program.

GRADUATE PROGRAM

Graduate Program Coordinator

304 Loew Hall, Box 352182

(206) 616-9571

qerm@uw.edu

depts.washington.edu/qerm

The Quantitative Ecology and Resource Management (QERM) Interdisciplinary Graduate Program offers students a unique opportunity to apply statistics, mathematics, and decision science to a broad range of problems in terrestrial and marine ecology, natural resource management, biometrics, and mathematical biology. The program attracts mathematically trained students interested in working on these problems, and biologically or environmentally trained students wishing to further enhance their quantitative skills.

The QERM program is interdisciplinary, bringing together diverse faculty from a wide range of academic areas such as statistics, sociology, anthropology, applied mathematics, forestry, biology, aquatic and fishery sciences, oceanography, and marine affairs. This diversity provides strength to the program.

Both a Master of Science and Doctor of Philosophy degree are offered; graduates are capable of continuing with the development and extension of biometrical and biomathematical modeling as they enter the educational, research, or private-sector work force.

Admission Requirements

1. Background in probability and mathematical statistics, linear algebra, and differential equations. Applicants with little or no statistical background are advised to take additional coursework prior to applying. Although not mandatory, this background makes a student's application more competitive.
2. Successful completion of the following coursework (or equivalent) prior to applying: MATH 126 (or equivalent); MATH 308 (or equivalent).

3. *Strongly Recommended:* MATH 394-MATH 395; STAT 341-STAT 342, or STAT 481.

4. Also taken into consideration:

- a. Minimum 3.00 GPA in last 60 semester or last 90 quarter credits required.
- b. Normally, completion of college-level courses in probability and mathematical statistics, linear algebra, and differential equations.
- c. Scores on Graduate Record Examination (GRE). Competitive applicants generally score above the 75th percentile on the verbal and analytic sections, and above the 85th percentile on the quantitative section.
- d. Minimum TOEFL score of 580 (237 for computer-based tests) - for international students only.
- e. Knowledge of the intended area of study, including clearly written statement of objectives.
- f. Recommendations from persons familiar with the applicant's academic ability and potential.
- g. Admission is also dependent on program resources and fit between student interests and faculty research. Students should explore faculty research interests by reviewing the QERM website, depts.washington.edu/qerm, to determine if their area of research interest is conducted at the UW. Students are not required to enter the QERM program with a faculty adviser selected in advance. Typically students identify their research and faculty adviser during their first year of study.

5. Application deadline for autumn quarter is January 1.

Degree Requirements (for Master of Science and Doctor of Philosophy)

Required coursework reflects the expectation that the student already has a fundamental understanding of the principles of statistical inference and ecological modeling. Required coursework taken during the first year includes:

1. STAT 516 and STAT 517
2. IND E 513 or IND E 599 (offered alternating years)
3. AMATH 523 or AMATH 535 (offered alternating years)
4. QERM 514 and QERM 597
5. SEFS 540
6. BIOL 567/SEFS 567/FISH 567
7. Ecology elective

Following the first year of core coursework, students select elective coursework in an area of emphasis ranging from biometry, mathematical modeling, and resource management. Additional elective coursework in basic biology and ecology gives students greater insight into the environmental systems in which they expect to apply their quantitative training.

Master of Science

Minimum 36 credits

Requirements for successful completion of the master of science degree include:

1. Successful completion of a minimum 36 quarter credits, including 27 course credits and 9 thesis credits, with at least 18 credits of coursework numbered 500 or above, including a thesis
2. Receipt of numerical grades in at least 18 quarter credits of coursework taken at the UW
3. Completion of a seminar on results of the research and oral defense of the thesis
4. Completion of all University requirements for graduation

Doctor of Philosophy

Minimum 90 credits

Requirements for successful completion of the doctoral degree, minimum of 90 credits, include:

1. Successful completion of the QERM qualifying examinations at the PhD level, following the first year of study
2. Successful completion of a minimum of 90-quarter credits, including 27 dissertation credits. Completion of an MS degree may be applied toward one year of the PhD program. The core QERM courses must be taken if the student has obtained an MS from a different program
3. A seminar on results of the research and an oral defense of the dissertation
4. Completion of all University requirements for graduation

Financial Aid

The QERM program offers incoming students a nine month fellowship funded by the Graduate School. Students secure their own funding starting at year two, typically in the form of a teaching or research assistantship. Tuition and health insurance are typically included as part of the financial package. Funding decisions are made annually; attempts are made to continue support for students making satisfactory progress.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

QERM 514 Analysis of Ecological and Environmental Data I (4) Overview of generalized linear models (GLMs), their use in forestry, fisheries, wildlife ecology, and environmental monitoring. Analysis of the statistical tests that fall under GLMs: chi-square tests on contingency tables, t-tests, analysis of variances, etc. Statistical software S+/R used throughout. Offered: Sp.

QERM 597 Seminar in Quantitative Ecology (2, max. 20) T. ESSINGTON Current topics in quantitative ecology and resource management. Fisheries, forestry, and marine resources. Offered: ASP.

QERM 600 Independent Study or Research (*-)

QERM 700 Master's Thesis (*-)

QERM 800 Doctoral Dissertation (*-)

Urban Design and Planning

The PhD in Urban Design and Planning at the University of Washington is one of 39 PhD programs in urban and regional planning in North America, and one of the oldest, founded in 1967. This program brings together faculty from disciplines ranging from architecture to sociology to focus on the interdisciplinary study of urban problems and interventions. Covering scales from neighborhoods to metropolitan areas, the program addresses interrelationships between the physical environment, the built environment, and the social, economic, and political institutions and processes that shape urban areas. The breadth of this program permits students to pursue doctoral studies in the various aspects of urban design and planning as well as in a number of related social science, natural resource, and engineering areas.

The program seeks to prepare scholars who can advance the state of research, practice, and education related to the built environment and its relationship to society and

nature in metropolitan regions throughout the world. It provides a strong interdisciplinary educational experience that draws on the resources of the entire University, and on the laboratory provided by the Seattle metropolitan region and the Pacific Northwest. The program emphasizes the educational values of interdisciplinarity, intellectual leadership and integrity, and the social values of equity, democracy, and sustainability. It seeks to promote deeper understanding of the ways in which public decisions shape and are shaped by the urban physical, social, economic, and natural environment. The program envisions its graduates becoming leaders in the international community of researchers, practitioners, and educators who focus on improving the quality of life and environment in metropolitan regions.

GRADUATE PROGRAM

Graduate Program Coordinator

311 Loew, Box 352192

(206) 543-6398

Doctor of Philosophy

Admission Requirements

Admission to the PhD program is based on evidence of promise of high scholarly achievement and research orientation. The applicant's statement of purpose, Graduate Record Examination (GRE) test results, letters of recommendation, and examples of past work constitute the basis for the admission evaluation.

Applicants typically have a master's degree in fields ranging from planning and public affairs to natural and social sciences. Students interested in a professional degree in urban design and planning should apply to the master's program in urban design and planning.

Application Deadline: All application materials are due by February 1. International applicants are encouraged to submit the Graduate School on-line application form by November 1.

For more information, see the program's website.

Degree Requirements

90 credits, divided into three phases.

Phase I: The Core Curriculum

The core curriculum defines the intellectual foundation of the program. While the program retains considerable flexibility in defining a research agenda within urban and environmental planning and policy, it provides a common foundation for all students to build upon. Students enter the program with a master's degree, in fields ranging from planning and public affairs to natural and social sciences. Depending on the academic preparation of the student, the core requirements can be met within one to two years.

Required Courses: Five courses, normally completed during the first year unless schedule conflicts make this infeasible. Courses from Phase II requirements may also be taken in the first year.

1. **Core Sequence:** URBDP 591, URBDP 592, URBDP 593
2. **Restricted Electives (before completion of Phase I):**
 - a. **Qualitative Research Methods:** One of the following: URBDP 598, GEOG 425, HIST 598, HSERV 526, POLS 493.
 - b. **Quantitative Research Methods:** One of the following: CS&SS 594, CS&SS 504, CEE 584

Phase II: Area of Study

Students develop with their Supervisory Committee a description of their proposed areas of study. These areas of scholarship must demonstrate an interdisciplinary research approach to an application within urban and environmental planning and policy. The description should develop a curriculum proposal approved by the Supervisory

Committee that addresses the following advanced study requirements:

Curriculum Requirements: Seven courses and a teaching seminar, in addition to advanced courses directly related to the area of study selected by the student. Some courses may be taken in the first year.

1. **Urban Processes and Patterns:** Three courses – For course options, see program website at depts.washington.edu/urbdpphd/Phase_II.shtml
2. **Research Design and Methods:** Two courses – For course options, see program Website at depts.washington.edu/urbdpphd/Phase_II.shtml
3. **Urban and Environmental Design and Planning:** Two courses – For course options, see program Website at depts.washington.edu/urbdpphd/Phase_II.shtml
4. **Teaching Methods:** One teaching seminar and experience as a TA for at least one quarter, before completion of Phase III.

General Examination: A critical review of the literature in the area of study, developed by the student, which integrates interdisciplinary research on that area of study and identifies areas of potential research opportunity that may subsequently form the basis for a dissertation proposal. The review should demonstrate broad familiarity with relevant research in the chosen area, and with the range of theory and methods applied within the reviewed literature.

Phase III: Dissertation

Once the student passes the general examination, he or she is advanced to the level of doctoral candidate, and is expected to build on the critical review of the literature to develop a dissertation proposal. The dissertation proposal should demonstrate the characteristics of interdisciplinarity, relevance to urban and environmental planning and policy, and potential for contribution to scholarship.

Financial Aid

The interdisciplinary PhD program in Urban Design and Planning attempts to provide funding for doctoral program applicants in a way that makes the program attractive to the strongest potential applicants, ensures their effective mentoring while in the program, and actively engages and energizes faculty to improve the program and to bring research funding to support students.

Interdisciplinary Undergraduate Degree Programs

Arctic Studies

The minor in arctic studies is sponsored jointly by the Jackson School of International Studies within the College of Arts and Sciences and the School of Oceanography in the College of the Environment. This interdisciplinary academic program links the natural, social sciences, and humanities in an integrated program of study. The purpose of the Arctic Studies minor is for undergraduates to have an opportunity to gain skills relevant to addressing major science and policy issues in the Arctic.

UNDERGRADUATE PROGRAM

Minor

503 Thomson, Box 353650

(206) 221-6374

nfabbi@uw.edu

Minor Requirements

Minimum 28 credits

1. Foundation Coursework (9 credits): ARCTIC 200; OCEAN 235; ARCTIC 401
2. Integrative Experience (3 credits): ARCTIC 400
3. Electives (minimum 16 credits): see adviser for approved list
4. Minimum two courses from the approved social sciences list
5. Minimum two courses from the approved sciences list
6. Minimum one course with North-Star designation; may be combined with social science or science elective offering
7. Minimum 2.00 cumulative GPA for courses applied to the minor
8. Minimum 15 credits taken from outside student's major requirements
9. Minimum 15 credits 300- and 400-level coursework
10. Minimum 15 credits completed in residence through the UW

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

ARCTIC 101 Elementary Inuktitut: Inuit Language (5) S. MALLON Fundamentals of oral and written modern Inuktitut, the Inuit language, including an introduction to the elements of Inuit culture. Offered: AS.

ARCTIC 200 Indigenous Diplomacies and International Relations in the Arctic (3) I&S Fabbri Provides an overview of current issues and geopolitics in the Arctic including those of the eight Arctic nation-states, six Permanent Participants (indigenous organizations) on the Arctic Council, and other non-Arctic nation-state interests. Offered: A.

ARCTIC 387 Study Abroad: Arctic Studies (1-5, max. 15) Relates Arctic geopolitics, indigenous internationalism, the arts, and/or natural sciences to the regions

and peoples of the circumpolar world. Equivalency for upper division Arctic minor of Jackson School course work taken on UW study abroad or direct exchange. Specific content varies and is evaluated on an individual basis.

ARCTIC 391 Climate Change - An International Perspective: Science, Art, and Activism (5) I&S/VLPA R. PAVIA Explores climate change science in the context of geographic, social, and political constraints, considering the role of art, activism, and Arctic indigenous peoples in communicating impacts and mitigation. Students gain knowledge in key atmospheric and ocean science principles along with the role of science in society Offered: jointly with JSIS B 391; Sp.

ARCTIC 400 Integrating Policy and Science in Arctic Studies (3) I&S/NW Gallucci, Hellmann Introduces Arctic resources and access from physical, biological, and political perspectives, focusing on the latter. Emphasizes political alliances among nation states as well as initiatives by indigenous peoples that involve mutual needs for access to Arctic resources for mining, transport, and food. Offered: Sp.

ARCTIC 401 Current Issues Concerning the Arctic Region (3, max. 9) I&S Addresses current issues impacting the Arctic region from the perspective of visiting scientists, social scientists, practitioners, and Arctic indigenous leaders. Offered: Sp.

ARCTIC 498 Special Topics in Arctic Studies (1-5, max. 10) Content varies by instructor.

Climate Science

The minor in Climate Science is offered jointly with the Department of Atmospheric Sciences, the Department of Earth and Space Sciences, and the School of Oceanography.

UNDERGRADUATE PROGRAM

Adviser

108 Oceanography Teaching Building, Box 357940 206-543-5039

student@ocean.washington.edu

Minor

Minor Requirements

25 credits as follows:

1. One of ESS 201, ATM S 211, or ATM S 321 (3-5 credits)
2. One of OCEAN 452/FISH 452, AMATH 301, Q SCI 381, or STAT 311 (3-5 credits)
3. *Integrated Capstone Experience*: ATM S 475/ESS 475/OCEAN 475 (3 credits)
4. *Science Electives*: At least one course from each focus area to include at least one course each from ATM S, ESS, and OCEAN. See adviser for list of approved courses (minimum 12 credits)
5. *Policy Elective*: One social science, policy, or energy course from an approved list of electives, to reach 25 credits
6. Minimum 2.00 cumulative GPA in courses applied to the minor
7. Minimum 15 credits taken through the UW
8. Minimum 18 credits outside student's major
9. Minimum 15 upper division credits
10. *Note*: Students are encouraged to take MATH 124, MATH 125, MATH 126, PHYS 121, PHYS 122, and PHYS 123, or see adviser to complete requirements for the minor.

Education, Learning, and Society

UNDERGRADUATE PROGRAM

Adviser

B507 Padelford

(206) 616-2352

elsminor@uw.edu

Minor

The minor in education, learning, and society, jointly sponsored by the College of Education and the College of Arts and Sciences, provides a strong background in how human beings learn, and how society, environment, and culture shape learning.

Minor Requirements

31 credits, to include:

1. *Learning and Development*: One from PSYCH 206 (prerequisite, PSYCH 101), PSYCH 306, NURS 201, EDPSY 302, EDPSY 406 (5 credits)
2. *Schooling and Society*: One from AES 340, CHID 210, EDUC 305, EDUC 310, SOC 292 (5 credits).
3. *Field Experience*: Any combination of EDUC 260, EDUC 360, EDUC 361, EDUC 369, GEN ST 346, and GEN ST 470 (with ELS adviser approval, student may substitute one of the following: GEN ST 350, ECFS 303, ECFS 304, ECFS 305, ECFS 454, ECFS 455, ECFS 456, EDC&I 499, EDPSY 499, EDSPE 499, CHID 497, or other related courses) (5 credits).
4. EDUC 299 (1 credit).
5. *Electives*: 15 credits from an approved list. For list, see adviser or College website.
6. Up to 15 credits of the minor may overlap with a student's major and up to 5 credits may overlap with another minor.

Undergraduate students from outside the College of Education may take courses offered to help them explore the field of education and prepare for graduate study. Fieldwork courses in local schools or social service agencies give students opportunities to make informed career and academic choices. Students may also complete prerequisites for graduate programs. Further, requirements to meet endorsement (subject) guidelines for secondary teaching may be completed by undergraduates.

Ethics

The Ethics program is an interdisciplinary minor sponsored by the Philosophy department.

UNDERGRADUATE PROGRAM

Adviser

361 Savery, Box 353350

(206) 543-5855

philadv@uw.edu

Minor

Minor Requirements

27 credits, to include:

1. Three courses from an approved list in which normative thinking and conceptual analysis of values and frameworks are central; at least one at the 300 level

- or above. See list at www.phil.washington.edu/POV/List_A_Courses.html
- Two courses from an approved list in which values-laden issues are central; at least one at the 300 level or above. See list at www.phil.washington.edu/POV/List_B_Courses.html
 - VALUES 495 (2-credit capstone).
 - Minimum 15 credits outside the student's major.
 - Minimum 15 credits completed through the UW.
 - Minimum 2.00 GPA in courses used for the minor.

Honors

211 Mary Gates Hall
uwhonors@uw.edu

The four-year University Honors Program features an interdisciplinary Honors core curriculum with a focus on experiential learning and reflection, Honors academic advising, foreign study programs and exchanges, and opportunities for independent study. It provides an academic community and educational opportunities to those students who are willing to take academic risks, think across disciplinary boundaries, and engage in experiential learning (e.g., research, leadership, community and/or international engagement).

To be considered for admission to the University Honors Program at entrance, students must apply to the Honors Program when they submit their Application for Undergraduate Admission to the University. "Selection is based on a student's demonstrated engagement with interdisciplinary learning, high school record, essay responses, a letter of recommendation, and fit for the program". Students also may seek admission based on their academic performance during their spring quarter of their freshman year at the University via the late admission process.

Students who are accepted into the University Honors Program in their freshman year and complete the Honors Core Curriculum alone graduate "With Interdisciplinary Honors." When students complete both the Core Curriculum and the Departmental Honors requirements in their chosen major, they graduate "With College Honors in Name of Major." Students who do not participate in or complete the Honors Core Curriculum but are admitted into and complete the Honors Program in their chosen major will receive a degree "With Honors in Name of Major." By special arrangement it may be possible for students to complete a degree "With College Honors" in departments, schools, or programs that do not offer a formal Departmental Honors option as well as Departmental Honors by itself.

Core Curriculum

47 credits as follows:

- HONORS 100 (1 credit)
- One Honors social science course (HONORS 230 series/HONORS 233/HONORS 397) (I&S; 5 credits).
- One Honors arts/humanities course (HONORS 210/HONORS 240 series/HONORS 213/HONORS 398) (VLPA; 5 credits).
- One Honors interdisciplinary course (HONORS 390 series/HONORS 381 series) (I&S, NW, VLPA; 5 credits)
- One Honors science course (HONORS 220 series/HONORS 223/HONORS 396) (NW; 5 credits).
- Combination of any five 4- or 5-credit Honors VLPA, I&S, NW courses and Honors prefix courses. (20-25 credits).
- HONORS 496 (1 credit)
- At least 15 credits of courses with the HONORS prefix, excluding HONORS 100 and HONORS 496.

- In at least one major in which the student is pursuing Interdisciplinary or College Honors, no more than three courses used in the major may apply toward the Honors core curriculum.
- Courses applying towards Departmental Honors may not be applied toward the Honors core curriculum.
- Students may fulfill no more than 15 credits of Honors core requirements by completing ad hoc projects in non-Honors course outside the major or by way of a non-Honors study abroad program. Ad hoc Honors courses with the appropriate Areas of Knowledge designation may replace the respective social science (I&S), arts/humanities (VLPA), or science (NW) course; ad hoc Honors courses may not replace the interdisciplinary course requirement.
- Minimum cumulative 3.30 GPA in all courses completed through the UW.

Departmental Honors

Students may apply to Departmental Honors in their major(s) after they have been admitted to the major, typically in their junior year. Each department at the UW has a unique set of Departmental Honors requirements. For links to specific information about each department, see the Honors Program Website.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

HONORS 100 Introduction to Honors Education (1) Introduces students to the essential features of the Honors Program, including interdisciplinary thinking, experiential learning, and the Honors portfolio. For University Honors Program students only.

HONORS 205 What We Know and How We Know It (5) C Helps students to develop methods of researching and gaining knowledge through critical reading of texts, dialogue, reflective writing, and visiting faculty lecturers from different disciplines. For University Honors Program students only.

HONORS 210 Humanities for Honors Students I (5, max. 15) VLPA Evolution of an idea or a discipline central to the humanities. Content varies from year to year. For University Honors Program students only. Offered: A.

HONORS 211 Humanities for Honors Students II (5, max. 15) VLPA Evolution of an idea or a discipline central to the humanities. Content varies from year to year. For University Honors Program students only. Offered: W.

HONORS 212 Humanities for Honors Students III (5, max. 15) VLPA Evolution of an idea or a discipline central to the humanities. Content varies from year to year. For University Honors Program students only. Offered: Sp.

HONORS 213 Honors Foreign Study I - Humanities (2-5, max. 15) VLPA Coursework drawn from interdisciplinary groups in the arts and humanities. Specific content varies and must be individually evaluated. For University Honors Program students participating in a UW study abroad program only. Offered: AWSpS.

HONORS 220 Science for Honors Students I (5, max. 15) NW Evolution of an idea or concept central to the natural sciences. Content varies from year to year. For University Honors Program students only. Offered: A.

HONORS 221 Science for Honors Students II (5, max. 15) NW Evolution of an idea or concept central to the natural sciences. Content varies from year to year. For University Honors Program students only. Offered: W.

HONORS 222 Science for Honors Students III (5, max. 15) NW Evolution of an idea or concept central to

the natural sciences. Content varies from year to year. For University Honors Program students only. Offered: Sp.

HONORS 223 Honors Foreign Study II - Natural Science (2-5, max. 15) NW Coursework drawn from interdisciplinary groups in the natural sciences. Specific content varies and must be individually evaluated. For University Honors Program students participating in a UW study abroad program only. Offered: AWSpS.

HONORS 230 Social Science for Honors Students I (5, max. 15) I&S Development of an idea, concept, or institution central to the social sciences. Content varies from year to year. For University Honors Program students only. Offered: A.

HONORS 231 Social Science for Honors Students II (5, max. 15) I&S Development of an idea, concept, or institution central to the social sciences. Content varies from year to year. For University Honors Program students only. Offered: W.

HONORS 232 Social Science for Honors Students III (5, max. 15) I&S Development of an idea, concept, or institution central to the social sciences. Content varies from year to year. For University Honors Program students only. Offered: Sp.

HONORS 233 Honors Foreign Study III - Social Science (2-5, max. 15) I&S Coursework drawn from interdisciplinary groups in the social sciences. Specific content varies and must be individually evaluated. For University Honors Program students participating in a UW study abroad program only. Offered: AWSpS.

HONORS 240 Fine Arts for Honors Students I (5, max. 15) VLPA Evolution of an art form, an idea, or a discipline central to the fine arts. Content varies from year to year. For University Honors Program students only.

HONORS 241 Fine Arts for Honors Students II (5, max. 15) VLPA Evolution of an art form, an idea, or a discipline central to the fine arts. Content varies from year to year. For University Honors Program students only.

HONORS 242 Fine Arts for Honors Students III (5, max. 15) VLPA Evolution of an art form, an idea, or a discipline central to the fine arts. Content varies from year to year. For University Honors Program students only.

HONORS 345 Interdisciplinary Writing Seminar (5, max. 15) C Investigates emerging topics of interest in the arts and sciences and frames the investigation of subject matter through writing and dialogic inquiry within a particular field. Students discuss, revise, and reflect upon their work through peer review, in-class writing activities, and editorial feedback. For University Honors Program students only.

HONORS 350 Honors Seminar (2, max. 20) Discussion of selected topics in a variety of subject-matter fields. Topics and reading material vary from year to year. For University Honors Program students only. Credit/no-credit only.

HONORS 381 Honors Foreign Study IV (2-5, max. 15) VLPA/I&S/NW Develops ideas, concepts, or institutions that cut across the arts, humanities, social sciences, and natural sciences. Specific content varies and must be individually evaluated. For University Honors Program students participating in a UW study abroad program only. Offered: AWSpS.

HONORS 382 Honors Foreign Study V (2-5, max. 15) I&S/NW Develops ideas, concepts, or institutions that cut across the social sciences and natural sciences. Specific content varies and must be individually evaluated. For University Honors Program students participating in a UW study abroad program only. Offered: AWSpS.

HONORS 383 Honors Foreign Study VI (2-5, max. 15) VLPA/NW Develops ideas, concepts, or institutions that cut across the arts, humanities, and natural sciences. Specific content varies and must be individually evaluated.

440 INTERDISCIPLINARY UNDERGRADUATE DEGREE PROGRAMS

For University Honors Program students participating in a UW study abroad program only. Offered: AWSpS.

HONORS 384 Honors Foreign Study VII (2-5, max. 15) VLPA/I&S Develops ideas, concepts, or institutions that cut across the arts, humanities, social sciences. Specific content varies and must be individually evaluated. For University Honors Program students participating in a UW study abroad program only. Offered: AWSpS.

HONORS 391 Honors Interdisciplinary Study I (5, max. 15) VLPA/I&S/NW Develops ideas, concepts, or institutions that cut across the social sciences and natural sciences. For University Honors Program students only.

HONORS 392 Honors Interdisciplinary Study II (5, max. 15) I&S/NW Develops ideas, concepts, or institutions that cut across the social sciences and natural sciences. For University Honors Program students only.

HONORS 393 Honors Interdisciplinary Study III (5, max. 15) VLPA/NW Develops ideas, concepts, or institutions that cut across the arts, humanities, and natural sciences. For University Honors Program students only.

HONORS 394 Honors Interdisciplinary Study IV (5, max. 15) VLPA/I&S Develops ideas, concepts, or institutions that cut across the arts, humanities, and social sciences. For University Honors Program students only.

HONORS 396 Interdisciplinary Special Topics-Natural Science (1-5, max. 10) NW Special courses drawn from interdisciplinary groups in the natural sciences. Content varies. For University Honors Program students only.

HONORS 397 Interdisciplinary Special Topics-Social Science (1-5, max. 10) I&S Special courses drawn from interdisciplinary groups in the social sciences. Content varies. For University Honors Program students only.

HONORS 398 Interdisciplinary Special Topics-Humanities (1-5, max. 10) VLPA Special courses drawn from interdisciplinary groups in the humanities. Content varies. For University Honors Program students only.

HONORS 496 Integration of the Honors Core Curriculum (1) Allows students completing the Interdisciplinary Honors Program to reflect on and present to peers the intersection between their Interdisciplinary Honors core courses and experiential learning projects. For University Honors Program students only. Offered: AWSp.

HONORS 499 Honors Independent Study or Research (1-5, max. 10) Faculty supervised Honors independent study or research for students in areas extending beyond their major departments or along lines not otherwise accommodated by existing Honors courses. For University Honors Program students only.

Integrated Science

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsctat/

INTSCI 197 Special Topics in Integrated Sciences (1-5, max. 15) NW Selected topics in integrated sciences.

INTSCI 301 Integrated Sciences Seminar (1, max. 3) Covers contemporary issues in integrated sciences, science education, and science communication.

INTSCI 401 Integrated Sciences Practicum (2, max. 4) Provides the opportunity to explore professions in formal or informal science education, science writing, science policy, and other areas that require an integrated science perspective. Examples include weekly visits to a science

classroom or volunteer work at a science or natural history museum. Credit/no-credit only.

INTSCI 402 Nature of Science (5) NW Case study examination of scientific methods and elements of scientific practice including observation, data, statistics, interpretations, hypothesis, theory, and law. Asks how does science change; how does data support theories; and how are theories verified, falsified, or modified?

INTSCI 403 Science in Context (5) NW Case study examination of how science operates within broad social, political, and ethical contexts. Considers the growth of multidisciplinary and interdisciplinary research, societal impacts, ethical responsibilities, censorship, complex mechanisms of funding, and the power inherent in claims to knowledge.

INTSCI 491 Introduction to Research (2) NW Preparation for intensive "hands-on" science experience. Discussion of what constitutes scientific research; development of a research proposition; meeting with potential research supervisors; signed agreement with supervisor and capstone instructor on scope and details of research

INTSCI 492 Reflections on Research (2, max. 6) NW Reflections on an on-going science research experience through discussion, short papers, and oral presentations, with emphasis on the challenges and dilemmas that arise in data collection and analysis. Prerequisite: INTSCI 491; corequisite: registration in a departmental 498 research course. Offered: AWSp.

INTSCI 493 Communicating Research (3) NW Preparation of oral and written presentations of research, under guidance of the capstone instructor. Presentation on research in class and in another venue, such a scientific meeting or an on-campus symposium. Prerequisite: minimum of four credits of INTSCI 492. Offered: AWSp.

Marine Biology

The minor in marine biology is sponsored jointly by the College of the Environment and the College of Arts and Sciences, and is designed to immerse students in the study of marine organisms and ecosystems, starting in the freshman year. Because the experience of marine sciences cannot be taught entirely within the classroom, the minor is structured to provide ample opportunity for field work and research within the coursework.

UNDERGRADUATE PROGRAM

Adviser

116 Fishery Sciences Building, Box 355020

206-543-7426

marbiol@uw.edu

Minor

Minor Requirements

35 credits, as follows:

1. *Introductory Courses (19 credits):* FISH 250/OCEAN 250/BIOL 250; OCEAN 210; BIOL 180; Q SCI 381.
2. *Integrative Experience (3 credits):* See adviser for approved list of courses.
3. *Electives (13 credits):* Selected from an approved list available from a program adviser. Additional courses may be approved by program adviser. (A minimum of one elective course must be taken from each of the following units: aquatic and fisheries sciences; oceanography; and biology or Friday Harbor Laboratories biology - FHL prefix.)
4. Up to 17 credits may overlap with credits applied to a student's major and up to 5 credits may overlap with credits applied to another minor.

5. Minimum 15 credits in upper-division courses.

6. Minimum 2.00 cumulative GPA in courses presented for the minor.

Paleobiology

The minor in paleobiology is sponsored by the Department of Biology and is designed to provide students a solid foundation in the evolution and ecology of life in deep geologic time. In addition to classwork in paleontology, geobiology, astrobiology, and paleoanthropology, the minor provides opportunities for fieldwork and independent research.

UNDERGRADUATE PROGRAM

Adviser

318 Hitchcock Hall, Box 355320 206-543-9120

bioladv@uw.edu

Minor

Minor Requirements

Minimum 30 credits, as follows:

1. BIOL 354
2. *Electives:* Two from the paleobiology core content area and one from each of the three other content areas, selected from a list of approved courses available on the paleobiology website.
3. BIOL 483
4. *Integrative Experience in Paleobiology:* Minimum 3 credits from one of BIOL 475 or BIOL 499, ESS 499 or BIO A 499, at the discretion of the instructor
5. Remaining credits from any of the above or BIO A 369, BIO A 491, or an adviser-approved elective
6. Minimum 2.00 cumulative GPA for courses presented for the minor
7. Minimum 18 credits from outside the student's major.
8. Minimum 15 credits completed through the UW.

Interschool or Intercollege Programs

Bioengineering

N107 William H. Foege Building

Bioengineering encompasses a wide range of activities in which the disciplines of engineering and biological or medical science intersect. Such multidisciplinary endeavors are yielding new discoveries and major advances that are revolutionizing the healthcare system. The Department of Bioengineering, housed jointly in the School of Medicine and the College of Engineering, provides a comprehensive, multidisciplinary program of education and research and is recognized as a leading bioengineering program in the world. Major areas of research and education include biomaterials and regenerative medicine, molecular and cellular engineering, technology for expanding access to healthcare, instrumentation, imaging and image-guided therapy, and systems, synthetic, and quantitative biology.

UNDERGRADUATE PROGRAM

Adviser

N107 William H. Foege Building, Box 355061

(206) 685-2000

bioeng@uw.edu

depts.washington.edu/bioe/programs/bachelors/bs.html

The Bioengineering program offers the following programs of study:

- The Bachelor of Science in Bioengineering degree
- The Bachelor of Science in Bioengineering degree with an option in nanoscience and molecular engineering
- A five-year BS/MS option (consult website or adviser for details)

Bachelor of Science in Bioengineering

Suggested First- and Second-Year College Courses: CHEM 142, CHEM 152, and CHEM 162; CSE 142, English composition, MATH 124, MATH 125, MATH 126, PHYS 121.

Department Admission Requirements

Admission is competitive. Students may be admitted at three different points. Consult the department's website for more information.

1. *Direct Admission.* The department enrolls up to 35 percent of its incoming class directly from high school. Students accepted to the UW who indicate bioengineering as their preferred major on their freshman application are considered. Strong applicants have completed chemistry, biology, and calculus in high school. Admission is for autumn quarter only.
2. *Early Admission.* Students enrolled at the UW are eligible to apply at the end of the freshman year if they have completed and earned at least a 2.50 GPA in the following courses: MATH 124, MATH 125, MATH 126; CHEM 142, CHEM 152, CHEM 162; and 5 credits of English composition. A 2.50 GPA guarantees consideration but not admission. Application deadline is July 1 for autumn quarter admission.
3. *Upper Admission.* Requires 63 credits of coursework with at least a 2.50 GPA: MATH 124, MATH 125, and MATH 126; CHEM 142, CHEM 152, CHEM 162; CHEM 223 or CHEM 237; PHYS 121, PHYS 122; BIOL 180,

BIOL 200; AMATH 301; and 5 credits of English composition. Any of BIOL 180, PHYS 122, and AMATH 301 may be in progress at time of application. A 2.50 GPA guarantees consideration but not admission. Application deadline is February 1 for spring quarter. Consult the department's website or adviser for more details.

Nanoscience and Molecular Engineering Option (NME)

Admission to the NME option for bioengineering majors is by self-selection and normally occurs in winter quarter of the junior year, upon completion of all bioengineering prerequisites and formal admission to the BS bioengineering major. Students applying for the NME option should indicate that interest on their bioengineering major application and discuss their interests/background in their application personal statement.

Graduation Requirements

Students follow requirements in effect at time of entry into the department. 180 credits as follows:

General Education Requirements (105 credits)

1. *Areas of Knowledge:* 24 total credits in Visual, Literary, & Performing Arts (VLPA) and Individuals & Societies (I&S), with at least 10 credits in each area.
2. *Written and Oral Communication (5 credits):* 5 credits of English composition, from the approved University list. Additional writing credits are built into the major core courses.
3. *Mathematics (24 credits):* MATH 124, MATH 125, MATH 126; either MATH 307 or AMATH 351; either MATH 308 or AMATH 352; STAT 390 or IND E 315
4. *Natural Science (44 credits):* CHEM 142, CHEM 152, CHEM 162 and CHEM 223 (or CHEM 237); PHYS 121, PHYS 122; BIOL 180, BIOL 200, BIOL 220
5. *General Electives (8 credits; 6 credits for the NME option)*

Major Requirements (75 credits)

1. *Engineering Fundamentals (4 credits):* AMATH 301
2. *Bioengineering Core (44 credits):* BIOEN 215, BIOEN 315, BIOEN 316, BIOEN 317, BIOEN 325, BIOEN 326, BIOEN 327, BIOEN 335, BIOEN 336, BIOEN 337, BIOEN 345, BIOEN 401; either 10 credits of BIOEN 402, or 4 credits of BIOEN 403 plus BIOEN 404 and BIOEN 405.
3. *Bioengineering Senior Electives (15 credits):* Fifteen (15) credits from an approved departmental list, including completion of one of three concentration areas: Molecular and Materials Bioengineering: four courses from approved departmental concentration list. Cells, Tissue, and Systems Bioengineering: four courses from approved departmental concentration list. Diagnostics and Therapeutic Instruments: PHYS 123; four courses from approved departmental concentration list. See department for approved list.
4. *Approved Engineering Electives (9 credits):* Chosen from a departmentally approved list or from additional bioengineering senior elective credit. See department for approved list.
5. *Grade Requirements:* Minimum 2.0 grade in each bioengineering course applied to the major

Nanoscience and Molecular Engineering Option Requirements (77 credits)

1. *Engineering Fundamentals (4 credits):* AMATH 301
2. *Bioengineering Core (44 credits):* BIOEN 215, BIOEN 315, BIOEN 316, BIOEN 317, BIOEN 325, BIOEN 326, BIOEN 327, BIOEN 335, BIOEN 336, BIOEN 337, BIOEN 345, BIOEN 401; either 10 credits of BIOEN 402 or 4 credits of BIOEN 403 plus BIOEN 404 and BIOEN 405
3. *Nanoscience and Molecular Engineering Courses (21 credits):* NME 220, NME 321, NME 421; minimum four additional approved nanoscience and molecular

engineering electives, to be chosen from an approved departmental list; additional senior elective credits as needed to total 15. The senior capstone (4-10 credits from BIOEN 402 or BIOEN 403) must be in an NME area.

4. Approved Engineering Electives: 5 credits

5. Minimum 2.0 grade in each bioengineering course applied to the major

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Bioengineering students learn to apply engineering synthesis and analysis to biological problems and to glean design principles from nature to solve medical problems and create biomedical devices and materials. A key piece of the degree program is the senior capstone research and design project, through which students develop their knowledge and skills by joining in the department's cutting-edge research. Bioengineering graduates are prepared to enter graduate school, medical school, or the growing biomedical industry. The department's goal is to prepare students to be leaders and innovators in improving human health and healthcare. Bioengineering graduates have the ability to apply knowledge of mathematics, science, and engineering; the ability to design and conduct experiments, as well as to analyze and interpret data; the ability to design a system, component, or process to meet desired needs; the ability to function on multi-disciplinary teams; the ability to identify, formulate, and solve engineering problems; an understanding of professional and ethical responsibility; the ability to communicate effectively; the broad education necessary to understand the impact of engineering solutions in a global and societal context; a recognition of the need for, and an ability to engage in, life-long learning; knowledge of contemporary issues; the ability to use the techniques, skills, and modern engineering tools necessary for engineering practice; an understanding of biology and physiology; the capability to apply advanced mathematics (including differential equations and statistics), science, and engineering to solve the problems at the interface of engineering and biology; the ability to make measurements on and interpret data from living systems, addressing the problems associated with the interactions between living and non-living materials and systems.
- *Instructional and Research Facilities:* The department is housed in the newly constructed Foege North building. Amenities include instructional laboratories, an advanced computing lab for class instruction and student use, a general computer lab for student use, a student work room, a seminar room, and meeting space. Departmental offices are also located in this building. Other laboratories are located in the College of Engineering and the School of Medicine. The Department of Bioengineering houses UWEB (University of Washington Engineered Biomaterials), participates in the Center for Nanotechnology, and sponsors many other research centers relating to our five thrust areas in computational bioengineering, distributed diagnosis and home healthcare, engineered biomaterials, medical imaging and image-guided therapy, and molecular bioengineering and nanotechnology.
- *Honors Options Available:* College Honors (Completion of both Interdisciplinary Honors and Departmental Honors requirements). Departmental Honors (see adviser for requirements). For Interdisciplinary Honors, see University Honors Program.
- *Research, Internships, and Service Learning:* Many undergraduate bioengineers are involved in internships. The department participates in the College of Engineering Co-op Program and maintains an internship website for majors.
- *Department Scholarships:* Several scholarships are available for majors.

- *Student Organizations/Associations:* The Biomedical Engineering Society (BMES), the campus chapter of the national professional organization, organizes social events as well as events that support student interest in medical school, graduate school, and industry.
- *Of Special Note:* Courses on technology commercialization are available to seniors.

GRADUATE PROGRAM

Graduate Program Coordinator

N107 William H. Foege Building, Box 355061

(206) 685-2000

bioeng@uw.edu

The Department of Bioengineering offers programs of study which lead to the Master of Science (MS), the Master of Pharmaceutical Bioengineering (PHARBE), and Doctor of Philosophy (PhD) degrees.

Master of Science

The Master of Science degree program provides breadth of knowledge of engineering, biology, and medicine, and depth of knowledge in a particular research area. The degree prepares students for careers in academic, industrial, or hospital environments.

Admission Requirements

All application materials must be received in the appropriate office by the deadline. International applications are due by December 1; domestic applications are due by December 15. Late and/or incomplete applications are not reviewed. Required application items include:

1. Online application: www.grad.washington.edu/applFormAdmiss.
2. Department of Bioengineering Admission Form
3. Statement of Purpose
4. Resume/Curriculum Vitae
5. Three letters of recommendation
6. Unofficial transcripts only (official transcripts are requested once an offer has been made)
7. Official GRE scores (sent to code 4854, and must be sent before the deadline)
8. Official TOEFL scores (from international applicants only, and must be received before the deadline)

More information about the application is online at depts.washington.edu/bioe/education/prospective/educ_prospective.html. Materials sent in addition to those listed above are considered non-essential and do not enhance the application.

Applicants are expected to have the following courses as part of their undergraduate education: ordinary differential equations, linear algebra, signal analysis, probability theory and statistics, programming, electrical engineering and physics, chemistry, materials science, rate processes and mathematics, and cell and molecular biology. Admitted students must be knowledgeable of these topics prior to entrance to the MS program.

Degree Requirements

Course requirements for the MS in Bioengineering are detailed below. All core and elective courses must be taken for a numerical grade. Students must complete a one-quarter teaching assistantship. The timing of the teaching assistantship is decided in consultation with the department and the faculty adviser.

Note: A single course may not count for two separate requirements.

36 credits as follows:

1. *Molecular Bioengineering:* BIOEN 501
2. *Cellular Bioengineering:* BIOEN 502
3. *Systems Bioengineering:* BIOEN 503
4. *Biostatistics*
5. *Bioengineering Seminar:* BIOEN 510
6. *Bioengineering Elective Courses*, chosen in consultation with faculty adviser: 10 credits
7. *Master's Thesis:* BIOEN 700

Master of Pharmaceutical Bioengineering

The Master of Pharmaceutical Bioengineering (PHARBE) program is an evening degree program designed to enable working local engineers, scientists, researchers, and professionals in the biotechnology, pharmaceutical, and related industries to explore advanced education in the areas of molecular and cellular biology, drug discovery and design, pharmaceuticals, and translational pharmaceuticals. Professionals may also complete three certificate programs without applying for degree status.

Admission Requirements

1. BS degree or equivalent in a relevant science (field/research), public health (biomedical related) or engineering (field/research) related, or a BS degree or equivalent in unrelated field and two years' experience working within a scientific or engineering group for a biotechnology or pharmaceutical company or related industry. Clinical degrees are considered.
2. Applicants who have a bachelor's degree other than a BS, professional experience, and completed recommended prerequisite course work are also considered for admission.
3. Minimum 3.00 GPA in the last 90 quarter credit hours (60 semester credit hours). Students who have a BA/BS degree with under a 3.00 GPA and have two years' work experience may be approved for graduate non-matriculated (GNM) status for basic biosciences. Students who receive a 3.0 or above in their basic biosciences courses under GNM status are considered for degree admissions.
4. Official GRE scores
5. One set of official (unopened) transcripts from each non-UW institution attended
6. *Prerequisite Course Requirements:* The following courses must be completed with a minimum 2.0 in each course before applying to the degree program. Students whose undergraduate degree majors are in engineering, biology, chemistry or pharmacy are exempt from the prerequisite course requirement.
 - a. *Calculus:* Minimum one quarter (or one semester) of college calculus
 - b. *Chemistry:* Minimum two quarters (one semester) of college general chemistry Additional course in organic chemistry recommended.
 - c. *Biology:* Minimum one quarter (semester) of general biology
 - d. *Physics:* One quarter (PHYS 114).
7. Applicants are evaluated on professional experience, previous degrees earned, or most recent/undergraduate GPA, basic biosciences courses GPA (if applicable), letters of recommendation, statement of intent, and GRE test scores. Admission to the program is not guaranteed.
8. Applicants who do not qualify for admission to the PHARBE degree program may be admitted to courses and/or to Pharmaceutical Bioengineering Certificate programs.
9. *English Proficiency:* Students who are non-native English speakers are expected to have adequate English

language proficiency. The Graduate School requires a TOEFL score of at least 580, unless applicants are citizens of Australia, Canada, Ireland, New Zealand, or the United Kingdom; or hold a bachelor's or advanced degree from an accredited institution in any of these countries.

Degree Requirements

Minimum 40 credits, with a minimum 3.00 cumulative GPA, as follows:

1. *Basic Biosciences Curriculum (20 credits):* Molecular and Cellular Biology I, Molecular and Cellular Biology II, Pharmaceutics I, Pharmaceutics II, Statistics and Experimental Design
2. *Advanced Tracks:* 16 credits from one of two advanced tracks in translational pharmaceuticals or drug discovery and design. Students must complete 20 credits of the basic biosciences core courses before enrolling in advanced track courses.
 - a. *Translational Pharmaceuticals (16 Credits):* Preclinical Development, Process Development, Formulation and Delivery, Clinical Development
 - b. *Drug Discovery and Design (16 Credits):* Molecular Biotechnology, Drug Discovery & Design, Molecular Targets & Drug Classes, Systems Biology and Bioinformatics
3. Departmental Seminar (4 Credits)
4. *Optional Capstone Project:* Students have the option of completing a professional capstone project in either the drug discovery and design or Process development courses.

Doctor of Philosophy

The objective of the PhD program is to train individuals for careers in bioengineering research and teaching. The program has three major objectives: (1) breadth of knowledge about engineering, biology, medicine, and the interdisciplinary interface between these different fields; (2) depth of knowledge and expertise in a particular scientific specialty; (3) demonstrated independence as a bioengineering researcher. These objectives are fulfilled through a combination of educational and research experiences. The program is rigorous but maintains flexibility to accommodate qualified students from diverse academic backgrounds. Entrance to the PhD program does not require prior completion of the MS degree and may be made directly after the BS. An optional dual PhD degree in bioengineering and nanotechnology is available; see www.nano.washington.edu for more information.

Admission Requirements

See the application process detailed in the MS section.

While it is not required to complete an MS degree before beginning the PhD, every graduate student is expected to have the following courses as part of her or his undergraduate education: ordinary differential equations, linear algebra, signal analysis, probability theory and statistics, programming, electrical engineering and physics, chemistry, materials science, processes and mathematics, and cell and molecular biology. Admitted students must be knowledgeable of these topics prior to entrance to the PhD program.

Degree Requirements

90 credits, to include:

Students must complete a one-quarter teaching assistantship. The timing of the teaching assistantship is decided in consultation with the department and the faculty adviser.

All core and elective courses must be taken for a numerical grade. A single course may not count for two separate requirements. Required courses include:

1. *Molecular Bioengineering:* BIOEN 501

2. *Cellular Bioengineering*: BIOEN 502
3. *Systems Bioengineering*: BIOEN 503
4. *Biostatistics*
5. *Bioengineering Seminar*: BIOEN 510
6. 16 credits of bioengineering elective courses, chosen in consultation with faculty adviser
7. 27 credits of dissertation writing (BIOEN 800)

Ordinarily, a student progressing well follows this schedule:

1. *First Year*: Complete one to three lab rotations and select a thesis adviser no later than the end of spring quarter.
2. *Second Year*: Pass the qualifying examination and form a Supervisory Committee by the end of that year.
3. *Third Year*: Pass the general examination.
4. *Fourth Year (and subsequent years)*: Make an annual progress report to, and receive feedback from, the Supervisory Committee.
5. *Fifth Year*: Defend the dissertation.

Medical Scientist Program

A Medical Scientist Training Program (MSTP) exists for the support of individuals interested in coordinated graduate school/medical school study leading to both the MD and PhD degrees. Students entering this highly competitive program are given an opportunity to pursue a flexible, combined course of study and research. Early inquiry is essential for this option. Contact the MSTP office at (206) 685-0762.

Research Facilities

As the department is established within the College of Engineering and the School of Medicine, bioengineering students have access to all engineering and health science departments and facilities. A wide range of technologies and virtually all aspects of biomedical research tools are available.

Financial Support

Financial support is available to qualified graduate students in the form of traineeships, fellowships, and teaching and research assistantships. Funding is derived from federal research and training programs, the Graduate School Fund for Excellence and Innovation, and programs sponsored by private agencies. Questions regarding financial support may be directed to the adviser.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

BIOEN 215 Introduction to Bioengineering Problem Solving (3) D. HENDRICKS, A. TAYLOR Introduces bioengineering through a problem solving approach. Topics include: creative problem solving techniques, self-directed inquiry, engineering ethics, social constraints, and engineering design process.

BIOEN 290 Guided Independent Studies on Transformative Science (4) NW G. POLLACK Intensive laboratory experience mixed with lectures, readings, and discussions aimed at achieving deep understanding of scientific approach, particularly the nature of paradigm shifts, role of governmental support and management of science, power of orthodoxy, role of challenger, and fate of unpopular scientific views. Offered: W.

BIOEN 299 Introduction to Bioengineering (1) G. POLLACK Lectures on the various aspects of bioengineering; orientation in bioengineering studies and practice. Credit/no-credit only. Offered: ASP.

BIOEN 315 Biochemical Molecular Engineering (3) D. RATNER Introduces the requisite organic, physical, and biochemistry for incoming bioengineers to understand biological systems at the molecular level. Prerequisite: CHEM 223, CHEM 237 or CHEM 335; BIOL 200, which may be taken concurrently. Offered: Sp.

BIOEN 316 Biomedical Signals and Sensors (4) C. NEILS Introduces the sources, detection, and processing of signals in medical instrumentation. Includes analog and digital signal processing in the time and frequency domains. Emphasizes component strengths and limitations, to develop systems that improve safety, accuracy, and reliability. Prerequisite: AMATH 301 and PHYS 122; BIOEN 317, which must be taken concurrently; either MATH 307 or AMATH 351, which may be taken concurrently. Offered: Sp.

BIOEN 317 Biomedical Signals and Sensors Laboratory (2) F. CURRA Uses computational and experimental projects covering methods to acquire, process, and analyze signals from physiological and biochemical origins. Co-requisite: BIOEN 315 and BIOEN 316. Offered: Sp.

BIOEN 325 Biotransport I (4) Y. ZHENG Introduces momentum and heat transport in medical and biological systems. Examines how differential and control-volume analyses produce ordinary and partial differential equations; develops analytical and computational solution methods. Prerequisite: AMATH 301; either MATH 136, MATH 307, or AMATH 351; PHYS 122. Offered: Sp.

BIOEN 326 Solid and Gel Mechanics (4) W. THOMAS Introduces solid mechanics and interactions of biological structures and medical materials. Emphasizes the relationships between composition, structure, properties, and performance of metals and ceramics, synthetic and natural macromolecules, cells, tissues, and self assembling systems. Prerequisite: either CHEM 162, CHEM 164, or CHEM 165; PHYS 122; minimum grade of 2.0 in BIOEN 315. Offered: A.

BIOEN 327 Fluids and Materials Laboratory (2) C. NEILS Practical exploration of the behavior of fluids and soft materials that occur in biological systems and biomedical devices; and the interaction between cells and their environment. Includes methods of measurement, analysis, and design. Co-requisite: BIOEN 325 and BIOEN 326. Offered: A.

BIOEN 335 Biotransport II (3) J. BRYERS Studies the principles of combined mass transport in homogeneous and heterogeneous reaction systems as applied to biological processes. Introduces chemical and biochemical reaction kinetics, methods of evaluating kinetic parameters for reaction rate data, and prediction of the performance of biological and biochemical processes. Prerequisite: minimum grade of 2.0 in BIOEN 325. Offered: W.

BIOEN 336 Bioengineering Systems and Control (3) H. SAURO Reviews linear and nonlinear systems analysis and control system design and biological and medical applications. Prerequisite: minimum grade of 2.0 in BIOEN 327; either MATH 136, MATH 308, or AMATH 352. Offered: W.

BIOEN 337 Mass Transport and Systems Laboratory (2) A. TAYLOR Uses computational and experimental laboratory exercises to demonstrate time- and space-dependent linear and nonlinear systems with specific emphasis on bioengineering application. Prerequisite: BIOEN 327; BIOEN 335 and BIOEN 336, which must be taken concurrently; either MATH 390, STAT 390, or IND E 315, which may be taken concurrently. Offered: W.

BIOEN 345 Failure Analysis and Human Physiology (4) S. PUN, M. REGNIER, Y. ZHENG Applies engineering analysis to understand human physiology of the engineering of solutions to medical and biological problems. Includes laboratory. Prerequisite: BIOL 220; minimum grade of 2.0 in each of BIOEN 215, BIOEN 335, BIOEN 336, and BIOEN 337. Offered: Sp.

BIOEN 401 Bioengineering Capstone Principles (3) K. WOODROW Teaches design principles in bioengineering and guides the development of design and research-based

senior capstone projects. Prerequisite: either MATH 390, STAT 390, or IND E 315. Offered: Sp.

BIOEN 402 Bioengineering Capstone Research and Design ([2-6]-, max. 10) Independent senior design project. Prerequisite: BIOEN 401. Offered: AWSpS.

BIOEN 403 Bioengineering Capstone Research (2-, max. 4) Independent senior research project. Prerequisite: BIOEN 401. Offered: AW.

BIOEN 404 Bioengineering Team Design I (3) C. NEILS First course in team design project course sequence. Prerequisite: BIOEN 401. Offered: W.

BIOEN 405 Bioengineering Team Design II (3) A. TAYLOR Second course in team design project course sequence. Prerequisite: BIOEN 404. Offered: Sp.

BIOEN 410 Bioengineering Honors Seminar (1) D. HENDRICKS Service-learning for departmental honors students. Credit/no-credit only. Offered: A.

BIOEN 420 Medical Imaging (4) C. YUAN Various medical imaging modalities (x-rays, CT, MRI, ultrasound, PET, SPECT optical imaging, etc.) and their applications in medicine and biology. Extends basic concepts of signal processing (BIOEN 303) to the two and three dimensions relevant to imaging physics, image reconstruction, image processing, and visualization. Prerequisite: either BIOEN 316 or E E 235; either MATH 136, MATH 308, or AMATH 352; either CSE 142 or AMATH 301.

BIOEN 423 Introduction to Synthetic Biology (3) Studies mathematical modeling of transcription, translation, regulation, and metabolism in cell; computer aided design methods for synthetic biology; implementation of information processing, Boolean logic and feedback control laws with genetic regulatory networks; modularity, impedance matching and isolation in biochemical circuits; and parameter estimation methods. Prerequisite: either MATH 136 or MATH 307, AMATH 351, or CSE 311 and MATH 308 or AMATH 352. Offered: jointly with CSE 486/E E 423; A.

BIOEN 424 Advanced Systems and Synthetic Biology (3) Covers advanced concepts in system and synthetic biology. Includes kinetics, modeling, stoichiometry, control theory, metabolic systems, signaling, and motifs. All topics are set against problems in synthetic biology. Prerequisite: either BIOEN 401, BIOEN 423, E E 423, or CSE 486. Offered: jointly with CSE 487/E E 424; W.

BIOEN 425 Laboratory Methods in Synthetic Biology (4) Designs and builds transgenic bacterial using promoters and genes taken from a variety of organisms. Uses construction techniques including recombination, gene synthesis, and gene extraction. Evaluates designs using sequencing, fluorescence assays, enzyme activity assays, and single cell studies using time-lapse microscopy. Prerequisite: either BIOEN 423, E E 423, or CSE 486; either CHEM 142, CHEM 144, or CHEM 145. Offered: jointly with CSE 488/E E 425; W.

BIOEN 440 Introduction to Biomechanics (4) J. SANDERS Presents the mechanical behavior of tissues in the body and the application to design of prostheses. Tissues studies include bone, skin, fascia, ligaments, tendons, heart valves, and blood vessels. Discussion of the structure of these tissues and their mechanical response to different loading configurations. An important part of the class is a final project. Offered: jointly with M E 445; Sp.

BIOEN 455 BioMEMS (4) A. FOLCH Introduction to BioMEMS. State-of-the-art techniques in patterning biomolecules, machining three-dimensional microstructures and building microfluidic devices. Various biomedical problems that can be addressed with microfabrication technology and the engineering challenges associated with it. Bi-weekly labs. Prerequisite: BIOEN 316. Offered: W.

BIOEN 457 Advanced Molecular Bioengineering (4) P. STAYTON Fundamentals of molecular recognition: thermodynamics, forces, kinetics. Manipulation of recognition processes for current molecular bioengineering research

and development. Fundamental physical chemistry of molecular recognition in the context of biomedicine. Therapeutics based on cells. Prerequisite: either BIOEN 315 and BIOEN 335. Offered: A.

BIOEN 467 Biochemical Engineering (3) *F. BANEYX* Application of basic chemical engineering principles to biochemical and biological process industries such as fermentation, enzyme technology, and biological waste treatment. Rapid overview of relevant microbiology, biochemistry, and molecular genetics. Design and analysis of biological reactors and product recovery operations. Prerequisite: CHEM E 340; either CHEM 223, CHEM 237, or CHEM 335. Offered: jointly with CHEM E 467; W.

BIOEN 474 Immunoengineering (3) *K. WOODROW* Covers cell and tissues of immune system; lymphocyte activation and specificity; cell biology of antigen processing and preservation; and effector mechanisms. Includes discussion of concepts in theoretical immunology used to describe viral dynamics and the dynamics of immune responses. Students present case studies in the pathogenesis of immunologically mediated diseases.

BIOEN 485 Computational Bioengineering (4) *W. THOMAS* Introduction to computational and mathematical analysis of biological systems, including control, stochastic, and transport systems. Lectures and laboratory sessions emphasize biochemical systems, but also include electrical, mechanical, and fluidic systems. Prerequisite: BIOEN 335; either AMATH 351 or MATH 307. Offered: Sp.

BIOEN 486 Tissue Engineering (3) *D. KIM* Tissue structure and function, scaffold design, applications to specialized tissues and organs. Prerequisite: BIOEN 315. Offered: A.

BIOEN 487 Bioengineering and Nanotechnology (4) *X. GAO* Explores basic concepts of nanoscience and the current literature, focusing on practical applications for nanotechnology in biology and medicine. Prerequisite: CHEM 142, CHEM 144, or CHEM 145; BIOL 180.

BIOEN 488 Computational Protein Design (4) *V. DAGGETT* Explores methods in protein engineering, emphasizing biomedical and biotechnological applications. Includes molecular visualization, homology modeling, molecular dynamics, computational protein design, and evaluation of designs. Introduces current research in subject area. Students learn to use and apply computational tools to investigate design problems. Prerequisite: BIOEN 315.

BIOEN 490 Engineering Materials for Biomedical Applications (3) Combined application of principles of physical chemistry and biochemistry, materials engineering, to biomedical problems and products. Applications include implants and medical devices, drug delivery systems, cell culture processes, diagnostics, and bioseparations. Offered: jointly with CHEM E 490; A.

BIOEN 491 Controlled-Release Systems (3) *S. PUN* Mechanisms for controlled release of active agents and the development of useful drug delivery systems for this purpose. Release mechanisms considered include diffusive, convective, and erosive driving forces. Delivery routes include topical, oral, and in vivo. Some special case studies covered in detail. Offered: jointly with CHEM E 491; W.

BIOEN 492 Surface Analysis (3) *B. RATNER* Understanding of solid surfaces for research and development in microelectronics, catalysis, adhesion, biomaterials, science wear, and corrosion science. Newer methods available to study surfaces of materials. Electron emission spectroscopies (ESCA, Auger): ion scattering, ion spectroscopic, photon spectroscopic, and thermodynamic methods. Offered: jointly with CHEM E 458; Sp.

BIOEN 493 Advanced Surface Analysis (3) *D. CASTNER* Covers the latest advanced in surface analysis instrumentation and methodology, including advanced methods of biorecognition AFM, surface Plasmon resonance, x-ray photoelectron spectroscopy, sum frequency generation spectroscopy, time-of-flight secondary ion mass spectrom-

etry, and multivariate analysis. Prerequisite: either CHEM E 458 or BIOEN 492. Offered: jointly with CHEM E 493; W.

BIOEN 494 Advanced Drug Delivery (3) *S. PUN* Provides students with an understanding of the current state of the art for advanced drug delivery. Covers the major families of biologic drugs, major challenges associated with their delivery and specific disease applications. Prerequisite: BIOEN 491. Offered: Sp.

BIOEN 497 Bioengineering Education Outreach (1-2, max. 6) Work with K-12 schools or community organizations. Current science education research and instructional techniques. May involve presentations or instruction in hands-on activities. Credit/no-credit only.

BIOEN 498 Special Topics (1-6, max. 15) Topics of current interest in the field, offered as lectures, conferences, or laboratory. Offered: AWSpS.

BIOEN 499 Special Projects (1-6, max. 24) Individual undergraduate bioengineering projects (research or independent study) under the supervision of an instructor. Credit/no-credit only. Offered: AWSpS.

BIOEN 501 Molecular Bioengineering (4) Examines advanced topics in molecular diffusion, reaction kinetics, and convective transport modeling as applied to biological systems. Includes mathematical analysis and numerical simulation techniques applied to: Non-Fickian diffusion, rotational versus translational diffusion, immobilized enzyme kinetics, drug release, and gene delivery. Offered: A.

BIOEN 502 Cellular Bioengineering (4) Covers basic principles of cell biology (including cell structure, function, and signaling), recombinant RNA/DNA technology, and specific examples of cellular bioengineering applications including gene delivery, RNA silencing, and tissue engineering. Prerequisite: BIOEN 501. Offered: W.

BIOEN 503 Systems Bioengineering (4) Explores whole-body or organ physiology topics from an engineering perspective. Uses various model systems to elucidate engineering principles such as feedback control and homeostatic regulation. Includes real-world examples, computer modeling, and research design approaches. Prerequisite: BIOEN 502. Offered: Sp.

BIOEN 504 Introduction to Technology Commercialization (4) *M. O'DONNELL, B. RATNER* Explores essential business, legal, engineering, and other skills necessary to take new technology from research to market. Covers intellectual property, market analysis, licensing, funding mechanisms such as venture capital, and product marketing.

BIOEN 505 Biomedical Entrepreneurship (4) Explores essential business, legal, engineering, and other skills necessary to take new technology from research to market. Covers intellectual property, market analysis, licensing, funding mechanisms such as venture capital, and product marketing; introduces strategic planning, management of commercialization effort.

BIOEN 506 Applying Technology Commercialization (1) Focuses knowledge of entrepreneurship within the spaces of medical devices, hardware/software, and energy, into a practical description of a potential start-up company. Corequisite: ENTRE 540. Credit/no-credit only.

BIOEN 509 Bioengineering Departmental Seminar (1, max. 16) Research review and discussions centered on demonstrating approaches and solving scientific problems. Seminar lectures led by faculty and visiting faculty in Bioengineering and related disciplines. Credit/no-credit only. Offered: WSp.

BIOEN 511 Biomaterials Seminar (1, max. 18) *D. CASTNER, L. GAMBLE* Presentation of student research results. Prerequisite: permission of instructor. Credit/no-credit only. Offered: jointly with CHEM E 511.

BIOEN 513 Current Topics in Cardiac Physiology (1, max. 3) *M. REGNIER* Current research in cardiac physiology. Student presentation and discussions of current research methodologies. Credit/no-credit only.

BIOEN 516 Medical Imaging Seminar (1) Weekly seminars, presented by UW faculty members, researchers and graduate students from UW, other academic institutions, and industry, on image computing and medical imaging. Topics include digital video, image processing, computer graphics, video/image compression, image analysis, algorithms and systems, pattern recognition, multimedia computer architectures, and other applications. Credit/no-credit only.

BIOEN 518 Nanotechnology Seminar (1, max. 18) Emphasizes frontier research in nanoscience and nanotechnology and on intellectual interactions within the nanotechnology community. Presented by experts in the field, with most being from other institutions. Prerequisite: graduate standing and permission of instructor. Credit/no-credit only. Offered: jointly with CHEM 597; AWSp.

BIOEN 520 Musculoskeletal Biomechanics (4) *R. CHING* Engineering principles and mechanics applied to the musculoskeletal system including structure-function property relationships of musculoskeletal tissues, the biomechanics of joint systems, and applications of biomechanics in industry and research. Offered: jointly with M E 527; W.

BIOEN 522 Biomechanics of Soft Tissue (3) *J. SANDERS* Applies soft tissue biomechanics to medical research. Develops specific biomechanical questions and experiments to address those aims or hypotheses.

BIOEN 523 Introduction to Synthetic Biology (3) Studies mathematical modeling of transcription, translation, regulation, and metabolism in cell; computer aided design methods for synthetic biology; implementation of information processing, Boolean logic and feedback control laws with genetic regulatory networks; modularity, impedance matching and isolation in biochemical circuits; and parameter estimation methods. Prerequisite: either MATH 136 or MATH 307, AMATH 351, or CSE 311 and MATH 308 or AMATH 352. Offered: jointly with CSE 586/E E 523.

BIOEN 524 Advanced Systems and Synthetic Biology (3) Covers advanced concepts in system and synthetic biology. Includes kinetics, modeling, stoichiometry, control theory, metabolic systems, signaling, and motifs. All topics are set against problems in synthetic biology. Prerequisite: either BIOEN 523, E E 523, or CSE 586. Offered: jointly with CSE 587/E E 524; W.

BIOEN 530 Bioengineering Professional Series I: Literature Analysis (2) *V. DAGGETT* Skills in scientific literature analysis developed through topics in bioengineering. Credit/no-credit only. Offered: A.

BIOEN 531 Bioengineering Professional Series II: Proposal Writing (2) *M. SCATENA* Covers grant and fellowship proposal writing. Offered: W.

BIOEN 532 Bioengineering Professional Series III: Professional Skills Development (1) *C. GIACHELLI* Key areas of professional development related to the bioengineering field, including oral communication, management, networking, and interviewing. Credit/no-credit only. Offered: Sp.

BIOEN 552 Microfabrication and Microfluidics (3) *A. FOLCH, P. YAGER* Studies the use of 2- and 3-dimensional structures in research and biomaterials, cells, and complex liquids. Focuses on micropatterning of surfaces and microfluidic chemical analytical systems. Co-requisite: BIOEN 553.

BIOEN 553 Microfabrication and Microfluidics Laboratory (2) *A. FOLCH, P. YAGER* Studies the creation of 2- and 3-dimensional structures for use in research with biomaterials, cells, and complex liquids. Each student will fabricate at least one PDMS device and demonstrate its function. Co-requisite: BIOEN 552. Credit/no-credit only.

BIOEN 555 Water, Nature, and Biological Function (3) *G. POLLACK* Explores emerging concepts of water at interfaces as a new and simpler way to understand many features of chemistry, physics, and biology. Considers new understanding in cell function, energy transduction, solar energy,

flow, transport, weather, green science, and other basics of nature and engineering. Offered: Sp.

BIOEN 573 Biosensors and Biomedical Sensing (3) *P. YAGER* In-depth overview of the principal types of biosensors. Topics include: how biological molecules are used in sensing, how the sensors operate, how different sensors compare, under what circumstances sensors can be useful, and the applicability of sensors to biomedical sensing.

BIOEN 574 Immunoengineering (3) *K. WOODROW* Covers cell and tissues of immune system; lymphocyte activation and specificity; cell biology of antigen processing and preservation; and effector mechanisms. Includes discussion of concepts in theoretical immunology used to describe viral dynamics and the dynamics of immune responses. Students present case studies in the pathogenesis of immunologically mediated diseases.

BIOEN 576 Laboratory Techniques in Protein Engineering (4) Practical introduction to fundamentals of recombinant DNA technology and protein engineering. Gene design, bacterial molecular biology, genetic engineering strategy. Laboratory project focused on making site-directed protein mutations. Techniques include the Polymerase Chain Reaction, DNA sequencing, DNA cutting/splicing, protein expression. Prerequisite: background in biochemistry or molecular biology or permission of instructor.

BIOEN 577 Cell and Protein Reaction with Foreign Materials (3) *T. HORBETT* Study of ways in which cell and protein interactions with foreign materials affect the biocompatibility of biomaterials. Description of phenomenology and mechanisms of protein adsorption, mammalian cell adhesion, and cell receptor biology and of methods used to study these phenomena. Surface properties of materials discussed in context of the course. Prerequisite: permission of instructor.

BIOEN 578 Biomembranes (3) *P. YAGER* Develops an understanding of the molecular principles that underlie the self-assembly of surfactants into natural and model membranes; in particular, on the relationship between the chemical structure of lipid molecules and the three-dimensional aggregates that they form in water.

BIOEN 579 Host Response to Biomaterials (3) *C. GIACHELI* Basic cell and molecular biology of the pathologies associated with biomaterial implantation that limit bioprosthetic use, including hemostasis, infection, acute and chronic inflammation, wound healing and fibrosis, and structural alterations. Major methods for histological analysis of retrieved implants. Prerequisite: general biology, BIOEN 490 (may be taken concurrently), or permission of instructor.

BIOEN 585 Computational Bioengineering (4) *W. THOMAS* Introduction to computational and mathematical analysis of biological systems, including control, stochastic, and transport systems. Lectures and laboratory sessions emphasize biochemical systems, but also include electrical, mechanical, and fluidic systems.

BIOEN 586 Tissue Engineering (3) *D. KIM* Tissue structure and function, scaffold design, applications to specialized tissues and organs. Offered: A.

BIOEN 587 Bioengineering and Nanotechnology (4) *Gao* Explores basic concepts of nanoscience and the current literature, focusing on practical applications for nanotechnology in biology and medicine.

BIOEN 588 Computational Protein Design (4) *V. DAGGETT* Explores methods in protein engineering, emphasizing biomedical and biotechnological applications. Includes molecular visualization, homology modeling, molecular dynamics, computational protein design, and evaluation of designs. Introduces current research in subject area. Students learn to use and apply computational tools to investigate design problems.

BIOEN 590 Advanced Topics in Biomaterials (3) Major, controversial issues in application of synthetic materials to medical problems. Blood compatibility, bioadhesion, intraocular lenses, contact lenses, polyurethanes, biodeg-

radation, protein adsorption, corrosion, bone fixation, new materials, artificial heart, medical device regulation. Prerequisite: BIOEN 490 or CHEM E 490. Offered: jointly with CHEM E 590.

BIOEN 591 Controlled Release Systems (3) *S. PUN* Provides students with an understanding of the current state of the art for advanced drug delivery. Covers the major families of biologic drugs, major challenges associated with their delivery and specific disease applications. Offered: W.

BIOEN 592 Surface Analysis (3) *B. RATNER* Understanding of solid surfaces for research and development in microelectronics, catalysis, adhesion, biomaterials science, wear and corrosion science. Newer methods available to study surfaces of materials. Electron emission spectroscopies (ESCA, Auger); ion scattering, ion spectroscopic, photon spectroscopic, and thermodynamic methods. Offered: jointly with CHEM E 558.

BIOEN 593 Advanced Surface Analysis (3) *D. CASTNER* Covers the latest advanced in surface analysis instrumentation and methodology, including advanced methods of biorecognition AFM, surface Plasmon resonance, x-ray photoelectron spectroscopy, sum frequency generation spectroscopy, time-of-flight secondary ion mass spectrometry, and multivariate analysis. Prerequisite: either CHEM E 558 or BIOEN 592. Offered: jointly with CHEM E 593; W.

BIOEN 594 Advanced Drug Delivery (3) *S. PUN* Provides students with an understanding of the current state of the art for advanced drug delivery. Covers the major families of biologic drugs, major challenges associated with their delivery and specific disease applications. Offered: Sp.

BIOEN 598 Research Rotation (1-10, max. 30) Research rotation in the laboratories of core or adjunct faculty in the Department of Bioengineering. Credit/no-credit only. Offered: AWSpS.

BIOEN 599 Special Topics in Bioengineering (1-6, max. 30) Offered at a graduate level periodically by faculty members within the Department of Bioengineering; concerns areas of research activities with current and topical interest to bioengineers. Prerequisite: undergraduate or graduate courses (or equivalent) determined individually for each special topic.

BIOEN 600 Independent Study or Research (*) Offered: AWSpS.

BIOEN 601 Internship (1-10, max. 10) Bioengineering graduate internship program. Requires written report. Prerequisite: permission of supervisory committee chair. Offered: AWSpS.

BIOEN 700 Master's Thesis (*) Offered: AWSpS.

BIOEN 800 Doctoral Dissertation (*) Offered: AWSpS.

Medical Engineering

MEDENG 519 Journal Research Seminar (1) *Minie* Presentation and discussion of topics related to the medical, clinical, and pharmaceutical technology fields. Credit/no-credit only. Offered: jointly with PHARBE 519; AWSpS.

MEDENG 532 Medical Device Design (4) *Baker* Emphasizes human factors in the design and intellectual property of medical devices. Examines the useful and safe design of devices for patients, caregivers, physicians, technicians, and manufacturers. Addresses the physical, mental, and environmental constraints which affect fitting a device to the human user. Considers design for the device's life cycle.

MEDENG 533 Regulatory Affairs for the Medical Device Industry (4) Reviews the government oversight of medical device development and those laws and regulations that apply to development, testing, and production of the devices. Examines the responsibilities of a regulatory affairs specialists in companies.

Pharmaceutical Bioengineering

PHARBE 500 Molecular and Cellular Biology for Pharmaceutical Bioengineering I (4) *Minie* Covers fundamental molecular processes that occur in living organisms; including the structure and organization of prokaryotic and eukaryotic cells. Studies molecular basis of cellular structure and behaviors of cell membranes, environmental sensing and motility, signaling pathways, and differentiation. Integrates online literature/media resources and bioinformatics tools. Offered: W.

PHARBE 501 Molecular and Cellular Biology for Pharmaceutical Bioengineering II (4) *Minie* Uses a case based approach to examine prokaryotic and eukaryotic gene structure and regulation, viruses, signaling pathways, RNA, DNA, metagenomics, and systems biology. Integrates student presentations of select research topics into curriculum to develop critical thinking approaches to the latest developments in the field. Prerequisite: PHARE 500 or permission of instructor. Offered: Sp.

PHARBE 502 Pharmaceutics I (4) Covers the drug development process for both small molecules and biological form discovery stage through the end of phase 1. Addresses the science, logistics, and regulatory environment of preclinical (pharmacology, PKDM, toxicology, CMC) and early clinical development. Offered: A.

PHARBE 503 Pharmaceutics II (4) *Benson* Covers phases II and III of the drug development process. Topics include clinical study design, safety, pharmacology, and statistics. Provides an overview of the preparation and filing of the New Drug Application (NDA). Uses case studies to demonstrate key concepts. Prerequisite: PHARBE 502 or permission of instructor. Offered: W.

PHARBE 510 Applied Pharmacokinetics (4) Covers basic principle of pharmacokinetics and its impact on treatment, including: single-dose intravenous and oral kinetics, multiple dosing, nonlinear pharmacokinetics, metabolite kinetics, pharmacogenetics, the role of disease in drug clearance and dose requirements, and kinetics of drug-drug interactions. Offered: A.

PHARBE 511 Process Development (4) *Laursen* Examines the principles involved in designed and developing production processes for protein therapeutics. Covers technologies, methods, and unit operations used in the development and GMP manufacture of biopharmaceuticals. Includes interdependencies of upstream, downstream, analytical, formulation and drug delivery technologies, illustrated with key biochemical, chemical, and physical chemical reaction examples. Offered: W.

PHARBE 512 Formulation and Delivery (4) *Nehilla* Introduces drug delivery and formulation principles, systems, and applications. Reviews administration routes and associated delivery barriers, connection to drug pharmacokinetics/pharmacodynamics, and drug diffusion and permeation principles. Includes current and developmental biomaterials used for formulation and drug delivery systems. Offered: Sp.

PHARBE 513 Clinical Development (4) Evaluates clinical development strategies including comprehensive drug candidate life cycle plan. Covers clinical trial design, FDA and Institutional Review Boards, ethics, consents, safety, and quality. Discusses target product profiles, phase III study synopses, informed consents, and SWOT analyses. Students present phase II results and debate go/no go decisions. Offered: A.

PHARBE 519 Journal Research Seminar (1) *Minie* Presentation and discussion of topics related to the medical, clinical, and pharmaceutical technology fields. Credit/no-credit only. Offered: jointly with MEDENG 519; AWSpS.

PHARBE 520 Molecular Biotechnology (4) *To* Emphasizes concepts and the techniques/methodologies used in molecular biotechnologies. Uses practice-oriented lectures and laboratories to cover issue culture and assays, recombinant DNA methodologies such as SNA isolation, restric-

tion mapping, cloning, site-directed mutagenesis, DNA sequencing, PCR techniques and applications, protein electrophoresis, ELISA analysis, and Western/Southern blotting methodologies. Offered: A.

PHARBE 521 Drug Discovery and Design (4) Baldwin Explores general principles and current approaches involved in modern drug discovery and development. Includes specific aspects of human biology and disease, case studies in discovery, and the evolution of how these topics have merged. Covers novel drug discovery techniques, emerging non-standard therapeutics, and the history of drugs and drug discovery. Offered: W.

PHARBE 522 Molecular Targets and Drug Classes (4) Wong Discusses select medicinal compounds, emphasizing mechanism of action, biotransformation, and structural and physical properties governing absorption, distribution, and excretion. Design of therapeutics to focus on maximizing efficacy while reducing toxicities. Compounds include classical organic small-molecules, peptides, proteins, nucleic acids, lipids, carbohydrates, and other bioactive chemical classes. Offered: Sp.

PHARBE 523 Systems Biology and Bioinformatics (4) Surveys methods in bioinformatics and systems biology, including genomics, proteomics, protein-folding prediction, phylogenetics, and simulations, making particular use of tools available online. Emphasizes student presentations. Offered: A.

Global Health

The Department of Global Health was established in 2007, bridging the schools of Medicine and Public Health, with a mandate to harness the expertise and interdisciplinary power of all 16 UW schools and colleges. The department is the second largest at the UW in terms of funding for research and training programs. Departmental efforts include 31 centers, programs, initiatives, and the Institute for Health Metrics and Evaluation.

The mission is to close the gap between the world's one billion people who experience relatively good health and the five billion who experience much lower levels of health, through teaching (education, training, and mentoring), research, and service programs.

The department offers an undergraduate minor, a Master of Public Health, and two PhD options: global health, and pathobiology. Four graduate certificate offerings are available for graduate students, as well as a global health pathway for UW medical students. Current and emerging focus areas include health metrics and evaluation, infectious diseases, workforce development, health system strengthening and implementation science, climate change, global trauma and violence, global medicines safety, and a strong cross-cutting focus on social justice and equity.

UNDERGRADUATE PROGRAM

The Department of Global Health offers the following program:

- A minor in global health

Minor

Minor Requirements (30 credits):

1. **Required Courses (8 credits):** G H 101/GEORG 180/JSIS B 180; and G H 210 or G H 410
2. **Perspectives in Global Health Series (3 credits):** G H 401; G H 402; G H 403
3. **Electives (to bring total to 30 credits):** Minimum of one elective course from each of the four content areas selected from a list of approved courses available from the Department of Global Health website, globalhealth.washington.edu

washington.edu/academics/undergraduate-minor/requirements

4. Minimum 15 credits outside the student's major
5. Minimum 15 credits completed through the UW
6. Minimum 15 upper-division credits
7. Minimum 2.0 grade in courses applied to the minor

GRADUATE PROGRAM

Graduate Program Coordinator
S432 Foege Building, Box 355065
(206) 897-1804
ghprog@u.washington.edu

Master of Public Health

The Global Health MPH program emphasizes a social justice approach to global health with a focus on the social, economic, and political determinants of health, and the history and context of global responses to health problems. The core curriculum develops competencies in the basic tools of public health, including epidemiology, biostatistics, global health systems, environmental health, and social behavioral sciences. Courses in research methods and management are also required. A practicum provides hands-on experience with local or international agencies engaged in global health activities, and academic coursework culminates with independent scholarship leading to a research or practice thesis. The curriculum is highly interdisciplinary, with faculty and courses from across campus including natural and social sciences and the humanities. Case studies and applied learning are common approaches, and contributions by students provide a major component of the learning environment.

For current listings of MPH program options and their requirements, visit the program website.

Admission Requirements

Applicants must have completed at least a baccalaureate degree by the time of matriculation, and some tracks require at least two years of relevant post-college work or volunteer experience prior to matriculation as well. Each MPH track has its own admission requirements.

1. Completed Graduate School online application. Deadline midnight, December 1
2. Official scores from the general Graduate Record Examination (GRE), required for applicants who have not already earned a doctoral-level degree (e.g., MD, PhD, JD) from a U.S. institution of higher learning
3. Unofficial transcripts: Applicants upload unofficial transcripts from each college and/or university attended into the online application.
4. Three recent letters of recommendation, preferably from former supervisors and professors
5. Personal statement, including background, goals, and research interests
6. Resume, maximum three pages

Degree Requirements

63 credits, for all MPH tracks

At least 30 credits must be from graduate-level, in-classroom courses, and at least 18 of these must be from global health in-classroom courses.

All tracks require a foundation course, epidemiology, biostatistics, environmental health, social and behavioral sciences, research methods, a practicum, and a thesis. Beyond these shared requirements, each track also has its own set of requirements. See program website for track-specific requirements.

Doctor of Philosophy

Program Manager

Institute for Health Metrics and Evaluation
2301 5th Avenue, Suite 600, Box 358210
Seattle, WA
(206) 897-2870
ghpdh@u.washington.edu

The Department of Global Health, in collaboration with the Institute for Health Metrics and Evaluation and Health Alliance International, has developed a unique PhD program, building on faculty expertise in the areas of metrics and implementation science. The program provides students the most innovative tools to advance global health solutions, and includes two emphasis areas:

Metrics: Students translate evidence into useful knowledge by learning and applying advanced quantitative methods, impact evaluation techniques, and analytic tools. Students design and develop new, innovative ways to tackle critical global health measurement challenges.

Implementation Science: Students identify and address barriers to effective implementation and scale-up of evidence-based interventions by developing and applying cutting-edge methodologies and analytical approaches.

For comprehensive information, see the PhD program website.

Admission Requirements

The department recruits students who wish to pursue a long-term career in global health, whether in academic institutions, ministries of health, non-governmental organizations, or the private sector. All indicators of future success, including past work, service, and research experience; level of enthusiasm and detail in letters of recommendation; previous academic records and performance on standardized tests; applicant's written statement of purpose; and an ability to discuss research or practice work and future goals are considered. The department reviews all variables without a preset formula.

Minimum Qualifications

1. Bachelor's degree from an accredited college or university in the United States, or its equivalent from a foreign institution. Strong candidates have prior master-level training or significant experience working in the global health field, ideally in a low-resource setting.
2. Demonstrated passion and commitment to the field of global health
3. High academic standing: Minimum 3.30 cumulative GPA in previous undergraduate- and graduate-degree work, though the department expects applicants to have a minimum 3.70 GPA.
4. Graduate Record Examination (GRE) scores greater than or equal to 120 (700) on the quantitative section
5. **English Proficiency:** For students who have not completed a degree in an institution where English is the primary language of instruction, results from the Test of English as a Foreign Language (TOEFL) are required.

Degree Requirements

Minimum 96 credits

1. **Coursework:** Minimum 27 dissertation credits, 37 credits in core requirements, 16 credits in area of emphasis, and remaining credits in electives. See details about curriculum and course paths on program website.
2. Preliminary written examination
3. General examination
4. Research and dissertation
5. Final examination

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/.

G H 101 Introduction to Global Health: Disparities, Determinants, Policies, and Outcomes (5) I&S S. GLOYD, M. SPARKE Provides an introduction to global health, including: the burden and distribution of disease and mortality; the determinants of global health disparities; the making of global health policies; and the outcomes of global health interventions. Offered: jointly with GEOG 180/JSIS B 180; W.

G H 210 Confronting Global Diseases: Introductory Biologic Principles and Context (3) NW M. PARSONS Provides a broad introduction to the leading causes of disability and death globally. Covers the basic biologic and scientific principles of globally prevalent human health problems, including the connections between the biology of disease and current prevention and treatment interventions used in public health. Not intended for biological science majors. Offered: Sp.

G H 399 Global Health Study Abroad (1-5, max. 15) I&S For participants in approved study abroad programs. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWSpS.

G H 401 Core Topics in Global Health (1) *Gonzales, Wade* Addresses a variety of foundational topics and central themes in global health, including the history and scope of the field, the complexities and contexts for global health problems, and the multidisciplinary nature of global health work. Credit/no-credit only. Offered: A.

G H 402 Contemporary Issues in Global Health (1) J. BE-SCHTA, D. WADE Explores contemporary topics in global health. Offered: W.

G H 403 Multidisciplinary Perspectives in Global Health (1) *Gonzales, Wade* Presenters from a variety of disciplines discuss their experiences working on global health issues in resource-poor settings. Speakers illustrate how their work is influenced by communication, culture, economic and socio-political realities. Credit/no-credit only. Offered: Sp.

G H 410 Advanced Biologic Principles of Global Diseases (3) NW R. COLER Presents selected communicable and noncommunicable diseases of global health importance at an advanced level. Students learn about biological principles, host-pathogen interactions, and other factors that influence the burden of global health diseases. Prerequisite: either BIOL 180, G H 210, or MICROM 301. Offered: W.

G H 419 War and Health (4) I&S Explores the health consequences of war (injury, infectious diseases, mental health, chronic disease, malnutrition, infrastructure) and the role of health professionals and others in preventing war (advocacy, measurement and application of epidemiology methods, promotion of social equity). Offered: jointly with HSERV 415; Sp.

G H 456 Global Mental Health (3) I&S, DIV Rao Examines the socio-cultural and political forces that impact assessment, manifestation, and treatment of mental illnesses worldwide. Students take a critical view of diagnostic systems and examine cultural differences in presentation of mental illness. Also reviews treatment practices in low resource settings, cultural-specific communication, and stigma. Offered: Sp.

G H 490 Special Topics (1-5, max. 15) Offered: AWSpS.

G H 499 Undergraduate Research (1-15, max. 15) Offered: AWSpS.

G H 500 Global Health Seminar (1, max. 6) Explores issues relevant to global health; themes vary by quarter. Credit/no-credit only. Offered: AWSp.

G H 501 Core Topics in Global Health (1) *Gonzales, Wade* Addresses a variety of foundational topics and central themes in global health, including the history and scope of the field, the complexities and contexts for global health problems, and the multidisciplinary nature of global health work. Offered: A.

G H 502 Contemporary Issues in Global Health (1) J. BE-SCHTA, D. WADE Explores contemporary topics in global health. Offered: W.

G H 503 Multidisciplinary Perspectives in Global Health (1) *Gonzales, Wade* Presenters from a variety of disciplines discuss their experiences working on global health issues in resource-poor settings. Speakers illustrate how their work is influenced by communication, culture, economic, and socio-political realities. Offered: Sp.

G H 505 P-Advanced Global Health (2) Prepares health profession students for work in developing countries. Includes healthcare delivery systems, political, social, and economic determinants of health, major global health issues, and personal well-being while abroad. Lecture and seminar format with guest speakers, student presentations, and discussion. Offered: jointly with MED 560.

G H 511 Problems in Global Health ([0-4]-, max. 4) *Gloyd* Explores social, political, economic, environmental determinants of developing countries' health; traces development of societal responses to problems. Includes: origins of primary healthcare; child survival; traditional systems; population; water; sanitation; international agencies; impact of economic policies. Case study formulating pharmaceutical policy in a developing country. Offered: A.

G H 514 Global Societal Determinants of Health (2-3) *Bezruchka* Examines societal determinants of health of nations around the globe. Asks why there is an increasing inequity in health outcomes today? Topics include early life, population health biology, medical care, mental health, and the environment. Offered: Sp.

G H 516 Health and Human Rights (3) Examines the basic concepts in the fields of human rights law and public health, and uses those concepts to examine the interdependence and tensions between the two fields. Introduction to the fields of public health and human rights law, examining the impact of health policies and programs on human rights. Offered: jointly with LAW H 540; W.

G H 519 War and Health (4) Explores the health consequences of war (injury, infectious diseases, mental health, chronic disease, malnutrition, infrastructure) and the role of health professionals and others in preventing war (advocacy, measurement and application of epidemiology methods, promotion of social equity). Offered: jointly with HSERV 515; Sp.

G H 521 Leadership Development in Global Health (3) *Campbell* Primarily taught through self and group assessment, case studies and small group work, explores student's leadership and management effectiveness, strengths and weaknesses. Establishes frameworks (communication, effective influencing, culture, values, vision and mission, and decision-making) explored throughout the three-quarter sequence. Offered: A.

G H 522 Global Program Management and Leadership (3) *Downer* Focuses on management and leadership skills for complex global health settings. Includes personal leadership strengths/values; management dilemmas, data-driven decisions; program planning design and evaluation; and resource management. Offered: W.

G H 523 Policy Development and Advocacy for Global Health (3) *Katz, Lane* Primarily taught through case- and problem-based learning and small group work, explores complex factors affecting global health policy and how context (e.g., ideology, culture, and history), international institutions, scientific knowledge, and stakeholder interests affect the structure of and changes to a nation's health system and its performance. Offered: Sp.

G H 531 Research and Evaluation Methods in Global Health (3-4) *Mock, O'Malley* Provides an overview of a range of evaluation and research designs used in global health. Students learn practical methodologies to obtain, validate, and analyze information regarding health status, services, and programs. Discusses usefulness, validity, limitation of vital records, health reports, household (and cluster) surveys, and qualitative methods. Offered: jointly with EPI 539; W.

G H 532 Responsible Conduct of Research: Global and Local (3) Prepares international and U.S. students to develop research proposals; conduct international and domestic field research; and present scholarly work. Offered: jointly with EPI 586; A.

G H 533 Survey Research Methods (4) A. MOKDAD Provides students with skills in questionnaire development and survey methods. Students develop a questionnaire and design a survey research proposal on a health-related or social topic. Prerequisite: either HSERV 511/HSERV 513; BIOST 517/BIOST 518; or EPI 512/EPI 513, which may be taken concurrently, or permission of instructor. Students should have a survey project in mind. Offered: jointly with CS&SS 527/HSERV 527.

G H 538 Advanced Qualitative Methods in Anthropology and Public Health (5) J. PFEIFFER Provides students with both a theoretical foundation in qualitative approaches to research in anthropology and public health and in-depth training in qualitative data management, analysis, interpretation, and presentation. Focuses on how to frame research questions, design, appropriate research strategies that incorporate qualitative methods, and analyze data. Offered: jointly with ANTH 519/HSERV 521; Sp, even years.

G H 539 Methods, Tools, and Data in Global Health (2) *Gakidou* Familiarizes students with current global health issues and their analytical challenges. Introduces analytical methodologies, quantitative concepts, statistical packages applied to global health challenges, and software used in health metrics and evaluations research. (Two weeks). Offered: A.

G H 541 Fundamentals of Implementation Science in Global Health (4-5) *Sherr, Wasserheit* Provides an introduction to the emerging field of implementation research by outlining various methods that are applied to improving implementation (including applied engineering, management tools, health systems, and policy research), and using experiential case studies from global health leaders. Addresses barriers to effective replication and scale-up in local settings. Offered: Sp.

G H 543 Global Health Pharmacy: Medicines, Practice, and Policy (2) J. BABIGUMIRA, A. STERGACHIS Introduces the critical role of pharmaceuticals in addressing the major diseases affecting persons in resource-limited settings, such as HIV/AIDS, malaria, and tuberculosis. Addresses the wide range of relevant issues, including burden of disease, human resource capacity, regulation, drug safety/pharmacovigilance, drug distribution, pharmacoeconomics, financing, intellectual property, and drug trade policies. Offered: W.

G H 544 Maternal and Child Health in Developing Countries (3) D. DENNO Emphasizes critical health problems of women and children in developing countries in social, economic, and cultural contexts. Practical approaches to developing MCH programs shared via lecture/discussions, exercises, and small group work. Students acquire skills in baseline assessment, setting objectives, planning and evaluating interventions, and involving communities. Offered: jointly with HSERV 544; W.

G H 545 Child Health in Developing Countries ([0-3]-, max. 3) *Denno* Provides an understanding of the causes and functional effects of the most prominent child health problems. Examines trends and progress in global child health and explores potential explanations for these trends. Offered: Sp.

G H 555 Nutrition in Developing Countries (3) *Gorstein* Introduces issues of nutrition in developing countries, with an emphasis on the control and prevention of under nutrition and micronutrient deficiencies. Offered: jointly with NUTR 555; Sp, odd years.

G H 556 Global Mental Health (3) *Rao* Examines the socio-cultural and political forces that impact assessment, manifestation, and treatment of mental illnesses worldwide. Students take a critical view of diagnostic systems and examine cultural differences in presentation of mental illness. Also reviews treatment practices in low resource settings, cultural-specific communication, and stigma. Offered: Sp.

G H 560 Principles of STD/HIV Research (3) *Graham, Winer* Provides MD and PhD fellows and graduate students with a comprehensive overview of the current state of knowledge in specific areas of STD/HIV research, including study design, laboratory methods, production of instruments for data collection, and methods for data analysis. Credit/no-credit only. Offered: S.

G H 561 Tropical Medicine (1) *F. BUCKNER, P. POTTINGER* Intended for professional health science students interested in learning the pathophysiology, epidemiology, and clinical presentation of disease conditions that are more commonly seen in less-developed countries, resource-limited settings, or tropical climates, and how to diagnose, treat, and follow the resolution of these diseases with commonly limited resources. Credit/no-credit only. Offered: jointly with MED 561; Sp.

G H 562 AIDS: A Multidisciplinary Approach (2) *C. FARQUHAR* Comprehensive overview of the public health, clinical, and laboratory aspects of human immunodeficiency virus (HIV) infection and disease. Topics include the pathogenesis, natural history, and management of HIV infections; the impact of HIV/AIDS on community and global healthcare; and prospects for prevention and control. Credit/no-credit only. Offered: jointly with EPI 530/MED 530; A.

G H 563 HIV/STI Prevention Research Methods (3) *J. BAETEN, R. HEFFRON* Focuses on current research and implementation of HIV/STI prevention (biomedical, behavioral, and public health interventions). Includes analyzing strength of research evidence to support candidate interviews, understanding key features of clinical trial design, and applying appropriate/feasible interventions for specific settings and populations. Offered: jointly with EPI 549; Sp.

G H 566 Biochemistry and Genetics of Pathogens and Their Hosts (4) *L. Campbell* Provides a strong foundation in biochemistry, molecular biology, and genetics for students interested in disease. Principles illustrated through examples focusing on pathogens, and infectious and non-infectious disease. Prerequisite: undergraduate-level coursework in molecular biology or biochemistry, or permission of instructor. Offered: jointly with PABIO 551; A.

G H 571 Essential of Clinical Care and Capacity Building in Low Income Countries (2) *Pak-Gorstein, Zunt* An interdisciplinary case-based forum of presentations by local and international lecturers and class discussions on realities of providing healthcare in low-income settings. Covers issues in prevention, socioeconomic underpinnings, management of medical and surgical conditions, and sustainable strategies to build capacity. Credit/no-credit only. Offered: W.

G H 572 Global Health Fieldwork: Preparation, Integration, Reentry (2) *S. GRAHAM* Prepares students for community-based global health experiences, and provides them the opportunity to share, discuss, and reflect on these experiences after returning to the United States. Explores the problems and promise of current global health strategies. Prerequisite: participation in International Health Opportunities Program or similar experience. Credit/no-credit only. Offered: S.

G H 573 Clinical Management of HIV (2-3) *M. CHUNG, H. KIM* Provides in-depth case-based training on the diagnosis and clinical management of HIV and associated condi-

tions. Includes interactive format with speakers who have experience in both resource-rich and resource-limited settings. Offered: jointly with CONJ 553; Sp.

G H 575 Integrated Residency Global Health Leadership (3) *Farquhar, Roxby* One-month rotation course for residents integrated in career in global health. Designed to teach residents the skills necessary to become future leaders in this field. Comprised of several different components, including field visits to local global health organizations, lectures, and small group case-based discussions. Credit/no-credit only. Offered: A.

G H 576 Health in Complex Humanitarian Emergencies (2) *D. TOWNES* Covers the principles of planning, implementing, and evaluating health programs for refugees and internally displaced persons during complex humanitarian emergencies in resource poor countries. Topics include rapid assessment; surveys; surveillance; nutrition; camp management; epidemiology of infectious diseases; water and sanitation; and vaccination campaigns during international relief operations for complex humanitarian emergencies. Credit/no-credit only.

G H 580 Global Health Doctoral Seminar: Biology, Systems, and Measurement (2, max. 8) *Gakidou, Lukehart, Sherr* Examines the most critical issues in global health and currently available solutions. Introduces complementary perspectives of pathobiology, metrics, and implementation science to build a multidisciplinary understanding of these issues, including effective and appropriate strategies for their control. Offered: AWSp.

G H 590 Selected Topics in Global Health (1-5, max. 15) Focuses on topics relevant to global health. Offered: AWSpS.

G H 592 Program Seminars (1-6, max. 6) Addresses specific educational needs of students within the Department of Global Health. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSp.

G H 593 MPH Workshop (1, max. 3) *Rao* Introduces students to the issues involved in conceptualizing and completing thesis projects and the various international health organizations and faculty members available as resources to projects. Prerequisite: first-year Global Health MPH students. Offered: AWSp.

G H 595 Master's Practicum (1-6, max. 6) Supervised practice experience providing an opportunity to apply knowledge and skills in a setting of relevance to global health. Prerequisite: permission of faculty adviser. Credit/no-credit only. Offered: AWSpS.

G H 600 Independent Study or Research (*) Prerequisite: permission of instructor. Offered: AWSpS.

G H 700 Master's Thesis (*) Prerequisite: permission of instructor. Offered: AWSpS.

G H 800 Doctoral Dissertation (*) Prerequisite: permission of Graduate Program Advisor. Offered: AWSpS.

ness of ethic and cultural characteristics and healthcare access, health and healthcare concerns of specific communities, traditional and alternative health-care practices, and community-based promotion and disease prevention programs. Credit/no-credit only.

UCONJ 411 Psychology of Aging (3) *Kiyak* Focuses on developing the skills necessary for critically evaluating current psychological theories of aging, research findings in this area, and the implications of findings on the aging person. Special consideration given to the effects of socioeconomic, sex, and ethnic differences in the psychology of aging. Open to upper-division undergraduates and beginning graduate students interested in the field of gerontology.

UCONJ 412 The Family in Later Life (3) Focuses on issues affecting older persons and their families. Addresses demographic influences on families; roles, rules for and function of family members; inter-generational relationships; economic, political, and social policy affecting family life; and cultural variations and supportive resources for older persons and their families.

UCONJ 413 Current Issues in Aging (3) Describes the population trends at work in the United States and other developed nations with significant societal implications for care and management of elders. Evaluates selected public policies related to aging. Gives students proficiency in using resources related to aging on the Internet. Evaluates alternative long-term care models.

UCONJ 420 Biological Safety Practices (1) *Kenny* General introduction to appropriate laboratory procedures used for handling potentially hazardous biological agents. Particular focus on laboratory safety and appropriate protocols that should be employed by those engaged in infectious disease and recombinant DNA research. Credit/no-credit only.

UCONJ 422 Sexually Transmitted Diseases: An Overview (2) *Gardner* Clinically oriented course designed to provide a knowledge base for upper-division health science students to participate effectively in community outreach programs for the prevention of sexually-transmitted diseases. Offered cooperatively by the departments of Pharmacy and Medicine.

UCONJ 440 Biological Aspects of Aging (3) Introductory course on aspects of the biology of human aging and of functional changes associated with normal aging and with those illnesses that may be present in the elderly. Focus on the relationship between changes in physical function, environment, and quality of life. Includes theoretical perspective on aging as well as the aging process in specific physiological systems. Designed for upper-level undergraduate students with an interest in aging.

UCONJ 442 Social and Cultural Aspects of Aging (3) Involves faculty members from the various social science fields examining the range and variation of relationships among age-linked attitudes and cultural values related to aging; the social and economic factors that influence the elderly in contemporary society; the effects of ethnic and sex differences in sociocultural aging. Open to upper-division undergraduates and beginning graduate students interested in gerontology.

UCONJ 500 Seminar in Interprofessional Collaboration ([1-3], max. 7) Interdisciplinary teams composed of students and community members placed in diverse urban settings to address an identified community need by developing and implementing collaborative, community-based projects. Seminars emphasize interprofessional collaborative practice, intrapersonal understanding, interpersonal group process skills, organizational savvy, community awareness, and sociocultural sensitivity. Offered through Graduate School of Public Affairs. Offered: AWSp.

UCONJ 504 Advanced Interdisciplinary Case Studies in Global Health (3) *Gorstein, Kurth, Shell-Duncan* Uses actual multidisciplinary case studies to (1) analyze quantitative parameters of diseases, (2) contrast the descriptive

University Conjoint

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

UCONJ 100 Introduction to Health Professions (1) *Garcia* Opportunities in health professions. Information on educational requirements, professional/patient interaction, licensing, registering for practice in profession, salaries, and career opportunities.

UCONJ 290 Diversity Issues in the Healthcare Environment (1-2, max. 2) *I&S* Introduction to the complexity of the issues surrounding culture and health, the interrelated-

and analytic approaches of health sciences, anthropology, and nutritional sciences, (3) integrate diverse disciplinary perspectives into cohesive information, (4) organize class presentations, and (5) apply critical thinking in approaching complex health issues. Offered: Sp.

UCONJ 510 Introductory Laboratory Based Biostatistics (2) Introduces methods of data description and statistical inference for experiments. Covers principles of design and analysis of experiments; descriptive statistics; comparison of group means and proportions; linear regression; and correlation. Emphasizes examples from laboratory-based biomedical sciences, and provides demonstrations using standard statistical programs.

UCONJ 517 Interdisciplinary Clinical Research Methods Seminar (2) Provides an introduction to clinical/translational relational research methods, including selection of research questions, study design, measurement, data analysis, and practical aspects of conducting research in clinical settings. Prerequisite: Students from Health Sciences schools conducting research under the Multidisciplinary Predoctoral Clinical Research Training Program. Credit/no-credit only. Offered: S.

UCONJ 520 Molecular Biophysics Research Seminar (1) *Parson A* series of research seminars for faculty and students involved with the molecular biophysics program. Credit/no-credit only.

UCONJ 524 Developmental Neurobiology (3) *Raible, Reh* Survey of contemporary issues in developmental neurobiology, including neurogenesis and differentiation; electrophysiological, morphological, and neurochemical regulation of cellular phenotype; neuronal pathways and synaptic contacts; cellular and synaptic plasticity; and behavior. Examination of molecular biological, morphological, electrophysiological, and behavioral approaches. Prerequisite: background in neurophysiology, neuroanatomy, molecular neurobiology. Offered: Sp.

UCONJ 525 Overview of Faculty Research in Neurobiology (1) Reviews research topics currently being studied in neurobiology. Student preparation consists of reading pertinent articles published on each topic. Prerequisite: first-year graduate student in neurobiology. Credit/no-credit only.

UCONJ 530 Issues in Indian Health (2) Surveys historical and contemporary issues in Indian health. Covers Indian contributions to health, traditional Indian medicine, current disease epidemiology, development of federal Indian health policy, the Indian Health Service, tribal health programs, and consequences of major legislation on Indian health. Prerequisite: current health science student or permission of instructor.

UCONJ 531 Introduction to Mind Body Medicine-An Experiential Elective (2) Sessions contain a didactic component followed by an experiential component and cover a variety of self-care techniques including meditation, exercise, and nutrition. Goals are to promote personal well being, a healthy lifestyle, reduce burnout, and reduce academic difficulties. Credit/no-credit only.

UCONJ 532 Health Sciences Common Book Seminar (1, max. 4) *R. ARNOLD* Covers material related to the current health sciences common book, and provides knowledge of key barriers underserved populations face in obtaining adequate healthcare, and strategies health professions can use to effectively care for underserved individuals. Guest speakers include community leaders. Service learning course. Credit/no-credit only. Offered: W.

UCONJ 545 Emergency Preparedness for Health Professionals (1) Introduces the roles of health professionals in preparing for community-wide disasters. Emergency preparedness content for graduate and professional students in health sciences. First of two interdisciplinary courses focusing on "all-hazards" preparedness. Credit/no-credit only.

UCONJ 546 Emergency Response for Health Professionals (2, max. 6) Focuses on interdisciplinary emergency preparedness and response for graduate students in health professions. Includes system and policy issues with emphasis on clinical relevance for health professionals. Second of two interdisciplinary courses focusing on "all-hazards" preparedness. Credit/no-credit only.

UCONJ 548 Current Issues in First Nations Behavioral Health: Mental Health and Substance Abuse (3) Historical and intergenerational antecedents of tribal psychiatric and substance abuse disorders. Oppression, economic circumstances, and family functioning as shaping mechanisms for attachment. Implications of insufficient attachment for neuro-development and developmental psychopathology. Traditional vs. mental health and substance abuse assessment and treatment. Self as provider to tribal clients, communities, systems.

UCONJ 550 Healthcare in the Underserved Community (1) Gives graduate/professional students in health sciences an introduction to health related issues faced by underserved populations. Credit/no-credit only.

UCONJ 584 Plant Tumors (1, max. 9) *Gordon* Discussion of the literature of plant tumors and current research work being done in this area at the University. Offered cooperatively by the departments of Biochemistry, Biology, and Microbiology and Immunology. Prerequisite: offered only to persons actively pursuing work in this area. Credit/no-credit only.

UCONJ 599 Selected Readings in Interdisciplinary Clinical Research (1, max. 6) *Marshall, Mitchell* Analysis and synthesis of selected readings and works in progress related to multidisciplinary and interdisciplinary clinical research. Prerequisite: UCONJ 517; permission of instructor. Credit/no-credit only. Offered: AWSp.

UCONJ 624 Health Equity and Community Organizing (1) *Arnold* Equips students with tools to organize themselves and others to address social and structural injustices that perpetuate health disparities. Didactic coursework complemented with opportunities to apply skills and gain confidence through hands-on collaboration with local leaders and engagement in community-driven listening and advocacy campaigns. Credit/no-credit only. Offered: AW.

School of Law

Dean

Kellye Y. Testy

Associate Deans

Steve Calandrillo

Penny A. Hazelton

Mary Hotchkiss

Peter Nicolas

Assistant Deans

Stephanie Cox

Interim Assistant Dean

Naomi Sanchez

Established in 1889, the School of Law is a member of the Association of American Law Schools and is on the American Bar Association's list of approved law schools. Graduates of the School are prepared to practice law anywhere in the United States. Additional information about the School is contained in the current School of Law catalog.

Facilities and Services

The School of Law, housed in William Gates Hall since 2003, is equipped with classroom, clinical, library, lounge, and office facilities. Eleven classrooms are equipped for multi-media presentations, wireless internet connection, and assistive-listening systems.

The Marian Gould Gallagher Law Library is among the largest university law collections on the West Coast. The collection currently contains more than 450,000 bound volumes and volume equivalents of microform. In addition to the extensive main collection, it houses important materials that support the Asian, marine, sustainable international development, and tax law graduate programs and serves as a federal depository for selected United States government documents. The library is equipped with the latest in microreaders and printers in order to make full use of the growing microform collection. The library is a subscriber to LEXIS, WESTLAW, the Western Library Network, and other research databases.

JURIS DOCTOR PROGRAM

The Juris Doctor (JD) degree is conferred upon a student who has met the residence requirements, consisting of nine quarters of at least 12 credits each, and has earned at least 135 credits satisfactory to the School of Law.

As with most law schools in the United States, the first-year courses are required and are designed to introduce students to basic legal skills, foundational subject matter, and the variety of public and private processes with which the profession is concerned. Those courses deal with contracts, torts, property, civil procedure, criminal law, constitutional law, and basic legal skills.

Except for a required course in professional responsibility, the public service requirement, and an advanced writing project requirement, courses in the second and third years are elective. Therefore, a student may choose a program designed to suit his or her interests and needs. JD candidates are required to perform 60 hours of public-service legal work during the second or third year.

Admission

New students may enter the School of Law only in autumn quarter. For first-year students, instruction begins earlier than for upper-class students. Students must have earned a baccalaureate degree from an accredited college or university prior to commencing the study of law.

All applicants are required to take the Law School Admission Test (LSAT) and to register for the Law School Data Assembly Service (LSDAS). Registration packets and test information are available at most law schools and from Law School Admission Council, Box 2000, Newtown, PA 18940-0998. www.lsac.org

No specific prelaw course is required or recommended, and the School of Law subscribes to the remarks set forth on prelaw preparation in The Official Guide to U.S. Law Schools (2000 Edition). Applications for admission to the next entering class must be postmarked no later than January 15. To be assured of consideration, an applicant must have complete credentials, including the LSDAS report, filed in the School of Law by February 1. An application fee (at this writing, \$50) also is required.

Transfer Applicants

Students who have completed at least one year at a member school of the Association of American Law Schools may apply for admission with advanced standing, with credit for no more than one year of such work. A student who has completed or expects to complete at least two years of work at a member school of the Association of American Law Schools and who expects to graduate from that member school may apply to this school for admission as a non-degree candidate.

Applicants should request application forms and instructions from the admissions office in time to permit filing of all application materials by July 10.

Applications are considered only if vacancies exist. Selection is based on evidence either (1) that the candidate can produce above-average work at this law school, or (2) that the candidate will contribute to the diversity of the student body.

Students working on law degrees to be conferred by the University have priority over non-degree candidates in the selection of courses. This policy is in accordance with the general University policy on the registration of nonmatriculated students.

Financial Aid

Students in need of financial assistance may receive University aid, School of Law aid, federal loans, or aid from all these sources. To be considered for aid, applicants must submit the Free Application for Federal Student Aid (FAFSA) by February 28. FAFSAs are available in December at most college financial aid offices, or may be obtained by writing or calling the Office of Student Financial Aid, 105 Schmitz Hall, Box 355880, University of Washington, Seattle, WA 98195, (206) 543-6101, offa@uw.edu. Applicants for admission should not wait until they have been admitted before applying for financial aid.

School of Law grants are awarded primarily on the basis of financial need, although scholarship or other factors may be considered for certain awards. Inquiries concerning School of Law aid should be addressed to Financial Aid Coordinator, School of Law, William Gates Hall, Box 353020, University of Washington, Seattle, WA 98195-3020; uwlawaid@uw.edu.

Inquiries

A more detailed statement on admission policy and application procedure is available from the School of Law. Requests for application materials and the University law school bulletin should be addressed to Law School Admissions, William Gates Hall, Box 353020, University of Washington, Seattle, WA 98195-4617; admissions@law.washington.edu; (206) 543-4078.

GRADUATE PROGRAM

Graduate Program Coordinator

William Gates Hall, Box 353020

(206) 543-4937

gradlaw@uw.edu

In addition to the professional law program leading to the Juris Doctor degree, the law faculty offers graduate programs leading to the Master of Laws (LLM) in Asian and Comparative Law, the law of sustainable international development, intellectual property law and policy, and taxation. The School of Law offers the Doctor of Philosophy (PhD) degree in Asian and Comparative Law only.

Master of Laws

Admission Requirements

1. Minimum B or 3.00 GPA in the most recent two years of study.
2. U.S. applicants must have completed their first degree in law (JD or equivalent) at a school accredited by the American Bar Association.
3. International students must have a first degree in law (LLB, BLaw) or equivalent and a minimum TOEFL score of 580 or 237 (TOEFLC).

Degree Requirements, Asian and Comparative Law

36 credits, as follows:

1. *Required Courses:* LAW B 551, LAW 600, LAW B 550; two courses in Asian and comparative law
2. *Elective Courses:* Additional courses, chosen in consultation with adviser, to bring total credits to 36.

Degree Requirements, Intellectual Property Law and Policy

40 credits, to include:

1. *Required Core Courses:* LAW P 501, LAW P 510
2. *Additional Requirement for Students Not Trained in the Common Law System:* LAW P 503
3. At least 16 additional credits drawn from a list of approved elective courses.
4. Research project and thesis

Degree Requirements, Law of Sustainable International Development

40 credits, as follows:

1. 15 credits in Law School classes. The remaining 25 credits may be earned in any other departments of the University. Sustainable international development students are required to take courses in at least three departments other than the Law School.
2. *Writing and Research Requirement:* Completion of a research paper is required and is generally satisfied by LAW B 578.
3. LAW A 545

Degree Requirements, Taxation

36 credits, as follows:

1. *Required Courses:* LAW T 501, LAW T 502, LAW T 503, LAW T 504, LAW T 510, LAW T 511
2. *Core Electives:* Two of the following courses: LAW T 515, LAW T 516, LAW T 521, LAW T 530
3. *Electives:* Additional courses, chosen in consultation with adviser, to reach 36 credits for degree

Doctor of Philosophy

Admission Requirements

Admission to the PhD program is limited to exceptional scholar-lawyers who are fluent in English and in another language. Prospective PhD students must normally complete the LLM program before being accepted as PhD students. The School does, however, welcome applications from candidates with equivalent academic standing and a demonstrated capacity for advanced research and writing.

Degree Requirements

90 credits, to include:

1. An LLM degree is counted toward the credit necessary for the PhD program.
2. Doctoral thesis seminar (4 credits)
3. Other coursework (26-29 credits): Coursework varies according to student's research interest areas and is determined in consultation with Supervising Committee
4. Doctoral dissertation (27-30 credits)

Financial Aid

Scholarship funds for graduate students in law are quite limited. Inquiries should be made to Law School Graduate Admissions, William Gates Hall, Box 353020, University of Washington, Seattle, WA 98195; gradlaw@uw.edu; (206) 543-4937.

Inquiries

Requests for applications and program brochures for all School of Law LLM programs except the LLM in taxation, as well as information regarding application procedures, should be addressed to Law School Graduate Admissions, William Gates Hall, Box 353020, University of Washington, Seattle, WA 98195.; gradlaw@uw.edu.

Requests for applications and program brochures for the LLM in taxation should be addressed to Law School Graduate Tax Admissions, William Gates Hall, Box 353020, University of Washington, Seattle, WA 98195; gradlaw@uw.edu.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

LAW 100 Introduction to American Law (2-5, max. 5) I&S T. MYHRE Examines the structure of the American legal system and how laws are made. Surveys key doctrinal areas of the law learning fundamental legal concepts, and explore how the law functions and evolves over time, including legal issues and decision-making related to statutory or common law. Offered: A.

LAW 300 Introduction to Law (3-6, max. 6) I&S Understanding the legal system, its functions in the social-economic order, legal reasoning, and the world of legal education and the legal profession. Open to nonlaw students only.

LAW 301 Introduction to Common Law Legal Reasoning (3) I&S Examines legal reasoning based on case law precedent using short, modern judicial decisions, summarizing those decisions in case briefs, breaking legal rules down into their elements, applying rules to facts, and reasoning by analogy from judicial decisions to hypothetical fact patterns.

LAW 305 Global Health and Justice (3-5) I&S

LAW 310 Law, Science, and Technology (4) I&S

LAW 410 Problems in Professional Responsibility (4) I&S

LAW 415 Criminal Justice (3) I&S Examines pre-trial rights of persons suspected or accused of crime, primarily those

rights covered by the Fourth, Fifth, Sixth, and Fourteenth Amendments of the U.S. Constitution.

LAW 416 International Contracting: Negotiation and Drafting (3) I&S Skills course designed to introduce process and problems of negotiating and drafting international agreements. Client interviewing and counseling and negotiation and drafting of a contract between parties in the United States and Japan. Open to nonlaw students only. Credit/no-credit only.

LAW 422 Copyright (3) I&S

LAW 429 Public Land Law (3) I&S

LAW 440 Legal Issues of Internet Law (3) I&S Introduces the basic legal issues raised by networked digital technologies, such as the Internet. Covers jurisdiction, speech, privacy/access, propriety rights (copyrights, domain names), emerging law, leading policy debates, as well as fundamental Internet technical skills. Offered: S.

LAW 442 Land Law and the Urban Environment (3) I&S Examination of the major legal tools available to shape the urban environment by controlling the use of land. Considers zoning, subdivision controls, urban renewal, private land-use restrictions, and the rules of nuisance law. Open to law and nonlaw students. Credit/no-credit only.

LAW 443 The Legal Process I (3/5) I&S The system of law and its functions rather than substantive law pertaining to any particular subject or discipline. Open only to nonlaw students.

LAW 444 Constitution and American Public Education (3-6, max. 6) I&S Examines the relationships between the Constitution of the United States and the American system of public education, excluding higher education, in areas of constitutional freedom and legal controls, racial desegregation, and equal educational opportunity, including equal financing of the public schools. Credit/no-credit only. Offered: jointly with EDLPS 444.

LAW 445 Major Issues in American Constitutional Law (3) I&S Significant themes in American constitutional law. Doctrine of judicial review, application of the Bill of Rights to the states, Supreme Court's recognition of fundamental rights, the Equal Protection clause, the Religion clauses, freedom of speech, and presidential powers. Open to law and nonlaw students.

LAW 447 Critical Perspectives in Law (3) I&S Examination of modern critical legal thought and critics views regarding proposed alternative forms of social ordering.

LAW 476 International Economic Relations and Trade Policy (3) I&S Consideration of international control of national trade policies and permissible transnational reach of national trade or other regulation. The General Agreement on Tariffs and Trade (GATT) and the international monetary system examined from legal and economic perspective. Examination and comparison of prescriptive jurisdiction to public international law.

LAW 477 Law, Literature, and Film ([2-4]-, max. 4) VLPA/I&S An examination of literary and cinematic portrayals of and issues important to law, lawyers, and the legal system. Considers both portrayals purporting to depict the legal system as well as works envisioning lawyers and the legal system in a "better world."

LAW 481 Land, American Culture, and the Law: Perspectives on the Use and Ownership of the Natural Environment (1-6, max. 6) I&S

LAW 489 Law and Aging (3) I&S Survey of principal areas of law of special concern to aging population, considering healthcare and healthcare decision-making, public and private income maintenance programs, taxation, guardianships, conservatorships, and other methods of protecting the property of the elderly, counseling, and professional responsibility.

LAW 600 Independent Study or Research (*)

LAW 800 Doctoral Dissertation (*)

Law A

LAW A 501 Contracts ([2-8]-, max. 8)

LAW A 502 Civil Procedure I ([2-6]-, max. 6)

LAW A 503 Property I ([2-8]-, max. 8)

LAW A 504 Torts ([2-8]-, max. 8)

LAW A 505 Criminal Law ([2-5]-, max. 5)

LAW A 506 Legal Analysis, Research, and Writing ([1-7]-, max. 7)

LAW A 507 Constitutional Law I: Constitutional Structures of Government ([3/6]-, max. 6)

LAW A 508 Comparative and International Law Survey (3) Taylor, Walsh, Winn Survey of basic principles of public international law; comparative and historical overview of various legal traditions (civil law, common law, Islamic law, and mixed systems). Examines sources, subjects, and challenges of international law, and methodology of comparing foreign legal systems, providing perspective on U.S. legal system and rules. Offered: Sp.

LAW A 509 Administrative Law (3-5)

LAW A 510 Sales (3-4)

LAW A 511 Payment Systems (2/4)

LAW A 512 Secured Transactions (3-4)

LAW A 513 Creditor-Debtor Law ([2-3]-, max. 5)

LAW A 514 Publicly Held Corporations (3)

LAW A 515 Business Organizations (4-5)

LAW A 516 Legal Accounting (3)

LAW A 517 Securities Regulation (4) Examines the federal regulations of the offer and sale of securities and the public offering process under the Securities Act of 1933; exemptions from federal registration; the reporting obligations of public companies under the Securities Exchange Act of 1934, and the examination of the impact of the Sarbanes-Oxley Act of 2002.

LAW A 518 Restitution (3)

LAW A 519 Transmission of Wealth (3-5)

LAW A 520 Property II ([2-8]-, max. 8)

LAW A 521 Community Property (2/3)

LAW A 522 Copyright (3/4)

LAW A 523 Real Estate Transactions (3/4)

LAW A 524 Law, Science, and Technology (3) P. KUSZLER Considers how the linkage between science and law has become more pivotal with advancements in technology. Topics include science in the context of criminal law, public regulation, and individual rights. Explores the power of science to promote justice and expose injustice. Offered: A.

LAW A 525 Water Law (4)

LAW A 526 Copyrights and Trademarks (5)

LAW A 527 Environmental Law (4)

LAW A 529 Public Land Law (3)

LAW A 530 Individual Income Tax ([2-6]-, max. 6)

LAW A 531 Death and Gift Taxation (2-5, max. 5)

LAW A 532 Taxation of Business Entities (5)

LAW A 534 Mergers and Acquisitions (4-6) Deals with tactics, strategy, and state and federal law relating to transactions by means of which corporations and other forms of business entity combine. Emphasizes corporate law with some treatment of federal tax and securities law issues. Prerequisite: either LAW A 515 or LAW A 567.

LAW A 535 Trademarks and Unfair Competition (2)

LAW A 536 Securities and Shareholder Litigation (2) Kaplan Covers securities and shareholder litigation in its broadest sense including federal securities litigation, state securities litigation, SEC enforcement, and state law-based derivative litigation. Offered: Sp.

LAW A 537 Taxation of Corporations, Partnerships, and Limited Liability Companies (4-)

LAW A 538 Estate Planning Workshop (3-4)

LAW A 540 Land Use Planning Seminar (3)

LAW A 541 Transnational Tax (5)

LAW A 542 Land Law and the Urban Environment (3)

LAW A 543 Business Reorganization Under the Bankruptcy Code (4)

LAW A 544 Transnational Commercial Law (3-4) Examines the political economy of transnational commercial law. Uses select international harmonization instruments (e.g. Cape Town Convention on International Interests in Mobile Equipment, UNCITRAL Model Law on Cross-Border Insolvency, Vienna Convention on Contracts for the International Sale of Goods) to illustrate and critique different methodological and institutional approaches.

LAW A 545 International Environmental Law (3-4)

LAW A 546 Patents ([2-4]-, max. 4)

LAW A 547 Critical Perspectives on Law Seminar ([2-4]-, max. 4) Considers law from the point of view of Continental philosophy and critical social theory. Involves close readings and intensive discussion of canonical texts from various critical traditions of thinking about law. Students also write and present papers concerning themes raised by the readings. Offered: A.

LAW A 548 Civil Rights ([2-6]-, max. 6)

LAW A 549 Advanced Legal Research (4)

LAW A 550 Constitutional Law ([2-8]-, max. 8)

LAW A 551 Global Governance Seminar (3-4) Introduces international and transnational regimes governing issues as varied as international economic inequality and instability; conflict and peace-building; humanitarian crises and intervention; and global environmental change. Explores principles of regime design and legal architecture. Evaluates the effectiveness and legitimacy of various modes of global governance.

LAW A 552 Antitrust Law and Policy ([2-5]-, max. 5)

LAW A 553 Feminist Jurisprudence (4) Explores the intersections of law and sex, gender, and sexuality with the aid of various theoretical lenses, prominently feminist legal theory. Focuses on those areas of law where notions of sex, gender, and sexuality seem conflated and confused.

LAW A 554 Labor Relations and the Law ([1-5]-, max. 5)

LAW A 556 Employment Discrimination ([2-4]-, max. 4)

LAW A 558 National Security Law Seminar ([2-6]-, max. 6) *Allen* Three-quarter seminar that provides an opportunity for study and research in selected legal issues relating to national security law and its processes and institutions. Prerequisite: LAW A 507. Offered: AWSp.

LAW A 560 Employment Issues (2/3) Examination of issues under selected employee protection laws. Analysis of the Fair Labor Standards Act, Workers' Compensation, and Social Security Act (related to retirement, disability, and supplemental income benefits). Includes assessment of public assistance issues for low-wage workers. Prerequisite: LAW A 509, LAW A 562, or permission of instructor.

LAW A 561 Law and Economics (2-4, max. 4) Offered: jointly with PB AF 519.

LAW A 562 Employment Law (3-4) Examines the law governing the employment relationship, including the establishment and termination of employment. Topics include employee duties, prohibited employment practices, regulation of wages, hours, and benefits of employment, workers' compensation, and occupational safety and health.

LAW A 563 Local Government Law (3)

LAW A 564 American Legal History (1-4, max. 4) Reviews the American legal history from colonial times to the civil rights era. Readings cover early constitutionalism, the republican revolution, the antebellum movement, the end

of slavery, the regulatory state, and rights of women and minority groups.

LAW A 565 American Indian Law (4)

LAW A 566 Theories of Justice ([2-4]-, max. 4)

LAW A 567 Closely Held Business Organizations (4) Examines elements of various unincorporated business forms and closely held corporations. Reviews relevant state statutes and case law related to each form relevant to advising small business clients on the choice of business form utilized in their ventures. Not open to students who have taken LAW A 515. Offered: A.

LAW A 568 Collective Bargaining and Labor Arbitration (2-4)

LAW A 569 Investments Funds and Managers Seminar (3) *Krug* Explores U.S. regulation of investment managers and invest companies, including hedge funds and mutual funds. Topics draw heavily from federal securities laws, particularly the Investment Advisers Act and the Investment Company Act of 1940, and encompass regulatory developments/proposals and policy considerations underpinning investment industry regulation. Offered: Sp.

LAW A 571 International Organizations Seminar (3) Provides a critical introduction to some of the issues that are important to understanding how international organizations function today. Focuses on the role of international organizations in the modern forms of international law-making, regulation, and global governance.

LAW A 572 Criminal Justice Policy (4) Provides overview of key policy issues arising in the criminal justice system, such as mass incarceration, victim's rights movement, racial disparities, and wrongful conviction. Considers role of prosecutors and public defenders in contributing to or alleviating these problems, and how participants in the system can provide leadership in addressing them.

LAW A 574 International Law (2-4, max. 4)

LAW A 575 Human Rights History: Rights, Revolutions, Republics, 1750-1850 (4) *Walsh* Comparative constitutional history of rights lawyering. Includes political trials from French Revolution in Europe through postcolonial Jacksonian American Republic. Covers basic rhetoric of early human rights discourse: on treason, seditious libel, racial equality, servitude, labor conspiracy, religious liberty, consumer protection, and codification. Offered: W.

LAW A 576 Cross-Border and International Criminal Law (3-4) *Allen* Examines responses by states and international organizations to international and transnational crimes. Covers substantive and procedural international criminal law, criminal responsibility, defenses and immunities, and the prosecution and punishment of international criminals in both national and in international tribunals. Prerequisite: LAW A 505. Offered: W.

LAW A 577 Immigration Law (3/4)

LAW A 578 International Business Transactions ([1-4]-, max. 4)

LAW A 579 Child Advocacy Seminar (2-4, max. 4) *Kelly* Includes child abuse and neglect, parental rights termination, paternity, and an overview of other practice areas as they intersect with issues of child abuse and neglect. Focuses on Washington law and practice, covering applicable substantive and procedural law, local practice rules, and professional responsibility. Offered: A.

LAW A 580 Family Law (3-5)

LAW A 581 Washington Constitutional Law Seminar ([1-4]-, max. 4) Studies the history, structure, content, and role of state constitutions generally, and the development of Washington's constitution in particular. Examines the important distinctions between the federal constitution and state document, and the interplay between them. Covers state declarations of rights and the substantive sections of state constitutions that relate to the structure, role, and constraints. Offered: A.

LAW A 582 Bankruptcy (3-4)

LAW A 583 Insurance Law (4)

LAW A 584 American Public School Law (3) Constitutional, statutory, and common law principles common to all public education systems within the United States. Applicable law in a variety of substantive legal areas such as torts, property, contracts, administrative law, and fundamental rights. Offered: Sp.

LAW A 585 Admiralty (3-5)

LAW A 586 Advanced Family Law Seminar (2-4) Discusses family law topics previously excluded or covered only minimally including: adoption, paternity, guardianship, third-party custody, parenting plans in the child welfare context, and family law in the intimate partner violence context. Prerequisite: LAW A 580.

LAW A 589 Elder Law (4)

LAW A 590 Constitutional Law: Equal Protection, Fundamental Rights, and Due Process of Law (4-5)

LAW A 591 Constitutional Law: Freedom of Expression (4-5)

LAW A 592 Constitutional Law II ([2-8]-, max. 8) Examines individual constitutional rights, primarily involving guarantees of due process and equal protection found in the 5th and 14th Amendments. Focuses on constitutionality of laws that classify people on basis of race, sex, sexual orientation, and other bases, as well as laws that restrict abortion, contraception, sexual activity, and other individual freedoms. Prerequisite: LAW A 507.

LAW A 595 Jurisprudence and Legal Philosophy ([2-4]-, max. 4) Surveys classic jurisprudential questions in the study of the nature, norms, and justifications of legal systems. Focuses on theories of adjudication, and covers the major twentieth and twenty-first century schools of jurisprudential thought, especially American Legal Realism, Natural Law, Legal Positivism, and Critical Legal Theory.

LAW A 597 Intensive Legal Writing Workshop (2-4) Focuses on how the rhetorical situation of legal writing influences choices about grammar, syntax, sentence structure, and paragraph structure. Students learn to use structures that best serve law-trained readers' needs for clear, concise, cohesive writing, and practice critical reading skills and techniques for self- and peer-editing.

LAW A 598 Legal Research I (3) Introduction to legal bibliography and law librarianship. Basic primary and secondary legal bibliographic tools. Integration of manual and computer resources for effective legal research. Emphasis on state materials. Offered: jointly with LIS 591.

LAW A 599 Legal Research Methods (3/4) Legal tools that answer more complex legal research problems, such as federal legislative histories, sources of administrative law, specialized subject research. Federal emphasis. Builds on skills and techniques taught in LIS 591/LAW A 598. Extensive work with online resources. Prerequisite: LIS 591 or permission of instructor. Offered: jointly with LIS 592.

Law B

LAW B 500 Civil Procedure II (2-4)

LAW B 503 Evidence ([2-6]-, max. 6)

LAW B 506 Conflicts of Laws ([2-6]-, max. 6)

LAW B 507 Federal Courts and the Federal System (3/4)

LAW B 508 Business, Social Responsibility, and Human Rights (2-4) *A. RAMASASTRY* Addresses business obligations to respect human rights. Offered: A.

LAW B 510 Problems of Professional Responsibility (2-4, max. 4)

LAW B 511 Decision Making for Lawyers: Concepts, Duties, and Skills (3) Enhances students' legal judgment, problem-solving, and prediction skills. Analyzes the psychology of decision making; describes the legal malpractice and disciplinary implications of deficient decision

making; identifies the frequency, costs, and predictors of adverse legal outcomes; and demonstrate methods to improve decision making.

LAW B 512 Legislation and the Formulation of Public Policy (2-3)

LAW B 513 Advanced Seminar ([2-4]-, max. 4) Covers advanced topics in evidence law and policy. Prerequisite: LAW B 503, which may be taken concurrently.

LAW B 514 Street LawClinic ([1-8]-, max. 8)

LAW B 515 Criminal Procedure: Investigation (5)

LAW B 516 International Contracting ([2-4]-, max. 4)

LAW B 517 Juvenile Justice Seminar ([1-6]-, max. 6)

LAW B 518 Appellate Advocacy ([1-3]-, max. 3) Credit/no-credit only.

LAW B 519 Pre-Trial Practice (3-4) Offered: A.

LAW B 520 Trial Advocacy ([2-6]-, max. 6) Credit/no-credit only.

LAW B 521 Trial Advocacy II (3-, max. 6) *Howard* Addresses more advanced trial advocacy issues than are covered in LAW B 520. Includes a civil or criminal track of study and work with trial lawyers who specialize in that area of practice on more sophisticated issues of strategy, evidence, creative use of exhibits at trial, technology in the courtroom, and ethics. Prerequisite: LAW B 520; permission of the Director of the Trial Advocacy Program. Offered: WSp.

LAW B 522 Mediation Skills Training (1) Focuses on collaborative style of mediation. Through a mix of theory and practice, students learn the skills, tools, and processes used by mediators. Students observe and practice the five-steps of the mediation process, through demonstrations and roleplaying. Individual coaches work with students to hone their skills. Credit/no-credit only. Offered: AW.

LAW B 523 Negotiation (2-4, max. 4) Credit/no-credit only.

LAW B 524 Alternative Dispute Resolution Seminar (2-, max. 4) Provides opportunities for study, research, and writing related to the legal, policy, and ethical issues in the emerging field of alternative dispute resolution (ADR). Research papers satisfy the advanced writing requirement for JD students. Prerequisite: permission of instructor if LAW B 525 already completed.

LAW B 525 Alternative Dispute Resolution (3) Overview of alternative dispute resolution including negotiation, mediation, arbitration, med-arb, early neutral evaluation, mini-trials, summary jury trials, and E-ADR. Critical evaluation of each process occurs through a combination of assigned readings, roleplay exercises, videotapes, guest presentations, and student-designed classes.

LAW B 526 Mediation Clinic ([1-10]-, max. 10) Credit/no-credit only.

LAW B 527 Criminal Prosecution Clinic (8) Credit/no-credit only.

LAW B 528 Workers' Rights Clinic ([2-8]-, max. 8) Provides clinical training in workers' rights and administrative law under the supervision of members of the Law School faculty. Students represent workers in employment law matters such as unemployment compensation benefits or wage claims. Credit/no-credit only.

LAW B 529 Advanced Environmental Law and Practice ([1-4]-, max. 4)

LAW B 530 Judicial Externship (1-18, max. 18)

LAW B 531 Immigration Law Clinic ([1-8]-, max. 8) Credit/no-credit only.

LAW B 532 Advanced Clinic (1-4, max. 4) Advanced clinical training under the supervision of a law school faculty member in order to complete a project or case begun by the student during a clinic, or to pursue in more depth the subject of the clinic. Prerequisite: Clinical basis for continued work. Credit/no-credit only.

LAW B 533 Interviewing and Counseling for Lawyers (2/3) Credit/no-credit only.

LAW B 534 Counseling Workshop (1-, max. 3) Provides an introduction to the culture of counseling in the legal profession. Students learn about effects of power and privilege in the United States and implications for counseling relationships. Students increase their abilities to engage in respectful practice of counseling people from all backgrounds.

LAW B 535 Legislative Externship (1-18, max. 18) Credit/no-credit only.

LAW B 536 Drafting Business Documents ([1-3]-, max. 3)

LAW B 537 Refugee Advocacy Clinic ([1-12]-, max. 12) Credit/no-credit only.

LAW B 538 Agency Externships (1-18, max. 18) Credit/no-credit only.

LAW B 539 Public Interest Law Externship ([1-18]-, max. 18) Credit/no-credit only.

LAW B 540 Japanese Law (4) Basic institutions and processes of the Japanese legal system. Historical development and traditional role of law, reception of Western law, and cultural and structural factors that influence the function of law and legal institutions. Offered: jointly with JSIS A 540.

LAW B 541 Chinese Law (4) Introduction to the institutions and processes of the Chinese legal system. Focuses on the contemporary system and its role in relation to political, economic, and social developments. Examines legal aspects governing foreign trade and investment in China. Offered: jointly with JSIS A 541.

LAW B 542 Comparative Korean Law (2-4) *Taylor* Introduction to basic institutions and processes of the Korean legal systems. Emphasis on the historical development and traditional roles of law, the reception of Western law, and cultural and structural factors that influence the function of law and legal institutions.

LAW B 544 Civil Litigation in Comparative Context ([2-4]-, max. 4) Covers international jurisdiction, service process abroad, taking evidence abroad, applicable laws and treaties, comparison of trial procedures, enforcement of foreign judgments, and use of arbitration. Uses United States and translated Japanese cases.

LAW B 545 Survey of American Law and Practice (6) Provides an integrated introduction to the U. S. legal system, legal analysis, legal research, and legal writing. Introduces tools and techniques for basic legal research in U. S. materials. Credit/no-credit only.

LAW B 546 Cross-Border Business Transactions Between China and the United States (4) *Page, Zang* Uses case study methodology to explore how United States law and Chinese economic policy and business laws are used in achieving Chinese-United States cross-border transactions. Open to law, business, and international studies students.

LAW B 547 Comparative Constitutional Law (2-5) Examines the constitutional structure of the U.S. government and the jurisprudence of U.S. constitutional courts, and compares them with the constitutional structures and jurisprudence of several foreign countries.

LAW B 548 Forensics (4) *Bailey* Introduces the world of expert witnesses in both criminal and civil cases, looking at the forms of scientific and technical knowledge commonly involved. Covers not only the standard and rules governing expert testimony, but also provide opportunities for hands-on experience. Offered: W.

LAW B 549 Government Regulation of Business in Japan (3) Offered: jointly with JSIS D 549.

LAW B 550 American Legal Systems and Method ([1-6]-, max. 6) Provides an integrated introduction to the basic structure and principles of the U.S. public and private law systems; the sources and techniques for basic legal re-

search; and the analytical and writing skills expected of U.S. trained lawyers.

LAW B 551 Comparative Law Seminar ([2-6]-, max. 6)

LAW B 552 Tutorial in Comparative Law ([1-4]-, max. 6)

LAW B 553 Chinese Legal Tradition (3) Offered: jointly with JSIS D 553.

LAW B 554 Research Tutorial ([1-12]-, max. 12) Introduces students to social science research methods that may be applicable to their research agenda. Focuses on reading, discussion, commentary, writing, and especially rewriting under close and targeted supervision by the professor. Offered: jointly with JSIS 595.

LAW B 555 Roman Law (3)

LAW B 556 Islamic Law (2-5) Selected topics in Islamic law that highlight major aspects of Islamic civilization. Offered: jointly with NEAR E 536.

LAW B 557 Graduate Writing Seminar ([2-6]-, max. 6) Through class instruction and individual tutoring, students select research topics, submit periodic writing assignments, and make formal presentations, culminating in the submission of a major research paper.

LAW B 558 Doctoral Thesis Seminar (2-10, max. 10) Students draft thesis abstracts, tables of contents, preliminary chapters, and present arguments orally to identify core theories and applied studies to incorporate in their work. Read a selection of published work and indicative articles drawn from the list of relevant sources for individual thesis-in-development.

LAW B 559 Comparative Law: Europe, Latin America, and East Asia (4)

LAW B 560 Criminal Justice Externship (1-18, max. 18) Credit/no-credit only.

LAW B 561 International Law of the Sea (3-4)

LAW B 562 Quantitative Methods (4) Covers logic, applications, and limits of quantitative reasoning in the law. Includes mathematics from areas such as statistics, game theory, and social-choice theory, together with legal examples from areas such as discrimination, torts, and CLS to help (re)consider issues such as proof, deterrence, and identity politics.

LAW B 563 Marine Law and Policy Seminar ([2-6]-, max. 6) Study and research in selected legal problems relating to ocean and coastal law, marine trade and transportation, marine resources, and protection of the marine environment. Students prepare and present a research paper and critique papers prepared by other students. Prerequisite: LAW B 561, LAW B 565.

LAW B 564 Women, Poverty, and Natural Resource Management (2-4) Uses an interdisciplinary approach to issues of development and environmental conservation, helping students to understand the complexities that face policy and law reform in developing countries. Discusses gender mainstreaming as a prerequisite to development and conservation solutions. Offered: A.

LAW B 565 U.S. Coastal and Ocean Law (3-5) *Allen* Study of the legal framework in the United States controlling allocation and use of coastal and marine resources. Topics include coastal zone management, fisheries management, protection of marine mammals and endangered species, marine pollution, offshore oil and gas development, and marine transportation.

LAW B 567 General Externship Perspectives Seminar (2, max. 6) Credit/no-credit only.

LAW B 568 Field Seminar in Law, Rights, and Governance (3-5) *K. FRIEDMAN, A. GODOY, S. PEKKANEN, M. SPARKE* Exposes students to theoretical and policy debates about the causes and consequences of legal evolution, rule of law, and a broad range of world governance concerns. Topics include human rights, markets, commerce, climate, environment, migration, institutions, justice, order, and rule of law. Offered: jointly with JSIS 599.

LAW B 570 Bio-entrepreneurship and the Law (3) Covers legal issues in bio-entrepreneurship by tracking product development through a VC-backed start-up company.

LAW B 571 PhD Colloquium (1-3, max. 3) Designed for students to engage with research agendas in the academy and to build a professional skill set for success - from writing conference abstracts and preparing articles for publication to 'workshopping' papers and developing their dissertations. Credit/no-credit only.

LAW B 572 Election Law (3-4) Examines the law of elections in the United States. Major themes include the design of electoral maps; the protection of voting rights; political parties and state action; money in politics; and the administration of elections.

LAW B 573 Supreme Court Decision Making (2-4, max. 4) Examines Supreme Court decision making from both a theoretical and practical perspective. Surveys representative cases on the Court's current docket. Extensive preparation required of participants, who play the roles of lawyers, justices, and commentators. Emphasis on developing appellate advocacy skills.

LAW B 575 Family Law: Selected Topics (2-3) *Mastroianni, Price* Covers current cutting-edge and complex areas of family law that challenge traditional definitions of "family." Examines marriage, dissolution, and parenting disputes through the lens of "nontraditional" families and families created through medical intervention. Prerequisite: LAW A 580 or permission of instructor. Offered: A.

LAW B 576 Climate Justice Seminar ([1-6]-, max. 6)

LAW B 577 Law, Literature and Film ([2-4]-, max. 4) An examination of literary and cinematic portrayals of, and issues important to law, lawyers, and the legal system. Considers both portrayals purporting to depict the legal system as well as works envisioning lawyers and the legal system in a "better world."

LAW B 578 Seminar on Legal Problems of Economic Development ([1-6]-, max. 6)

LAW B 579 Law and Development: History and Theories (3-4) *Ramaswamy* Examines the role of law in fostering economic and social development in developing countries, emerging markets, and nations in transition. Provides a historical overview of the role of law in alleviating poverty and exposes students to key theoretical perspectives. Offered: A.

LAW B 580 Externship Tutorial (2) Credit/no-credit only.

LAW B 581 Land, American Culture, and the Law: Perspectives on the Use and Ownership of the Natural Environment ([1-6]-, max. 6)

LAW B 582 International Development Practicum (1-6, max. 6) Provides experience with an approved non-profit organization, business, judicial or legislative body, or intergovernmental or governmental agency on issues related to law and development and sustainable development. Students work under the guidance of experienced practitioners. Credit/no-credit only. Offered: AWSpS.

LAW B 584 Indian Law Seminar ([2-6]-, max. 6) Covers advanced topics in Indian Law. Prerequisite: LAW A 565 or permission of instructor.

LAW B 585 Natural Resources Law ([1-4]-, max. 4)

LAW B 589 Social Enterprise Law (2-3) *D. Markham* Social enterprise is increasingly driving commerce, corporate norms, and investment goals globally. Begins with an introduction of social enterprise, including underlying principles and legal framework, followed by in-depth analysis of governance, operational and investment considerations, both domestic and abroad. Includes lectures, reading, and one student project. Offered: W.

LAW B 590 The United States Constitution: Past, Present, and Future (2)

LAW B 591 Law and Society in Asia ([2-6]-, max. 6)

LAW B 593 Natural Resources Commons Property (3) A review of the different forms of natural resources and an exploration of the desirability of managing certain resources as commons or private property. Covers a review of the successes and failures by various groups in setting policy in this area.

LAW B 594 Public Land Law Seminar ([2-6]-, max. 6)

LAW B 595 International Humanitarian Law (3-5) *Lorenz* Investigates International Humanitarian Law (sometimes called the Law of Armed Conflict), the field concerned with rules developed by civilized nations to protect victims of armed conflict, including the Geneva Conventions. Case studies include the conflict between Israel and the Palestinians, as well as developments in Afghanistan and Iraq. Offered: Sp.

LAW B 596 International Protection of Human Rights ([2-4]-, max. 6) *Stilt* Examines international treaty and customary law protecting fundamental human rights against abuse by governments. Major international systems studied are the U.N., the Council of Europe, and the O.A.S. Readings include international and American judicial opinions, treaties, and studies by human rights groups and scholars.

LAW B 597 Journal Seminar (1-3) Focuses on topic selection, research, and drafting to assist students on one of the law school journals. Provides students with the opportunity to explore a topic in depth, to think critically about current law, and to consider future developments by writing a substantial note or comment. Does not satisfy the advanced writing requirement.

LAW B 598 Advanced Research and Writing Seminar ([1-6]-, max. 6)

LAW B 599 Special Topics (1-12, max. 12)

Law C

LAW C 530 For-Profit Small Firm Externship (4-6) Field-based experience in pre-approved for-profit small law firm (10 attorneys or fewer) under supervision of authorized field supervisor. Students may not receive any monetary compensation for the work, nor may clients be billed for work performed by a student. Students must enroll concurrently in an approved companion seminar. Credit/no-credit only.

LAW C 535 For-Profit Corporate Counsel Externship (4-6) Field-based experience in pre-approved corporate legal department under supervision of authorized field supervisor. Students may not receive any monetary compensation for the work, nor may clients be billed for work performed by a student. Students must enroll concurrently in an approved companion seminar. Credit/no-credit only.

Law E

LAW E 500 Advanced Writing Project (1-3, max. 3) Independent research and writing project supervised by a faculty member. Projects are structured to develop skills in research, analysis, and writing. Offered: AWSpS.

LAW E 501 United States Contract and Sales Problems (3-4) Examines the distinctive features of Common Law and Civil Law contract and sales law. Introduces the sources of contract and sales law, and emphasizes basic elements as well as problems of formation and remedies. Offered: S.

LAW E 502 White Collar Crime (3-4)

LAW E 503 Analytic Writing (3)

LAW E 504 Civil Process and Litigation (3) Introduces adjudicatory jurisdiction, covering problems of parallel litigation; service (notice); discovery; recognition/enforcement of foreign state and country judgments; and arbitral awards, as well as choice of forum (court or arbitration). Focuses on the distinctive features of Common Law/Civil Law civil litigation. Offered: S.

LAW E 505 United States Law-Making Institutions and Processes (3-4) Introduces distinctive features of the United States legal system, including the constitutional design

for the structure and powers of the judicial, executive, and legislative branches; United States federalism and federal and state administrative procedure; and the scope of regulatory authority. Offered: S.

LAW E 506 Business and Financial Literacy for Law Students (3) Introduces students to a broad range of fundamental business and financial topics. Emphasizes breadth, relevance, and promoting a basic understanding of foundational business concepts and terms; financial statements; quantitative concepts; how markets function; core business challenges; and practical, business-related challenges often faced by lawyers.

LAW E 507 Access to Justice Seminar (2) Explores the legal, ethical, and financial issues involved in providing legal services to moderate income persons. Uses a combination of lectures and interactive discussion. Credit/no-credit only.

LAW E 508 Persuasive Writing (2-4) *Anderson* Studies persuasion and rhetoric by practicing legal argument: working with facts, framing issues, constructing legal arguments. Studies examples of good and bad persuasive writing. Students practice written advocacy skills in a number of assignments. Students practice advocacy in the context of pre-trial motions and appeals.

LAW E 509 European Union Law (2-4) Survey of the legal origins of the European Union and the synthesis of the major European legal traditions achieved. Focus on the process of harmonizing national laws of the member states and economic integration in the area of competition law and free movement of goods and services.

LAW E 510 Banking Law (2-3) Introduces the basics of banking law and regulation. Topics include separate sections on U.S. regulation of financial services with emphasis on federal regulation of banks, and on international, cross-border, and comparative banking regulatory issues.

LAW E 511 Venture Capital Deals (4) *O'Conner* Focuses on the legal environment of venture capital (VC) financing of technology start-ups. Analyzes relevant statutes and regulations, and the standard set of negotiated terms in typical VC deals. Students negotiate and draft VC deal documents. Offered: W.

LAW E 512 Law, Globalization, and Multinational Corporations (3) An interdisciplinary workshop that examines the role of multinational corporations in a global society. Topics include the legal construct of the multinational corporation, the multinational and the state, the multinational and human rights, and the multinational in the international arena. Offered: jointly with JSIS D 512.

LAW E 513 Theories and Tools for Combatting Corruption ([1-4]-, max. 4) Corruption has been identified as an obstacle to development, and a 'cost of doing business' in many countries. Examines theories, causes and consequences of corruption, and select regimes established to combat and measure it, e.g., UNCAT, ORCD Anti-Bribery Convention, U.S. Foreign Corrupt Practices Act, and the Transparency International's Corruption Perceptions Index.

LAW E 514 The Law of Nonprofit Organizations (2-4, max. 4) Examines laws generally applicable to nonprofit corporations and legal issue relating to co-operatives, credit unions, and thrift/mutual associations. Attention given to the Washington Nonprofit Corporations Act with comparable statutes and model legislation.

LAW E 515 Post-Conviction Review (2-4) *Anderson, Katsounis* Covers direct appeals and collateral remedies in state and federal criminal proceedings. Topics include jurisdictional issues, harmless error, exhaustion, time limits, cognizable claims, history of the Great Writ of habeas corpus, and the federal AEDPA statute. Offered: Sp.

LAW E 516 Criminal Procedure: Adjudication (4) Covers the formal charging, trial, and appellate stages of criminal proceedings, including grand jury proceedings, prosecutorial discretion in charging, pretrial release and detention, charging and venue joinder and severance, double jeopardy

dy assistance of counsel, discovery, and disclosure, criminal trials appeals, and collateral post conviction remedies.

LAW E 517 Legal Information Technology (2-4) A. THOMSON, B. WILLIAMS Introduces the theory and practice of legal informatics.

LAW E 518 Torts II (3-4) Wolcher Covers advanced topics in tort law, including defamation, invasion of privacy, intentional infliction of mental distress, medical malpractice, misuse of legal proceedings, misrepresentation, interference with prospective advantage, nuisance, products liability, toxic torts, trespass to chattels, conversion, and vicarious liability. Prerequisite: LAW A 504. Offered: Sp.

LAW E 519 Philosophy of Law (4) Explores jurisprudence as “the jurist’s quest for a systematic vision that will order and illuminate the realities of the law” and legal philosophy as “the philosopher’s effort to understand the legal order and its role in human life.” Examines various texts, emphasizing works of one or more proponents and critics of liberalism.

LAW E 520 European Union Constitution (4) Walsh Examines the European Union constitution adopted in the Lisbon Reform Treaty: history, values, and objectives; EU institutions and finances; economies, political, and constitutional competences; citizenship and democracy; human rights and fundamental freedoms; common foreign policy; security and defense; and amending the constitution. Offered: A.

LAW E 521 Advanced Trial Advocacy (3)

LAW E 522 Advanced Constitutional Law: Sexual Orientation and Gender Identity (1-4, max. 4) Nicolas Examines various constitutional provisions from a gay rights perspective. Topics include the rights of equal protection and substantive due process, as well as the First and Ninth Amendments and the Full Faith and Credit Clause. Offered: A.

LAW E 523 Entrepreneurial Law Clinic ([1-9]-, max. 9) Prerequisite: LAW A 526, LAW E 547, or LAW A 546. Offered: S.

LAW E 524 Child Advocacy Clinic ([3-12]-, max. 12)

LAW E 525 Poverty Law (4) Overview of legal issues affecting poor people, including relevant background readings on poverty and access to justice, and selection problems such as housing and homelessness, education, employment issues of low-wage workers, income support and welfare reform, consumer law, family law, and child care.

LAW E 526 Law Reform in Transition Economies Seminar ([2-4]-, max. 6) Clarke, Ramasastry, Taylor Using interdisciplinary perspectives and case studies, this seminar probes the assumptions, methods and outcomes of commercial law reform in transition economies. Also highlights and critiques the role of international lawyers in this important, emerging area of practice.

LAW E 527 Bankruptcy Client Representation Project ([1-4]-, max. 4) Kuno Provides an opportunity for students to interview a client, evaluate the appropriateness of different forms on bankruptcy as a solution to their debt problems, and provide representations in obtaining the bankruptcy. Student teams are paired with pro bono attorneys under the supervision of a part-time faculty member. Credit/no-credit only. Offered: W.

LAW E 528 Appellate Advocacy Clinic (2-, max. 4) Clinical training in appellate litigation with both seminar and practical components dealing with appellate procedure, strategy, and applicable substantive law. Students represent clients in state appellate court, writing at least one appellate brief and participating in oral argument.

LAW E 529 Tribal Court Public Defense Clinic (4-, max. 12) Offers clinical training in substantive areas of law implicated in representation of Native American tribal court criminal and dependency proceedings. Open to third year students in the JD program. Offered: AWSp.

LAW E 530 Race and Justice Clinic (3-4, max. 12) Focuses on how lawyers can address racial disparities for youth in the juvenile justice system by advocating in multiple forums. Students participate in direct representation on cli-

ents, community education, and coalition building. Topics include the history of race in juvenile justice, past efforts to reduce disproportionate minority contact in juvenile justice, the School to Prison Pipeline, skills training, community lawyering, and systems change.

LAW E 532 Sports Law (3/4) Analyzes sports cases and materials that cover multiple disciplines, including contracts, torts, constitutional, antitrust, labor and employment, intellectual property, and criminal law. Participation in problem solving exercises and drafting and negotiations sessions, which explore areas like player and coaching contracts, investigation of NCAA rules infractions, and possible sanctions against universities.

LAW E 533 Rights in America: Equality, liberty, and Democracy (4) Deep historical exploration of a jurisprudentially revolutionary constitutional conflict that pits courts, local government, and the U.S. Congress in passionate struggles over gay and lesbian antidiscrimination rights; freedoms of speech and religion; and African-American political equality in the nation’s capital. Offered: S.

LAW E 534 Human Rights Law: Philosophy and Practice (4) Explores international human rights law through a rigorous curriculum including both human rights philosophy and practice. Topics include aspects of human rights with various disciplines from environmental law and public health to business. Prerequisite: LAW B 596; LAW A 574, both of which may be taken concurrently.

LAW E 535 Basic Income Tax Concepts (3) Basic federal income tax principles, how the tax law impacts a wide variety of business and personal transactions and decisions, and what a reformed tax law might look like.

LAW E 536 Practical and Professional Responsibility Issues in the Small or Solo Law Practice (3-4) Credit/no-credit only.

LAW E 537 Refugee Law (2) Examines the processes in the United States for the admission of refugees and for the adjudication of asylum claims. Explores international refugee policy and evolving legal norms concerning asylum, temporary protection, repatriation, resettlement, and internal displacement.

LAW E 538 Transnational Civil Litigation in U.S. Courts (3-4) Examines the law governing private civil disputes in U.S. courts arising from transnational transactions, including: jurisdiction; forum selection and choice-of-law clauses; extraterritorial service of process, discovery, and application of U.S. law; parallel proceedings; foreign sovereign immunity; Act of State doctrine; and recognition and enforcement of foreign judgments.

LAW E 539 United States and European Union E-Commerce Law (2/3) Compares the different attitudes to regulation of e-commerce and the information society in the U.S. and the European Union. Topics may include: an introduction to European Union institutions, regulatory, cultural themes in the Internet; e-society and e-commerce in Europe; regulation of illegal, harmful content, and Internet Service Provider liability, etc.

LAW E 540 Transnational Litigation (3) J. HALEY Considers transnational litigation involving civil, common, and hybrid law jurisdictions. Students learn nuances of how jurisdiction is asserted and forum determined in global transnational disputes. Offered: A.

LAW E 541 Cannabis Law Seminar (2-3) S. O’CONNOR Introduces students to federal and state laws governing medical and recreational cannabis. Guest lecturers include government officials, cannabis law practitioners, and industry leaders. Students write and present a substantial research or policy paper. Offered: A.

LAW E 542 Queer Youth Advocacy (2) Addresses the legal needs of lesbian, gay, bi-sexual, and transgendered youth. Topics include educational advocacy; legal consequences within the parent-child relationship, access, consent, and right to refuse physical and mental health services; and accessing services for homeless and foster youth.

LAW E 543 Professional Ethics for International LLM Students (3-4) K. BOXX Provides foreign-trained LLM students background in professional responsibility issues, including confidentiality, conflicts of interest, role of the lawyer, and understanding business issues. Designed for international students to master professional responsibility rules online prior to arrival at law school, with discussion sections while in residence. Offered: S.

LAW E 544 Privacy Law (2) Examines the legal doctrines of privacy and confidentiality used to protect personal information. Aims to understand how courts and legislatures seek to protect information as new technologies and institutional practices emerge. Studies scope and implications of federal statutes that attempt to establish fair information practices with respect to electronic personal information.

LAW E 545 International Trade Law (2-4) Introduces the legal framework, policies, and jurisprudence of the World Trade Organization (WTO). Provides an overview of the regulation of trade in goods, services, and intellectual property that is necessary for international legal practice, and provides the policy analysis to better understand the trade dimensions of international legal disputes.

LAW E 546 International Commercial Arbitration (2-3) Introduces the legal framework of international commercial arbitration (ICA) with a focus on the New York Convention of 1958 and the United States Federal Arbitration Act of 1925.

LAW E 547 Robotics Law and Policy (2) R. CALO Explores the legal and policy aspects of near-term robotics and artificial intelligence. Relevant technologies include driverless cars, drones, medical, personal or service robots, and various expert systems. Readings draw from multiple disciplines, but focus particularly on legal or policy sources. Offered: Sp.

LAW E 549 International Investment Law and Practice (4/5) Pekkanen Examines the rise of international investment law and practice, including topics such as Bilateral Investment Treaties (BITs), standards of treatment, investor-state arbitrations, and social and political controversies related to the governance of foreign direct investment (FDI) in developed and developing countries. Offered: jointly with JSIS B 549.

LAW E 550 Complex Litigation Seminar (2-4) Examines practical and theoretical problems associated with complex litigation, including class actions and multidistrict litigation. Prerequisite: either LAW B 500 or LAW B 507.

LAW E 551 Law and Entrepreneurship (3/4) Planning-oriented course uses the problem method to explore the corporate tax and securities law, general business and financial considerations related to small business formation and financing. Prerequisite: LAW A 515; LAW A 530.

LAW E 552 Regulation of Business - W.R. Grace, a Case Study (4) Stevelman Surveys prominent areas of law relevant to American corporations using W.R. Grace and Co. as a case study. Includes corporate disclosures in SEC filings; SEC enforcement actions; litigation between Grace and the EPA; Grace’s bankruptcy plan; and criminal prosecution of Grace. Offered: W.

LAW E 553 Technology Law and Public Policy (2) Survey of the domains of public policies that have been affected by the information revolution. Examines issues from Internet taxation, to personal data privacy, information warfare. Discusses the implications of the new public policies and whether it is feasible for states to enact different information policies.

LAW E 554 Technology Law and Public Policy Clinic ([2-4]-, max. 12) Clinical training in legislative and public policy advocacy under supervision of law school faculty. Examines legislative process, drafting, commentary and advocacy, appellate advocacy, and professional responsibility concerns. Supervised practice experience representing public interest with respect to law and technology. Prerequisite:

LAW E 553, which may be taken concurrently. Credit/no-credit only.

LAW E 555 Legislation ([2-5]-, max. 5) *Andersen, Vaughn, Watts* Studies topics related to legislation and the legislative process. Examines the structure and operation of legislative bodies as well as the contemporary debates and laws that surround the process. Considers the theories and canons of statutory construction and interpretation. Introduces the basic techniques of statutory drafting. Offered: W.

LAW E 556 International Human Rights Clinic ([1-12]-, max. 12) *Godoy* Interdisciplinary clinical training in international human rights. Includes seminar component on legal issues, practice skills, and reflections on human rights projects. Fieldwork on human rights projects tests, develops, and enhances skills training through real-world human rights practice with cross-campus, U.S., and international partnerships. Credit/no-credit only. Offered: AWSp.

LAW E 557 Human Rights Advocacy Seminar (2-4) *Ramasatry* Provides interdisciplinary training in international human rights advocacy. Provides background knowledge and exposure to skills needed to participate effectively in advocacy efforts, including the Interdisciplinary International Human Rights Clinic. Offered: AWSp.

LAW E 558 Voting Rights Research and the Law (3) Address two primary topics related to the Voting Rights Act of 1965, Sections 2 and 5, and their application today: 1) redistricting and minority representation; and 2) the protection or suppression of the right to vote. Also includes introductory research methods and statistical analysis.

LAW E 560 Contemporary Muslim Legal Systems Seminar (2-6, max. 6) *Lombardi* Provides a forum for in-depth research of legal developments in nations where governments are trying to establish legal systems that ensure economic development and human rights, while at the same time ensuring that their law respects "Islamic norms." Prerequisite: LAW B 556. Offered: A.

LAW E 561 Critical Race Theory (2-4) Provides an overview of Critical Race Theory (CRT) and the contrasts between CRT and liberal and conservative analytical frameworks on race and the law. Examines the questions and criticisms raised about CRT, as well as the impact of the field on legal and political discourse.

LAW E 562 Legal Issues in Museums (4) Explores the legal issues faced by art and science museums. Topics include copyright/trademark law, how the First Amendment protects controversial exhibits, repatriating Native American remains and cultural artifacts, donor rights, art appraising, wartime looting, and the ongoing debate over stewardship and ownership of the world's natural and cultural resources. Offered: jointly with MUSEUM 562.

LAW E 566 Innocence Project Northwest Clinic (3-4, max. 12) Offers students clinical training investigating and litigating claims of actual innocence on behalf of prisoners serving lengthy sentences for serious crimes. Open to second- and third-year students in the JD program.

LAW E 567 Technology Transfer Law and Policy Seminar (2) *O'Connor* Covers the law and policy affecting university and non-profit research commercialization and technology transfer. Focuses on the Bayh-Dole Act, the laws and regulations covering data, copyrightable works, materials, tax exempt issues, employee assignments, and other matters. Offered: W.

LAW E 568 Indian Law Clinic (4-, max. 12) Supervised practice component on Indian law practice and procedure and advocacy skills. Provide legal advice, brief services, and representation to low income Indian clients under the direct supervision of a practicing attorney. Client counseling research, negotiation, and community education. Offered: AWSp.

LAW E 569 Advanced Mediation Practicum (3) *Ewalt* Advanced clinical practicum in mediation under the supervision of the faculty and experienced mediators. Students

convene and mediate cases referred to the Mediation Clinic from government agencies and other sources. Only for students who have successfully completed the Mediation Clinic LAW B 526, or have other comparable experience. Offered: A.

LAW E 570 International Economic Relations and Comparative Trade Policy (3/4)

LAW E 572 Race and the Law (3-4) Evaluates the legal regulation of race in the United States. Addresses the racial and legal history of major groups in the United States, including African-Americans, Asian-American, Latinos, Native Americans, and whites, and examines the nexus between law and the construction of race as a concept and locus of identity.

LAW E 575 Veterans Legal Aid Clinic (3, max. 9) Students provide legal aid to low income veterans on upgrading military discharges, child support, VA housing programs, correcting criminal convictions, reinstating suspended driver licenses, assistance before VA on overpayments or complex benefits issues. Specialized outreach and service provided to incarcerated veterans, veterans in treatment courts, women veterans and homeless/at-risk veterans.

LAW E 578 LLM Early Bar Prep (2-8, max. 8) *M. SHAW* Provides LLM students an early start on bar exam preparation. Students review heavily tested areas across several bar exam subject areas while learning test taking strategy for the Essay Multistate and MPT portions of the Washington UBE, NY, or CA bar exams. Credit/no-credit only. Offered: WSp.

LAW E 579 International and Foreign Law Research (2-3) Overview of international law materials. Examines primary materials in the vernacular and in translations: constitutions, charters, codes, administrative rules, cases, treaties, and other international agreements. Focuses on practice tools such as directories, guides, digests, and proceedings. Prerequisite: LAW A 506 or permission of instructor.

LAW E 580 Gender Violence and the Law (3-4) Introduces substantive legal areas including: evidence and rape shield laws; protection orders; civil liability of perpetrators and third-parties, and restorative civil remedies in housing, employment, and education contexts. Looks at national trends and primarily focuses on Washington State Law.

LAW E 581 Reproductive Rights and Justice Seminar (4) *Ainsworth* Provides students with an in-depth study of the constitutional framework governing reproductive rights, as well as critiques of that framework from feminist theorist, those who oppose abortion and contraception, and those whose reproduction and sexuality have been historically marginalized and regulated. Studies different bases in the law for reproductive rights claims, including privacy, equality, and dignity. Offered: A.

LAW E 582 Information Policy: Domestic and Global (5) National and international information policy: public and private sector policy in terms of privacy, access, and exploitation; technology infrastructures and policies supporting the information industries. Coverage includes freedom of information privacy, copyright, telecommunications, and emerging technologies.

LAW E 583 Globalization and the Law (1-6, max. 6) Focuses on the rise of global law, intersection of national, international, and global law, and the legitimacy of global law.

LAW E 588 Trademark and Unfair Competition Law (3) *Hoffmann* Provides a comprehensive review of issues relating to protection of trademarks and other trade identity symbols under the common law and the Federal Lanham Act. Offered: A.

LAW E 590 Incarcerated Parents Advocacy Clinic ([4-5]-, max. 9) Students advocate for incarcerated parents seeking to preserve relationships with children despite incarceration. Supervised by clinic faculty, students represent incarcerated parents in dependency and other court proceedings, working with clients and families to maintain the

parent-child relationship. Students develop interviewing and counseling, negotiations, and trial preparation skills. Credit/no-credit only.

LAW E 591 Non-Profit Organizations Clinic (1-3, max. 3) Provides students with an opportunity to represent a real client in setting up a non-profit organization and applying for tax-exempt status. Students draft multiple documents such as articles of incorporation, applications for tax-exempt status, and client communications. Credit/no-credit only.

LAW E 592 Federal Appellate Advocacy (1-6, max. 6) Representation of an otherwise pro se litigant in an appeal in the Ninth Circuit. Preparation of the opening and reply brief and conduct the oral argument. Requires substantial research, multiple drafts, and painstaking familiarity with the record. Prerequisite: permission of the instructor. Credit/no-credit only.

LAW E 594 Regulatory Environmental Law and Policy ([1-12]-, max. 12) Examines the applied and theoretical dimensions of environmental rule-making, with particular emphasis on the development of an administrative record. Students prepare written comments on pending rules proposed by governmental agencies. Prerequisite: either LAW A 527 or LAW B 585; LAW A 509, which may be taken concurrently. Credit/no-credit only.

LAW E 595 Animal Law (3) Examines substantive law and procedure, specific cases, legislation, and background societal mores that force an evolution and backlash in the level of jurisprudential and legislative comfort with new ways of seeing and speaking about animals other than humans. Offered: WSp.

LAW E 596 Wildlife Law Seminar (3) *Anderson, Knudsen* Covers the basic issues involved in the law of fish and wildlife management. Topics include the relationship between property and wildlife, federalism issues, and international regulatory regimes.

LAW E 597 Global Warming and Justice Seminar (4) *Rodgers* Explores case studies (worldwide but with an emphasis on indigenous peoples) addressing multiple legal responses to the consequences of climate change. Explores remedies under U.S. and international law. Offered: WSp.

LAW E 598 Climate Change Law (3-4) *Rodgers* Develops student understanding of the consequences of anticipated climate change across a spectrum of issues that include human health, the Earth, and its oceans. Covers the practice of agriculture, revised energy futures, legislative responses to climate change, and local, state, regional, and tribal efforts to address it. Offered: Sp.

LAW E 599 Legislative Advocacy Clinic (2-5, max. 15) Clinical training in legislative and public policy advocacy. Topics include the legislative process, drafting commentary, advocacy, building a legislative agenda, working with coalitions, and ethics. Direct work with non-profit and other organizations advocating in the state legislature to develop and move legislation as well as respond to proposed legislation. Prerequisite: LAW A 579. Offered: AWSp.

Law (Health)

LAW H 501 Fundamentals of Health Law (4) Topics include: healthcare reform; obligations to provide care (including EMTALA); medical decision-making law; private health insurance and managed care (including ERISA, HIPAA, and COBRA); Medicare; Medicaid and SCHIP; regulation of healthcare providers; staff privileges and hospital-physician contracts; tax exemption; antitrust, and fraud and abuse laws.

LAW H 502 Medical Malpractice (3-4)

LAW H 503 Medical Ethics and Jurisprudence (3-) *Dudzinski, Kuszler* Examines the relationship between bioethics and law. Reviews the basic concepts of both disciplines; their theoretical and practical connections. Analysis of principle legal cases and statutes illustrating such issues as informed consent to treatment, foregoing life support,

re-search with human subjects, confidentiality, and allocation of health care resources. Offered: jointly with B H 535.

LAW H 504 Legal, Ethical, and Social Issues in Public Health Genetics (3) Equips the student to anticipate and assess potential legal, ethical, and social barriers complicating the incursion of new genetic advances, information, and technologies into public and private healthcare delivery efforts. Prerequisite: GENOME 361, GENOME 371, or equivalent. Offered: jointly with B H 514/PHG 512; A.

LAW H 506 International Bioethics, Social Justice, and Health Seminar (1, max. 3) *Kuszler, Rivin* Explores case studies of ethical dilemmas in research and medical practice and violations of international human rights norms in the design, implementation, and evaluation of health programs and policies. Bioethics and human rights law are the foundational tools for critically evaluating global health impact. Offered: AWSp.

LAW H 507 Law, Medicine, and Ethics in the Context of Pain Management (2) Reviews the problem of physicians failing to relieve pain of patients in the dying process and legal and ethical issues they face as well as cultural sources of the problem.

LAW H 508 Beginning of Life: Rights and Choices (2) Addresses the controversial legal issues engendered by our increasing control over the beginning of life. Focuses on the law, regulation, and policy implications of contraception; new reproductive and genetic technologies, including surrogate parenthood, sperm and egg donation, in-vitro fertilization, and other methods of conquering infertility; and abortion.

LAW H 509 End of Life: Rights and Choices (2) Address controversial legal issues engendered by our increasing control over the end of life. Focuses on patient autonomy issues at the end of life including withdrawal of life support, surrogate decision making, advance directives, and patient choice to hasten death with medical assistance (physician aid in dying). Offered: Sp.

LAW H 510 Topics in Law and Medicine ([1-4]-, max. 4)

LAW H 511 International Research Ethics, Law, and Policy (3) *Kuszler, Rivin* Exploration of legal requirements and ethical principles related to responsible conduct and research in a variety of different government structures, healthcare systems, and research environment. Compares and contrasts law and ethical standards applicable to research enterprises in developing countries, industrialized countries, and ethically distinct communities. Offered: jointly with B H 553; A.

LAW H 512 Public Health Law (2) Focuses on the role of law in public health administration and in the increasingly regulated healthcare industry. Provides a foundation in the relevant law for public health officers and healthcare industry administrators. Offered: jointly with HSERV 551.

LAW H 515 Global Health Law (3) *Kuszler* Provides an examination of the legal, economic, social, ethical, and political aspects of global health. Explores the emergence of global health law as a multilateral tool to address health disparities and improve the health of the vulnerable. Offered: A.

LAW H 516 Study Abroad: Global Health, Human Rights, and the Rights of the Child in Cambodia (10) Study abroad exploring the theoretical underpinnings and practical aspects of the rights of the child in the context of Cambodia's health system, focusing on children with disabilities. Approaches the rights of the child from legal and health services perspectives, combining methodologies of research and analysis for practical application. Offered: S.

LAW H 517 Legal Issues for Global Health Programs (2) *J. Lane* Examines the role of the law, legal strategy and legal research in supporting and advancing global health programs. Provides students an outline of the legal issues impacting global health programs and instruction on working with local counsel and research partners in foreign jurisdictions. Offered: W.

LAW H 518 Legal and Policy Solutions to Improve Global Health of Women, Adolescents, and Children (1-2, max. 2) *J. Lenga-Long, B. Shah, J. Sylker* Explores specific examples of how legal and policy frameworks can impact health inequities for women, children, and adolescents. Teaches to formulate multi-disciplinary strategies to improve health outcomes. Credit/no-credit only. Offered: W.

LAW H 520 Genetics and the Law (3) Explores and analyzes legal issues arising from genetic technologies and information. Statutes, regulations, and cases demonstrate the constitutional, contract, tort, criminal, and family law use of genetic science to determine rights, disputes, and controversies. Prerequisite: LAW H 504/B H 514/PHG 512 or permission of instructor. Offered: jointly with PHG 523; Sp.

LAW H 521 Medicare and Medicaid Finance and Reimbursement (3) *Gould, Williams* Covers the history of Medicare and Medicaid, how they are administered, how eligibility is determined, payments are made, and financing is structured. Includes changes to both programs from the Affordable Care Act, how the federal government audits providers, and the available appeals. Offered: W.

LAW H 522 Affordable Care Act Seminar: Legal and Policy Issues in Health Reform Implementation (2) *K. Merrikin, S. Thieme Sanford* Delves into the Affordable Care Act, including its historical context, key provisions, policy choices, legal challenges, implementation issues and future directions. As part of the seminar, which utilizes a multi-disciplinary approach, each student analyses an ACA provision of interest.

LAW H 524 Forensic Evidence (3) Examines the application of the rules of evidence in cases that involve forensic evidence. Examines paradigmatic cases involving homicide and physical or sexual assault, although the principles examined are applicable generally in civil and criminal cases.

LAW H 525 Business Transactions in Healthcare (3) *Snyder* Focuses on the complex business transactions involved in modern healthcare mergers. In addition to the transactional business aspects, the students also address government rules, regulations, and prohibitions that arise. Students in teams represent different sides of the transaction in this simulated experiential learning opportunity. Offered: W.

LAW H 526 Healthcare Employment Law (3) *Lehmann* Focuses on employment in health care settings, and will specifically cover "at will" employment and the development of implied and express individual employment contracts; recruiting and hiring; negotiated collective bargaining agreements; managing health care employees; and termination of employment. Offered: Sp.

LAW H 528 Health Law Practicum (1-6, max. 6) Provides experience with an approved non-profit organization, judicial or legislative body, or governmental agency on issues related to health law or policy. Students work under the guidance of experienced practitioners. Both student and field supervisor provide the supervising law faculty member with a final written evaluation. Credit/no-credit only. Offered: AWSp.

LAW H 529 HIV and the Law: Legal and Political Developments of the AIDS Crisis (2-4, max. 4) *Price* Traces thirty years of the HIV/AIDS epidemic, beginning with the discovery of the disease through the present. Focuses on many of the socio-political-legal aspects of the HIV/AIDS crisis, including discrimination, quarantine, immigration, criminal law, insurance, public health, and family law issues. Offered: Sp.

LAW H 530 Disability Law (3-4) Considers the definition of disability as defined by statute (ADA, FRA), case law, and social perception. Focuses on education law and entitlements, access to and discrimination in employment, housing, public transportation, and healthcare.

LAW H 531 Health Law Advocacy (2-4, max. 4) *Fox, Lenga-Long* Explores select aspects of legal advocacy for vulnerable patients and surrogate decision-makers in healthcare

settings. Focuses on practical, pragmatic solutions to complex health law advocacy issues, using both classroom participation and mock guardianship hearings. Offered: Sp.

LAW H 534 Mental Health and the Law (3) Covers medical and legal definitional issues as well as major civil and criminal law issues, including standards and procedures for involuntary commitment; consent for, and informed refusal of, treatment; de-institutionalization/community-based treatment; the insanity defense; competency to stand trial; and punishment of the mentally ill convict.

LAW H 536 Research Ethics and Regulation (3) *Mastroianni* Explores the ethical foundations, principles and concepts, and U.S. laws related to the conduct of research with human subjects. Required for graduate students in the Department of Bioethics and Humanities, School of Medicine. Offered: jointly with B H 536; W.

LAW H 540 Health and Human Rights (3) Examines the basic concepts in the fields of human rights law and public health, and uses those concepts to examine the interdependence and tensions between the two fields. Introduction to the fields of public health and human rights law, examining the impact of health policies and programs on human rights. Offered: jointly with G H 516; W.

LAW H 545 FDA Law (3) *Kuszler* Surveys the scope of regulatory authority accorded to the FDA. Focuses on products used in medical care, notably pharmaceutical drugs, medical devices, and biologics. Considers food safety, regulation of cosmetics, and oversight of carcinogenic substances. Offered: Sp.

LAW H 550 Medical Products Liability Law (3) Focuses on product liability claims arising from defective design/development, manufacture, marketing, and distribution of medical technologies. Considers the concepts of strict liability, negligence, breach of warrant, and informed consent as well as the relative roles of state and federal law. Offered: W.

LAW H 579 Interactive Seminar (1, max. 30) *Lin* Seminar series on topics related to public health genetics, including current bioethical, legal, medical, biotechnology, and public policy issues. Credit/no-credit only. Offered: jointly with PHG 580; AWSp.

LAW H 580 Competition in Health Care (3) Examines the role competition and its opposite, regulation, play in the healthcare industry in the United States.

LAW H 582 Healthcare Fraud and Abuse (2-3) Considers federal and state laws that impose criminal and civil penalties on healthcare providers for activities ranging from payment for referrals, submissions of false claims, misconduct in medical research, the illegal disclosure of patient information, and the abuse and neglect of patients in long term care settings.

LAW H 590 Advanced Research and Writing Seminar in Health Law (2-, max. 4) *Kuszler* Dedicated research and writing seminar. Includes a substantial paper on a health law topic. Offered: WSp.

LAW H 599 Health Law Tutorial (1-4) Focuses on a specialized area of health law. Prerequisite: limited to students in the graduate program in health law; must be approved by the program director. Offered: AWSp.

Law (Intellectual Property)

LAW P 501 Intellectual Property Law Core (6-8) Intensive study of intellectual property law core subjects: patents, copyrights, trade secrets, and trademarks. Examines fundamental principles, their underlying policies, and how the laws inter-relate. Not open to students who have taken LAW A 522, LAW A 546, LAW E 567, or LAW E 588.

LAW P 503 Introduction to American Legal Systems and Skills (2-3) Introduces the U.S. system of state and federal courts in the context of intellectual property. Discusses how intellectual property laws come from the common law as well as state and federal statutes and regulations.

Teaches legal research, writing, case briefing, and analysis skills. Offered: A.

LAW P 504 Economic Analysis of Intellectual Property (2-3) Explores the intersection between intellectual property law and economics from both a macro and micro economic perspective; economic justification of intellectual property law; and portfolio management tools that can evaluate intellectual property protection as an investment. Prerequisite: either LAW P 501 or LAW E 567. Offered: W.

LAW P 505 International Intellectual Property Law (2-3) Focuses on international treaties as they relate to protection of trademarks and copyrights. Introduces international aspects of branches of intellectual property, including general principles of comparative and international law, and specific law related to obtaining and enforcing intellectual property rights in foreign countries. Prerequisite: either LAW A 522, LAW E 567, LAW E 588, or LAW P 501.

LAW P 506 Transnational Intellectual Property Law Theory and Practice (4) *Takenaka* Studies comparative intellectual property law using a series of lectures, license exercises, and a mock trial. Consists of a series of lectures on campus followed by a one-week intensive transnational seminar hosted by a law school in Asia or Europe. Offered: Sp.

LAW P 509 Antitrust and Intellectual Property Rights (2-3) *Bangasser* Examines in-depth application of competition law and policy to the creation and exploration of intellectual property. Offered: Sp.

LAW P 510 Advanced Research and Writing Seminar (2-, max. 4) *Gomulkiewicz* Instructs IP LL.M students in the research and writing skills necessary to write a major legal research paper. Offered: A.

LAW P 522 Advanced Copyright Law (2-5) Advanced, in-depth study of copyright law and policy. Explores the boundaries of copyright protection and how copyright law relates to other intellectual property laws. Prerequisite: either LAW A 522, LAW E 567, or LAW P 501.

LAW P 525 Intellectual Property Law Seminar ([1-4]-, max. 4) Explores current controversies and important topics in intellectual property law and policy. Welcomes visiting speakers from industry, government, and the academy to discuss these cutting-edge issues.

LAW P 528 LLM Intellectual Property Law Practicum (1-4, max. 6) Experience with an approved non-profit organization, judicial or legislative body, or governmental agency on issues related to intellectual property law and policy. Students work under the guidance of experienced practitioners; both student and field supervisor provide the supervising law faculty member with a final written evaluation. Credit/no-credit only.

LAW P 535 Entertainment Law (3) A primer on the various forms of legal protection (trade secrets, copyright, trademarks, publicity law, and licensing) that form the bases for various types of entertainment. Considers key industries: books, music, movies, television, internet, and computer games. Prerequisite: LAW P 501 or permission of the instructor.

LAW P 539 Law, Technology, and Development (2-3) *Snyder, Winn* Provides an overview of selected principles and theories of development economics, and considers the implications of technological innovation, intellectual property rights, government regulation, trade policy, and technical standards for the achievement of development objectives. Mass media coverage of current developments enriches class discussions.

LAW P 543 Intellectual Property Law in East Asia (2-3)

LAW P 545 Advanced Patent Law Seminar (3) *Taylor* Studies public policy and practice considerations relating to patenting research results in high technology. Examines the most up-to-date issues in legal protection of technology from the comparative law perspective. Prerequisite: either LAW A 546 or LAW P 501. Offered: W.

LAW P 546 Advanced Trademark Law (3) *Takenaka* Covers advanced procedural and substantive topics of trademark law including protection of trade dress, online trademark infringement, and global trademark protection including gray market issues. Students write and present a research paper on a topic related to trademark law and policy. Prerequisite: either LAW P 501 or LAW P 567 Offered: W.

LAW P 547 Legal Protection for Computer Software (3) Addresses copyright, patent, trademark, trade dress, trade secret, and contract protection for software. Also addresses how the law places boundaries around legal protection through anti-trust law and the doctrines of fair use and preemption.

LAW P 548 Litigation Strategies in Technology Protection (3) Deals with procedural and substantive legal issues in enforcement of patents. Proceeds through a litigation in the order that parties normally would. Teaches substantive legal issues in conjunction with procedural and strategic considerations. Prerequisite: either LAW A 546, LAW P 501, or LAW P 567.

LAW P 550 Patent Prosecution (4) Addresses fundamentals of patent application drafting, through a combination of lectures and assignments. Addresses all aspects of proceedings before the U.S. Patent and Trademark Office, including preparing new applications, and examiner interviews. Prerequisite: either LAW A 546, LAW P 501, or LAW P 567.

LAW P 552 Strategic Intellectual Property Commercialization (3) Comprehensive coverage of issues related to exploitation of intellectual property rights as a business asset for new companies, or as a source of income for existing businesses. Prerequisite: either LAW A 546, LAW P 501, or LAW P 567.

LAW P 567 Survey of Intellectual Property (3-6, max. 6) *O'Connor* Intended for both law students who are only interested in a general overview of intellectual property and non-law students who are seeking a certificate in intellectual property law and policy. Designed as an alternative to Patents, Trademark and Unfair Competition Law, and Copyrights. Prerequisite: either LAW A 522, LAW A 546, LAW E 588, or LAW P 501. Offered: W.

LAW P 577 Drafting Intellectual Property Licenses (3) Covers advanced drafting and negotiating licenses and other technology agreements. Credit/no-credit only.

LAW P 589 IP Innovations in Science and Technology (2-, max. 6) *Takenaka* Covers controversial intellectual property law and policy questions arising from evolving science, technology and e-commerce, and addresses cutting edge issues from a multidisciplinary perspective. Examines the current legal regimes and research environment and explores innovative methods for maximizing the exploitation of advanced science and technology. Offered: AWSp.

LAW P 590 Graduate Intellectual Property Law Tutorial (1-4, max. 4) Focuses on a specialized area of intellectual property law. Limited to students in the graduate program in intellectual property law and policy. Tutorial must be approved by the program director.

Law (Taxation)

LAW T 502 Federal Tax Controversies and Procedures (3)

LAW T 503 Problems of Timing (2-3)

LAW T 504 Income Taxation of Business and Investments (3-5) *M. HATFIELD* Addresses the fundamental issues of the taxation of income related to businesses and investments. Topics include business deductions; capital expenditures; depreciation; below market loans; non-recourse debt; methods of accounting; gains and losses; like-kind exchanges; installment sales; passive activity losses and credits; and the at-risk rules. Offered: A.

LAW T 505 Introduction to Income Taxation (2) Addresses a number of fundamental income tax concepts, including the computation of individual tax liability, statutory exclu-

sions, deductions, and gains. Also deals with issues related to character and timing.

LAW T 506 Tax Practice and Skills (1-4, max. 4) Orientation to core concepts of tax practice, including administrative structure and nature of tax law, nuances of statutory interpretation, and the relative authority of statutory, administrative, and judicial sources. Includes overview of print and online tools for federal tax research. Credit/no-credit only.

LAW T 507 Federal Tax Policy Seminar (2-4, max. 4) Examines the theoretical and policy considerations applied in assessing existing and proposed federal tax regimes. Topics include: the nature of the income tax as a tax on saving and consumption; consumption taxes as alternatives to taxes on income; tax policy and charitable giving; taxes and the poor; and more.

LAW T 510 Estate and Gift Taxation (3)

LAW T 511 Taxation of Partners and Partnerships ([1-4]-, max. 4)

LAW T 512 Exempt Organizations ([2-4]-, max. 4)

LAW T 513 Estate Planning (3)

LAW T 514 Drafting Estate Planning Documents (2) *Adams* Includes the drafting of several documents used in contemporary estate planning practice, including wills, trusts, client letters, powers of attorney, healthcare directives, gift and estate tax returns, and opinion letters. Prerequisite: LAW T 513, which may be taken concurrently. Offered: Sp.

LAW T 515 International Taxation I (3)

LAW T 516 International Taxation II (3)

LAW T 517 Estate and Gift Taxation II (2)

LAW T 518 Taxation of S Corporations (2)

LAW T 519 Canadian-United States Tax Issues (2) *Ko* Overview to various cross-border issues, including the Canadian income tax (and its GST tax), residency for Canadian tax purposes, principles relating to operation of Canadian business in the United States and profit repatriation, and U.S. investment in Canada and similar repatriation issues.

LAW T 520 Professional Regulation of Tax Lawyers (2-3) Addresses the professional regulation of tax lawyers by Congress, the IRS, state bars, and professional associations. May address legal malpractice and criminal liability issues for tax lawyers.

LAW T 521 Compensation and Benefits I (3)

LAW T 522 Compensation and Benefits II (2)

LAW T 523 International Estate Planning (2)

LAW T 524 Transfer Pricing Seminar (2) *Andrade* Reviews section 482 of U.S. Internal Revenue Code and the Treasury regulations thereunder with a focus on multinational corporations (MNCs) and their related party transactions that are subject to the arm's length standard. Application of U.S. transfer pricing regulations to related party transactions involving MNCs.

LAW T 525 Advising Privately-Owned Businesses (3) Explores the role of the lawyer as an adviser through case studies examining a range of structural planning issues and the practical and analytical challenges of the planning process. Emphasizes tax and business considerations, and creative planning strategies. Prerequisite: LAW A 530; LAW A 515, which may be taken concurrently.

LAW T 526 Federal Tax Clinic ([2/3]-, max. 9) Clinical training in federal tax litigation under the supervision of members of the law school faculty.

LAW T 527 Taxation of Financial Instruments (2) Examines the classification and tax consequences of various financial instruments including: fixed, variable, and contingent rate debt instruments; secondary market transactions in debt instruments, such as coupon stripping and market discount purchases; and transactions in common stock-equity derivatives, such as notional principal contracts, hedging transactions, and monetization strategies.

LAW T 528 Graduate Tax Practicum (1-6, max. 6) Field-based experience in a department-approved public or private entity, of eight hours per week minimum under the guidance of experienced practitioners. The student and practitioner produce a final report summarizing the practicum experience to the supervising faculty member, who decides whether to award academic credit. Credit/no-credit only.

LAW T 529 International Tax Practice Seminar (2-3) *Kadet* Utilizes case studies of real-world, multi-faceted international business transactions to develop the knowledge and skills to apply international tax principles and tools to both inbound and outbound investments. Offered: Sp.

LAW T 530 Tax Issues in Mergers and Acquisitions (2-3) Examines the federal income taxation of business entities and their owners. Limited to coverage of the fundamental concepts of corporate and partnership taxation.

LAW T 531 Advanced Transactional Tax Problems (2) Examination (through case studies) of consolidated tax returns, limits on the use of tax benefits, carryover of tax attributes, classifications of debt versus equity, and corporate penalty taxes.

LAW T 532 Taxation of Estates, Trusts, and Beneficiaries (2-3)

LAW T 533 Tax Crimes: Investigations, Prosecutions, and Penalties (2) *Chiconie* Focuses on elements of tax and related crimes with a view of the governmental investigative tools and powers, including IRS summonses, search warrants, and Grand Jury investigations. Covers taxpayer's rights and defenses in a criminal case; the IRS voluntary disclosure program; and the elements of civil penalties. Offered: AWSp.

LAW T 534 State and Local Taxation (2)

LAW T 536 Taxation of Trans-Pacific Transactions (2-3)

LAW T 537 Business Planning ([2-6]-, max. 6)

LAW T 538 Estate Planning for Business Interests (2-3) Business succession and estate planning issues for the owners of closely held business, including shareholder agreements, recapitalizations, family limited partnerships and limited liability companies, taxable acquisitions, split dollar agreements, redemptions to pay death taxes, electing small business trusts and more. Prerequisite: LAW T 510

LAW T 539 Matrimonial Tax (2) Covers tax aspects of married relationships and the tax impact of the dissolution of a marriage. Includes joint returns, the marriage tax penalty, innocent spouse relief from joint return liability, pre-nuptial agreements, transfer tax effects of inter-spousal transfers, alimony, child support, and marital property transfers incident to divorce.

LAW T 540 Federal Tax Research and Writing (2-4)

LAW T 541 Limited Liability Companies (2)

LAW T 542 State and Local Tax II: Advanced State Tax Concepts (2) *Okimoto* Covers the interplay between the federal tax and state tax systems. Covers attributional and economic nexus, unitary business principle, state combined reporting versus federal consolidated filings, expense disallowance, adjustments to the federal tax base, fair apportionment, alternative business tax, and state tax implications of mergers and acquisitions. Offered: W.

LAW T 543 Advanced Partnership Tax (2) Builds on the material covered in the basic course, Taxation of Partners and Partnership. Covers more sophisticated aspects of partnership allocations; transactions between partners and partnerships; and sale or exchange of partnership interests. Prerequisite: LAW T 511.

LAW T 544 Tax Aspects of Charitable Giving (2) Examines income, gift, and estate tax consequences of charitable gifts of cash and property. Includes: theoretical and policy bases of charitable deduction; technical requirements; effect of receipt of benefits; percentage limitations based on

donee and type of property; application of carryover rules; effect of partial cash or cash equivalent consideration.

LAW T 545 International Taxation of Intellectual Property (2) *Smith* Overview of the tax consequences of various types of common commercial arrangements that involve the development, ownership, and use of intangible property within multinational groups. Explores tax efficient arrangements such as contract research and licensing arrangement, cost-sharing arrangement, and the use of intangible holding companies.

LAW T 546 Taxation of Real Estate Interests (2) An in-depth study and analysis of the tax consequences of acquiring, developing, operating, and disposing of interests in real property. Focuses on practical approaches to structuring sale-leaseback transactions, syndications, installment sales, and like-kind exchanges. Considers the application of the passive activity loss rules in real estate.

LAW T 547 International Taxation of Electronic Commerce (2-, max. 4) Electronic commerce is defined as the exchange of digital information in connection with the purchases and sale of goods and services. Seminar and discussion format. Explores the potential methods and approaches for the taxation of earnings associated with electronic commerce.

LAW T 548 Tax Writing (2) Designed to improve writing skills as they relate to practice of tax law. Students draft many types of tax documents. Also considers professional responsibility aspects of tax practice.

LAW T 549 International Merger and Acquisition Transactions (2) Examines the rules applicable to international merger and acquisition transactions, both tax-deferred and table, including the anti-inversion rules of 7874 and the rules under 367 for a variety for tax-deferred transaction structures. Also covers the unique considerations applicable to taxable acquisitions of foreign target companies.

School of Medicine

Dean

Paul G. Ramsey

C314 Health Sciences

Established in 1946, the School of Medicine is the only medical school directly serving the states of Washington, Wyoming, Alaska, Montana, and Idaho (WWAMI). Located in the Warren G. Magnuson Health Sciences Center, the School operates a decentralized program of medical education (WWAMI) via a regional network of teaching affiliates.

The School's basic-science departments provide educational opportunities for students from all schools and colleges within the University. Clinical teaching programs are conducted at the University of Washington Medical Center, Harborview Medical Center, Seattle Children's hospital, Northwest Hospital & Medical Center, Valley Medical Center, and the Veterans Affairs Puget Sound Healthcare System, as well as at other clinical affiliates in Seattle and throughout the WWAMI states.

The School admits approximately 240 medical students to its first-year class and has a total enrollment of over 1000 students pursuing the Doctor of Medicine degree. The full-time faculty numbers more than 2,100 members and there are more than 4,500 clinical faculty located throughout the WWAMI region. The affiliated University residency-training network enrolls more than 1,200 house officers. Enrollment in the graduate programs in the basic sciences exceeds 600 students, and approximately 1,000 postdoctoral fellows are enrolled in advanced training programs. The School has baccalaureate and/or graduate programs in occupational therapy, physical therapy, prosthetics and orthotics, and medical technology. The School participates in training a broad spectrum of other allied health professionals. The School is also home for the Physician Assistant Training Program known as MEDEX.

WWAMI Program

The WWAMI program was initiated in 1971 as an effort to address the maldistribution and shortage of physicians in the Northwest region, provide a broader range of educational opportunities for students, and address the need for primary-care physicians oriented toward rural practice. It is an integral part of the undergraduate medical curriculum and is a fully accredited program of the School of Medicine. The WWAMI program is named for the five states (Washington, Wyoming, Alaska, Montana, and Idaho) that share resources and responsibilities in the regional educational program. Funds appropriated to the WWAMI program by the Wyoming, Alaska, Montana, and Idaho legislatures assure each state of positions for its students in the entering medical class each year.

Foundations of Science Phase Training

The University of Washington School of Medicine is nationally recognized for its regional training program (WWAMI). In addition to providing unique clinical learning opportunities, the WWAMI program allows a small-group learning experience at the regional training sites, which many students prefer. Students from Washington (Spokane), Alaska, Montana, and Idaho complete their 18-month foundational curriculum in small learning groups in their respective home states. Wyoming students complete their first 12-month foundational curriculum in Wyoming. The state of Washington provides two sites for medical students to complete their 18-month foundations curriculum:

Seattle: uwmedicine.washington.edu/Education/Md-Program

Spokane: www.medicalsciences.wsu.edu/prospectivestudents/wwamiprograminfo.html

Small group learning experiences are available in Spokane. All Washington residents are required to rank one or more of these two sites in order of preference in their secondary application. Every effort is made to match accepted Washington students with one of their preferred sites.

More information and video testimonials from first-year Spokane medical students are available at: uwmedicine.washington.edu/Education/MD-Program/Admissions/WWAMI-First-Year/Pages/default.aspx

Offers of acceptance are conditional upon agreement to participate in the WWAMI program.

Patient Care Phase Training

At the conclusion of the foundations of science phase, students enter the portion of the curriculum that is predominantly clinical. Required, selective, and elective clerkships are described below. As part of clinical training, students complete clerkships at the UW, at its affiliated hospitals, or at community clinical units located in the five-state region. During third- and fourth-year clerkships, School of Medicine full-time and clinical faculty members provide supervised clinical training in required as well as elective clerkships through the WWAMI region.

ACADEMIC PROGRAMS

Bachelor of Science

A program leading to a baccalaureate degree with a major in microbiology is offered through the College of Arts and Sciences.

Bachelor of Clinical Health Sciences

A program leading to a baccalaureate degree with a major in clinical health services is offered through the MEDEX program.

Bachelor of Science in Medical Technology

A curriculum in medical laboratory science is offered by the Department of Laboratory Medicine. This program provides study in basic laboratory science that includes clinical laboratory training and is designed to prepare knowledgeable and skilled laboratory scientists for a variety of employment opportunities. Information concerning admission to the medical laboratory science program appears under Laboratory Medicine in this catalog.

Bachelor of Science in Prosthetics and Orthotics

The Department of Rehabilitation Medicine offers a Bachelor of Science degree in prosthetics and orthotics. The curriculum provides professional training in the basic sciences and the clinical application, design, and fabrication of prostheses and orthoses. Information concerning admission to the curriculum in prosthetics and orthotics may be found under Rehabilitation Medicine in this catalog.

MEDEX Northwest Physician Assistant Training

MEDEX Northwest, UW School of Medicine, is a program designed to train physician assistants. The program has been in existence since 1978 and is accredited by ARC-PA, the Accreditation Review Commission on Education for the Physician Assistant. MEDEX currently trains approximately 80 students annually in three didactic training sites (Seattle, Yakima, and Spokane). Discussions are currently underway to have a fourth training site in Anchorage, AK. Students return to their home communities in the WWAMI region (Washington, Wyoming, Alaska, Montana, Idaho) plus a variety of sites in Oregon and Nevada for their clinical year of training.

MEDEX Northwest is currently an eight-quarter program. The first four quarters consist of intense clinical and didactic

instruction at one of the didactic training sites. The final four quarters are spent in clinical experiences throughout the Northwest region. At the completion of the program, students are eligible to sit for the National Certifying Examination for Physician Assistants.

Master of Occupational Therapy

The Department of Rehabilitation Medicine offers a graduate degree in occupational therapy. The curriculum provides professional training in the health sciences and in the theory and practice of occupational therapy as it impacts occupational performance across the life span and in the various arenas of practice. Occupational therapy addresses daily living skills including self-care, work, and leisure/play. Information concerning admission to the occupational therapy program appears under Rehabilitation Medicine in this catalog.

Doctor of Physical Therapy

The Department of Rehabilitation Medicine offers a graduate degree in physical therapy. The curriculum provides professional education in the basic sciences and in the clinical use of physical therapy evaluation and management strategies in the treatment or prevention of neuromusculoskeletal dysfunction. Information concerning admission to the physical therapy program appears under Rehabilitation Medicine in this catalog.

Master of Science and Doctor of Philosophy

Work leading to master's and doctoral degrees is offered, in accordance with the requirements of the Graduate School, in the departments of Biochemistry, Bioengineering, Biological Structure, Immunology, Microbiology, Pathology, Pharmacology, and Physiology and Biophysics. Master's degree programs are offered by the departments of Laboratory Medicine, Medical History and Ethics, and Rehabilitation Medicine. Students may work toward these degrees concurrently with the MD degree, taking additional years beyond the typical four-year medical curriculum.

Concurrent degrees are possible in many other departments and colleges of the University. Recent graduates have pursued concurrent degrees in the basic sciences of medicine and the School of Public Health. A student who intends to work toward a graduate degree should confer with the chairperson of the department in which graduate study is to be pursued and with the Associate Dean for Academic Affairs of the School of Medicine. Specific requirements for admission to work for advanced degrees appear in the Graduate School section of this catalog. Permission to pursue advanced degrees is granted to medical students only if they are progressing normally in the medical curriculum and show evidence of being able to take on this additional work load.

DOCTOR OF MEDICINE

Upon completion of the curriculum of the School of Medicine, the MD degree is awarded to those candidates who (1) have given evidence of good moral character, (2) have satisfactorily completed the requirements of the curriculum, (3) have fulfilled all special requirements, and (4) have discharged all indebtedness to the University.

Admission

(Procedures and policies described are subject to change. Information regarding changes is available from the School of Medicine Admissions Office.)

Selection Factors

Candidates for admission to the University of Washington School of Medicine are considered comparatively on the basis of academic performance, motivation, maturity, personal integrity, and demonstrated humanitarian qualities. A knowledge of, and exposure to, the needs of individuals and society and an awareness of healthcare delivery is-

sues are desired. Extenuating circumstances in an applicant's background are evaluated as they relate to these selection factors.

Applicants must submit scores from the Medical College Admission Test (MCAT). This examination must be taken no later than autumn of the year before matriculation and cannot be more than three years old at the time of matriculation. MCAT registration blanks are available through premedical advisers or through the Office of Admissions. Under exceptional circumstances, to be determined by the Admissions Committee, the GRE may be considered during the admission process; however, if accepted, the applicant is required to take the MCAT prior to matriculation.

The following science course requirements must be completed before matriculation but preferably by the time of application: A total of 32 semester hours or 48 quarter hours of undergraduate courses divided into (a) chemistry, 12 semester/18 quarter hours, which can be satisfied by taking any combination of inorganic or organic chemistry, biochemistry, or molecular biology courses; (b) physics, 4 semester/6 quarter hours; (c) biology, 8 semester/12 quarter hours; and (d) other ("open") science subjects, 8 semester/12 quarter hours, which can be met by taking other courses in any of the three categories above.

Although a biochemistry course is not absolutely required for admission to the medical school, it is very strongly suggested for entering students. The biochemistry course for the first-year medical students focuses on molecular mechanisms central to human health and disease and is taught with the presumption that participants have already mastered the fundamentals of biochemistry, including molecular genetics, structure and activity of proteins, and metabolism. A comprehensive undergraduate biochemistry course is the most expedient way to gain this knowledge.

Under exceptional circumstances certain course requirements may be waived for individuals who present unusual achievements and academic promise. All candidates must demonstrate substantial academic ability in their major field as well as in the required courses. Candidates should be proficient in the use of the English language and basic mathematics and are expected to have a basic understanding of personal computing and information technologies.

Students who entered in the fall of 2003 had a mean GPA of 3.69 and the following mean MCAT scores: Verbal, 10.0; Physical Science, 10.3; Biological Science, 10.8; and a median Writing Sample of P.

Completion of three years of coursework at an accredited college or university is the minimum required before possible matriculation; however, all entrants in recent years have earned bachelor's degrees. No specific major is advised. A broad background in the humanities and liberal arts is encouraged, indeed expected.

Pre-Medical Requirements

The following pre-medical course requirements must be completed prior to matriculation but preferably by the time of application; undergraduate or post-baccalaureate courses must be completed at a college or university accredited by the appropriate regional accrediting body. All candidates must demonstrate substantial academic ability in their major field as well as in the required science courses. Candidates should be proficient in the use of the English language and basic mathematics, and are expected to have a basic understanding of personal computing and information technology. All entrants in recent years have fulfilled requirements for a bachelor's degree. No specific major is advised. A broad background in the humanities and liberal arts is encouraged and expected.

Courses must include a minimum of:

1. 4 semesters or 6 quarters of social science or humanities
2. 6 semesters or 9 quarters of chemistry and biology. The subject matter in these courses must include general chemistry, general biology, biochemistry, molecu-

lar genetics, and cell biology/cell physiology, although applicants are not required to take courses with these specific titles.

3. 2 semesters or 3 quarters of physics; or 1 semester or 2 quarters of physics plus 1 semester or 2 quarters of calculus or linear algebra

The following courses are recommended, but not required:

- Ethics
- Anatomy or comparative anatomy
- Human or mammalian physiology
- Embryology
- The biochemistry course for the first-year medical students focuses on molecular mechanisms central to human health and disease and it is taught with the assumption that participants have already mastered the fundamentals of biochemistry, including molecular genetics, structure and activity of proteins, and metabolism.

For further information, consult:

- UW School of Medicine Admissions website
- The American Association of Medical Colleges' publication, 2012-2013 Medical School Admission Requirements (MSAR)
- askuwsom@uw.edu

Under exceptional circumstances certain course requirements may be waived for individuals who present unusual achievements and academic promise.

Application Procedure

The University of Washington participates in the American Medical College Application Service (AMCAS). The deadline for submitting an application to AMCAS is November 1 and no waivers are granted. After receiving the application from AMCAS, the School of Medicine asks qualified individuals to submit a \$35 application fee and supplemental application materials. Every attempt is made to notify applicants of the final action by the middle of April of the year of matriculation.

Residents of the states of Washington, Wyoming, Alaska, Montana, or Idaho are eligible to apply. Candidates from Wyoming, Alaska, Montana, and Idaho are required to submit residency certifications from their respective state certifying officers. Proof of legal residence for Washington residents also may be requested. Determination of state of legal residence is not made by the School of Medicine; specific instructions regarding this requirement are furnished at the time of application.

Applicants from outside this five-state region who come from disadvantaged backgrounds or who have demonstrated a commitment to serving underserved populations are considered. Foreign applicants, in addition to the above requirements, must also have a permanent-resident visa.

Individuals with a demonstrated interest in research may apply for the MD/PhD program (Medical Scientist Training Program, or MSTP) regardless of residency.

Applications are not considered from persons who have failed to meet minimum standards at this or another medical or dental school.

The deadline for submitting additional application materials is January 13, 2012. These supplemental materials include:

1. A supplemental application form. This is sent to qualified applicants after the School of Medicine has received the AMCAS application.
2. An autobiographical statement in which the candidate describes the origin and development of his or her motivation to be a physician with specific emphasis on steps taken to explore a career in medicine and eventual professional goals. Any other issues of importance to the candidate should also be included. The applicant may

request that the personal comments section of the AMCAS application be used to fulfill this requirement.

3. Three additional short essays (250 word limit each)
 - a. How have your experiences prepared you to be a physician?
 - b. How do you imagine your personal and professional lives intersecting 10 years from now?
 - c. What obstacles to your goals have you experienced and how have you dealt with them?
 - d. For reapplicants: From your most recent application until now, how have you strengthened your application?
4. A premedical-committee letter of recommendation or three letters from instructors (either sciences or humanities) from whom the candidate has taken courses. These letters should critically evaluate the candidate's academic ability, strengths and weaknesses, the difficulty of coursework undertaken, motivation for medicine, personal maturity, and special attributes and assets. We accept up to three additional letters of recommendation. Letters of recommendation from current employers may be advantageous. All letters of recommendation should be submitted via the AMCAS Letters of Evaluation/Recommendation service. We must receive letters from AMCAS by the secondary application deadline (January 13, 2012).
5. A \$35 non-refundable application fee (check or money order only). This is automatically waived for those who have qualified for AMCAS fee waivers. Others seeking a waiver of this fee should submit their requests directly to the School of Medicine Admissions Office.
6. On-line acknowledgment of having read, understood, and of being able to meet, with or without reasonable accommodation, the Essential Requirements of Medical Education at the University of Washington School of Medicine: Admission, Retention, and Graduation Standards.
7. All acceptances are contingent on a criminal background check. Falsifying information may lead to the withdrawal of an acceptance.

Inquiries, address changes, or other information regarding the application should be transmitted in writing and directed to the Committee on Admissions, Office of Admissions, Box 356340, School of Medicine, University of Washington, Seattle, Washington 98195-6340; or email askuwsom@uw.edu.

Medical Curriculum

Basic Science Curriculum - 147 credits

The first two years of the medical-student curriculum are identified as the Basic Science Curriculum, consisting of three phases, or groups, of courses in the human biology series, courses in the sciences basic to medicine, organ systems courses taught by basic and clinical disciplines, and introduction to clinical medicine. The first phase is designed to provide the background in basic disciplines required for the organ-system courses. In the second phase, emphasis is placed on learning the normal and pathophysiologic properties of several human organ systems, and upon correlating these properties with clinical methods of data collection and problem formulation. Students pursue the introduction to clinical medicine course throughout the first two years, learning to interview patients, obtain a medical history, and perform the physical examination.

The academic demands of the Basic Science Curriculum are scaled so that most students are also able to take elective courses that broaden their background.

Basic Sciences Curriculum (generally defined as 500-level courses) - 159 credits

1. Required human biology (basic science) first-year courses

- a. Biochemistry I and II
- b. Gross anatomy and embryology (including trunk and head and neck anatomy)
- c. Introduction to clinical medicine
- d. Introduction to immunology
- e. Mechanisms in cell physiology
- f. Medical information for decision making
- g. Microbiology and infectious disease
- h. Microscopic anatomy (histology)
- i. Musculoskeletal system
- j. Nervous system
- k. Systems of human behavior
2. Required human biology (basic science) second-year courses
 - a. Cardiovascular system
 - b. Cases in clinical ethics
 - c. Clinical epidemiology and evidence-based medicine
 - d. Gastro-intestinal system
 - e. Genetics
 - f. Hematology
 - g. Hormones and nutrients
 - h. Introduction to clinical medicine II
 - i. Medicine, health, and society
 - j. Mind, brain, and behavior
 - k. Pathology II
 - l. Principles of pharmacology
 - m. Reproduction
 - n. Respiratory system
 - o. Rheumatology
 - p. Skin system
 - q. Urinary system
3. *Required Preceptorship*: A mentoring experience in which a practicing physician volunteers to give personal instruction, training, and supervision to a medical student during the first two years of medical school. Preceptorships offer the preclinical student an opportunity to follow a patient over time, to get to know the particular clinical field, and to experience a clinical setting over a period of eight weeks. Students report that preceptorships can be an excellent way of preparing for board examinations and clinical training.
4. *Non-clinical Selectives* (500-level medical school courses) - 4 credits: Students taking courses in the basic sciences curriculum are expected to pursue electives that enhance their personal medical education – i.e., special electives offered throughout the University relevant to medical education, but not involving direct patient care (must be approved by the School of Medicine). All UW non-clinical selectives run on the regular quarterly academic calendar; hence, they may not correspond with other courses in the School of Medicine.
5. *Independent Investigative Inquiry (III)* - 8 credits: Involves independent investigation in one or more of the biological, behavioral, sociocultural, or epidemiological sciences basic to medicine, culminating in a scholarly product or written paper. The purpose of this requirement is to allow the student to gain an understanding of the philosophy and methods of scientific investigation.

The III portion of the curriculum engages students in activities that foster the skills of life-long learning essential for practicing physicians in the twenty-first century. Students gain experience generating questions related to the practice of medicine and explore the various methods available to resolve such questions. Students are strongly urged to select a topic of particular interest and to investigate the subject independently, utilizing

the advice of a faculty adviser and other resources in the WWAMI community. This is a unique opportunity for students to choose both the content and form of their learning and to pursue an interest that may not be included elsewhere in the curriculum

Clinical Curriculum (generally defined as 600-level courses) - 148 credits

The clinical curriculum is pursued in the third and fourth years of medical school. It includes prescribed clerkships to be completed by all students (84 credits or 42 weeks) in family medicine, internal medicine, obstetrics and gynecology, pediatrics, psychiatry, and surgery, plus clinical electives (32 credits or 16 weeks) in four clinical areas including clerkships in rehabilitation medicine/chronic care, emergency care/trauma, neurology, and surgery electives. Additional clinical or non-clinical selectives (a minimum of 32 credits or 16 weeks) are also required.

During the clinical curriculum, students gain clinical knowledge and gradually increase their clinical problem-solving abilities while working as junior members of the medical-care team. Each team is headed by a faculty clinician working in one of the medical school-affiliated hospitals, clinics, or practices.

1. Required clinical clerkships in the third year
 - a. Family Medicine (6 weeks, 12 credits)
 - b. Internal Medicine (12 weeks, 24 credits)
 - c. Obstetrics/gynecology (6 weeks, 12 credits)
 - d. Pediatrics (6 weeks, 12 credits)
 - e. Psychiatry (6 weeks, 12 credits)
 - f. Surgery (6 weeks, 12 credits)
2. Required clinical selectives in third or fourth year(s)
 - a. Emergency medicine (4 weeks, 8 credits)
 - b. Rehabilitation medicine/chronic care (4 weeks, 8 credits)
 - c. Neurology (4 weeks, 8 credits)
 - d. Surgery (4 weeks, 8 credits)
3. Other clinical electives (16 weeks, 32 credits)

Capstone: Preparation for Residency - 2 credits

Capstone is a required, one week course taught primarily in a small group and workshop format, designed as a “continuing medical education” course, in which fourth-year students (graduating in June of the current year) choose sessions to attend relating to the medical issues, evaluation, management, and procedures involved in their planned specialties. Grading is credit/no-credit only, and is based on attendance and tracked via evaluations.

Total minimum credits for the MD degree - 309 credits

Student Evaluation and Promotion

The awarding of the Doctor of Medicine degree is contingent upon satisfactory completion of academic and non-cognitive requirements. The latter includes the acquisition of behavioral patterns and attitudes consistent with the School's professional standards and the oath that all students take at the time of graduation. As such, student evaluation is based on observations by the faculty and others involved in teaching of the student's behavior and conduct as well as papers and examinations. Every student is required to pass Steps 1 and 2 of the United States Medical Licensing Examination, all University of Washington examinations, and to complete an approved independent investigative inquiry project before receiving the Doctor of Medicine degree. Periodic reviews of student performance are conducted by the School's Student Progress Committee. Students are informed of their deficiencies and the remedial requirements, if any, for these deficiencies. Dismissal from the School may occur if the student fails to maintain an acceptable academic record, fails to follow academic

directives provided by the School's committees, or fails to develop attitudes and behavioral patterns appropriate to a career in medicine.

The Faculty Council on Academic Affairs (FCAA) reviews the Student Progress Committee's action, and the Dean of the School of Medicine has final approval of the committee's and council's recommendations. A review mechanism is available within this process. Once dismissal or withdrawal from the School has occurred, the student may petition for reinstatement through the FCAA. Reinstatement is not considered without substantial evidence that the problems causing the dismissal or withdrawal have been resolved. Only one petition through the FCAA is allowed. If more than one year elapses after the withdrawal or dismissal, the individual may be required to apply for readmission through the admission process. If a reinstatement petition is denied by the FCAA, the decision is final with no further avenue for review. Subsequent requests for admission must be directed through standard admission procedures.

Honor Society

Alpha Omega Alpha (AOA) is a national honor medical society. A charter as Alpha of Washington was granted to the School of Medicine in 1950 by AOA. Members are elected by AOA on the basis of high scholarship and good moral character. The purpose of AOA is to recognize and perpetuate excellence in the medical profession. Its goals are to promote scholarship and research in medical school, encourage high standards and conduct, and recognize high attainment in medical science, practice, and related fields. Its motto is “Worthy to serve the suffering.”

Grading System

Grades awarded in each course in the MD curriculum are Pass or Fail in the first-year basic science curriculum; Honors, Pass, or Fail in the applied-science curriculum; and Honors, High Pass, Pass, or Fail in the clinical curriculum. The School's goal is to provide a curriculum that defines the competencies to be achieved by the student at each level. However, a pattern of documented evaluator concerns about a student's performance may indicate unsatisfactory performance when the record is viewed as a whole, even though passing grades have been assigned. Honors may be awarded in a course on predetermined criteria that may involve additional work in the subject as selected by the student. The grading system precludes the ranking of students and no class standing is assigned.

The School of Medicine reserves the right to revise or modify the curriculum, system of evaluation, or graduation requirements.

Graduation with Honors

A degree of Doctor of Medicine with Honors may be awarded to students with high achievement who, in addition, have demonstrated initiative and success in clinical and scholarly pursuits related to medicine. Candidates for graduation with honors are nominated by the departments each year and are selected on the basis of a review of their academic records by the Honors and Awards Committee.

Office of Multicultural Affairs

The Office of Multicultural Affairs assists students from disadvantaged backgrounds who are pursuing MD or MD-PhD degrees. The program nurtures interests in medical careers by providing a variety of support services and enrichment activities in the areas of recruitment, education, admission, retention, and professional development. The School considers applicants from disadvantaged backgrounds or those who have a demonstrated commitment to work with underserved populations. Students should contact the Office of Multicultural Affairs for assistance during the application process. The program offers counseling and advocacy, referrals to University and community resources, tutoring, financial-aid information, and numer-

ous opportunities to interact with other minority health-care professionals within the community. Various student organizations also provide minority medical students a means to interact socially and pursue shared interests, to offer peer support, and to assist with community-outreach activities.

U-DOC, a high-school summer-enrichment program offered by the Office of Multicultural Affairs, is a six-week program for students who have completed their junior year in high school. U-DOC's goal is to foster, affirm, and encourage high school students' interest in the medical profession by allowing them to further explore medical careers and to obtain a valuable introduction to college life. U-DOC is offered in each of the five WWAMI states.

The Western Consortium Summer Medical Education Program (SMEP) offers undergraduate and some qualified postbaccalaureate students a six-week summer academic-enrichment program that includes biology, chemistry, physics, communications, study skills, and MCAT preparation. Structured clinical and research activities are also offered. Housing, stipends, and travel assistance are available.

A prematriculation program for entering minority or disadvantaged medical students is offered for six weeks during the summer. The program is designed to facilitate students' entry into medical school by providing instruction in histology as well as enrichment activities in areas such as study skills, stress management, test-taking skills, research, clinical practice, and community health. Stipends and travel assistance are available to students who qualify.

During the regular school year, the Office of Multicultural Affairs serves as a support network for both the academic and nonacademic needs of students, and facilitates students' access to the multiple resources in the School of Medicine, the WWAMI region, and the community.

The Native American Center of Excellence was established in 1992 as part of the Office of Multicultural Affairs to encourage Native American students to pursue medicine as a career, to promote research on Native American health issues, and to foster the preparation of Native American students for faculty roles in academic medicine. The Center of Excellence provides educational experiences that integrate Western medicine with the Native American way of life, offers a variety of support services to promote the academic development of students, and sponsors a variety of educational opportunities within the Native American community.

Inquiries and requests for additional information may be obtained from the Office of Multicultural Affairs, Box 357430, School of Medicine, University of Washington, Seattle, Washington 98195-7430; (206) 685-2489.

Medical Scientist Training (MD-PhD) Program

A limited number of highly qualified candidates who wish to pursue both the MD and PhD degrees are considered annually. MD/PhD students are permitted a wide choice of research specializations from among numerous disciplines and interdisciplinary areas of biomedical sciences. The program emphasizes continuity of both clinical and basic sciences exposure. Among participating graduate departments and interdepartmental disciplines are biochemistry, bioengineering, chemistry, environmental health, epidemiology, genetics, immunology, microbiology, molecular biotechnology, pathology, pharmacology, and physiology and biophysics. The participating interdepartmental and affiliate programs are neurobiology and behavior, molecular and cellular biology. Students can also conduct their research at the Fred Hutchinson Cancer Research Center.

Applicants who wish to be considered for the MD/PhD program must submit the Medical Scientist Training Program application as soon as possible. Both the application and any supplemental material requested must be completed by January 15. Serious consideration is rarely given to ap-

plicants with minimal research experience and/or a cumulative GPA of less than 3.50 or MCAT scores of less than 10 in each category.

Applicants should correspond directly with the administrator of the Medical Scientist Training Program: MSTP

University of Washington
Health Sciences Building, Room 1264
Box 357470
Seattle WA 98195-7470
(206) 685-0762
mstp@pathology.washington.edu
www.pathology.washington.edu/mstp/

Financial Information

Fees and Other Charges

All fees and extra service charges are payable in U.S. dollars and due at the time specified for such fees and charges. The University reserves the right to change any of its fees and charges without notice. Resident tuition for 2003-2004 is \$4,149 per quarter; nonresident tuition is \$9,796 per quarter.

Financial Assistance

Financial aid awards are based on the demonstrated need of the students. All applicants for aid must submit the Free Application for Federal Student Aid (FAFSA). This requires disclosure of financial information from the student and the student's parents. The Federal Direct Stafford Loan (subsidized and unsubsidized), Perkins Loan, and the Primary Care Loan are the primary sources of aid. Institutional loans are also available from the School of Medicine. Limited amounts of grant funds are available to Washington state residents who meet specific funding criteria. Parental information is not required for grant funds, the Stafford Loan, or the Perkins Loan.

Scholarships are available through the School of Medicine scholarship fund. These awards vary in amount and require financial information from the student and the student's parents. There is a separate application for the School of Medicine scholarship, which has a May 31 due date.

Financial aid information is distributed to all accepted applicants. The FAFSA form may be obtained at www.fafsa.ed.gov or from the UW Office of Student Financial Aid or the School of Medicine Financial Aid Office. The deadline for receipt of the financial-aid application by the processor is February 28. Applicants must meet this deadline to be considered for all available aid sources regardless of the status of their admission file. Late applicants are awarded only Stafford and Unsubsidized Stafford loans.

Outside employment is discouraged while the student is enrolled in medical-school coursework.

Enrichment Opportunities

Students may enhance their medical education through a variety of sponsored activities that offer students an opportunity to explore areas of special interest, such as working in rural or urban clinics that serve medically underserved communities, undertaking medical research projects, or participating in an international exchange program with a developing country. Brief descriptions of two of the more formally structured programs follow.

Rural/Underserved Opportunities Program (RUOP)

This program exposes students to rural medicine and utilizes clinical training sites in all five states. For one month during the summer between the first and second years, students work with physicians in small communities, offering a chance to better understand the challenges and opportunities in these settings. Students receive a stipend supported by the Family Health Foundation, the Academy

of Family Physicians, Area Health Education Centers, and the School of Medicine.

Medical Student Research Training Program

Summer research opportunities are offered to UW medical students interested in gaining valuable experience from training in medical research. This research is planned and carried out under the supervision of a faculty sponsor and is undertaken during the summer between the first and second years. Student trainees in the program receive a stipend supported largely by gifts given by donors specifically to fund student research. The project is ten weeks, full-time, on a working schedule of forty hours per week, and the student may not be enrolled in courses for credit during this time. At the conclusion of the summer, the students prepare posters that are presented as part of the Medical Student Research Forum.

GRADUATE MEDICAL EDUCATION AND POSTDOCTORAL TRAINING

The University of Washington School of Medicine offers a broad array of residency and fellowship programs. Training occurs at the University of Washington Medical Center, Harborview Medical Center, Veterans Affairs Puget Sound Health Care System, Seattle Children's hospital, and other affiliated training sites in Seattle and throughout the WWAMI region. Postdoctoral research fellowship opportunities in the basic sciences are also offered.

CONTINUING MEDICAL EDUCATION

The Office of Continuing Medical Education, School of Medicine, offers a wide variety of courses for physicians and healthcare professionals in the Pacific Northwest and throughout the nation.

Offerings include short courses of one to three days, one- to two-week board-review courses, visiting professorships, preceptorships, and mini-residencies. Other offerings include lecture series at hospitals, video-tape presentations, self-directed instructional materials, and other specific courses requested by members of the medical community throughout the WWAMI region. Information on offerings is available from its website at www.uwcmce.org.

All physicians also are invited to participate in continuing medical education programs offered by clinical departments, such as grand rounds and regular conference series.

The University of Washington School of Medicine is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians. All programs sponsored by the Office of Continuing Medical Education are applicable to physician relicensure requirements of the Washington Board of Medical Examiners and for Category I credit of the Physician's Recognition Award of the American Medical Association. Prescribed credit for the American Academy of Family Physicians and other types of credit are included in the program offerings when appropriate.

Brochures and calendars for courses are available for more detailed information. For information concerning Continuing Medical Education programs, contact:

University of Washington School of Medicine
Office of Continuing Medical Education
Box 359441
4333 Brooklyn Ave NE
Seattle, Washington 98195
Telephone: (206) 543-1050
Email: cme@uw.edu
Website: www.uwcmce.org

Anesthesiology

BB1459 Health Sciences

The Department of Anesthesiology maintains an active program of teaching and research for both the specialist and nonspecialist. Medical students are introduced to the principles of anesthetic management and the effects of anesthetic agents on circulatory and respiratory physiology. The clinical-clerkship program provides basic training in airway management and care of the unconscious patient. A three-year residency program is available for physicians who desire specialty training in anesthesiology. In addition, advanced clinical and research training is offered in several major subspecialty areas (cardiac anesthesia, neuro-anesthesia, pediatric anesthesia, obstetrical anesthesia, pain management, and regional anesthesia). Opportunities for collaborative research are available to undergraduate and graduate students. The department conducts a regular series of clinical conferences, didactic lectures, and research seminars. Questions regarding medical student clerkships may be directed to Dr. John Bramhall at (206) 231-2847 or bramhall@uw.edu. Other training questions may be directed to the Residency Coordinator at (206) 543-2773 or lfg@uw.edu.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/.

ANEST 498 Undergraduate Thesis (*) *Sivarajan* By special arrangement. Time and credit to be arranged. Offered: AWSpS.

ANEST 499 Undergraduate Research (*) Specific research problems relating to pulmonary, cardiovascular, renal, obstetric, and central nervous system functions, and their alteration by anesthetic techniques and agents. Offered: AWSpS.

ANEST 501 P-Preceptorship in Anesthesiology (1, max. 12) An opportunity for first- and second-year medical students to gain experience with medical practice situations by observing clinical faculty members in the operating room. Prerequisite: permission of instructor. Offered: AWSpS.

ANEST 650 P-Pain Medicine Clerkship (8) Participation as part of a Pain Medicine team in evaluation and management of patients experiencing short term post injury (surgery, trauma) pain and/or long-term pain. (Four weeks, full time). Prerequisite: Third- or fourth-year student.

ANEST 663 Basic Anesthesia Clerkship - Cheyenne, WY (4) Introduction to the principles of airway management, ventilator support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation.

ANEST 665 P-Basic Anesthesia Clerkship - Anchorage (4, max. 8) Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Two weeks, full-time). Prerequisite: third- or fourth-year student.

ANEST 667 P-Basic Anesthesia Clerkship - Billings (4, max. 8) Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Two weeks, full-time). Prerequisite: third- or fourth-year student.

ANEST 668 P-Basic Anesthesia Clerkship - Missoula (4, max. 8) Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Two weeks, full-time). Prerequisite: third- or fourth-year student.

ANEST 671 P-Basic Anesthesia Clerkship - Boise (4, max. 8) Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Two weeks, full-time). Prerequisite: third- or fourth-year student.

ANEST 672 Basic Anesthesiology - Boise, ID VA (4) Introduction to the principles of airway management, ventilator support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation (Two weeks, full-time). Prerequisite: third- or fourth- year Medicine student.

ANEST 674 P-Basic Anesthesia Clerkship - Spokane (4, max. 8) Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Two weeks, full-time). Prerequisite: third- or fourth-year student.

ANEST 677 P-Basic Anesthesia Clerkship - Swedish (4, max. 8) Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Two weeks, full-time). Prerequisite: third- or fourth-year student.

ANEST 678 P-Basic Anesthesia Clerkship - VA (4, max. 8) Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Two weeks, full-time). Prerequisite: third- or fourth-year student.

ANEST 679 P-Basic Anesthesia Clerkship - HMC (4, max. 8) Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Two weeks, full-time). Prerequisite: third- or fourth-year student.

ANEST 680 P-Basic Anesthesia Clerkship - UWMC (4, max. 8) Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Two weeks, full-time). Prerequisite: third- or fourth-year student.

ANEST 681 P-Advanced Clerkship in Anesthesiology - UWMC (8, max. 16) Clerkship for students desiring greater exposure to anesthesiology as a specialty. Individual programs can be arranged in the following areas: surgical anesthesia, obstetrical anesthesia, and pain clinic. (Four weeks, full-time.) Prerequisite: Third- or fourth-year student.

ANEST 682 P-Advanced Clerkship in Anesthesia - HMC (8, max. 16) Clerkship for students desiring greater exposure to anesthesiology as a specialty. Individual programs can be arranged in the following areas: surgical anesthesia, obstetrical anesthesia, and pain clinic. Prerequisite: Third- or fourth-year student.

ANEST 683 P-Advanced Clerkship in Anesthesiology - VAMC (8, max. 16) Clerkship for students desiring greater exposure to anesthesiology as a specialty. Individual programs can be arranged in the following areas: surgical

anesthesia, obstetrical anesthesia, and pain clinic. (Four weeks, full-time.) Prerequisite: Third- or fourth-year student.

ANEST 684 P-Advanced Clerkship in Anesthesiology - Spokane (8) Clerkship for students desiring greater exposure to anesthesiology as a specialty. Individual programs arranged in the following areas: surgical anesthesia, obstetrical anesthesia, and pain clinic. (Four weeks, full-time.) Prerequisite: third- or fourth-year medical students.

ANEST 688 Advanced Anesthesia - Cheyenne, WY (8) Clerkship for students desiring greater exposure to anesthesiology as a specialty. Individual programs can be arranged in the following areas: surgical anesthesia, obstetrical anesthesia, and pain clinic.

ANEST 697 P-Anesthesiology Special Electives (*, max. 24) Special clerkships, externships, or research opportunities can at times be made available at institutions other than the University of Washington. Students wishing to elect this course should obtain a special assignment form from the dean's office at least one month before advance registration. (Four to twelve weeks, full-time.). Prerequisite: permission of instructor.

ANEST 699 P-WWAMI Anesthesiology Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department.

Biochemistry

See the Biochemistry section under the College of Arts and Sciences for full program description.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/.

BIOC 405 Introduction to Biochemistry (3) NW Hol, Hurley Survey of basic principles of biochemistry and molecular biology, emphasizing broad understanding of chemical events in living systems in terms of metabolism and structure-function relationships of biologically important molecules. Suitable for pre-majors, for students interested in careers in medicine, dentistry, pharmacy, medical technology. Prerequisite: BIOL 200; either CHEM 223, CHEM 237, or CHEM 335. Offered: A.

BIOC 406 Introduction to Biochemistry (3) NW Ailion, Brzovic Survey of basic principles of biochemistry and molecular biology, emphasizing broad understanding of chemical events in living systems in terms of metabolism and structure-function relationships of biologically important molecules. Suitable for pre-majors, for students interested in careers in medicine, dentistry, pharmacy, medical technology. Prerequisite: BIOC 405. Offered: W.

BIOC 426 Basic Techniques in Biochemistry (4) NW Verlinde Introduction to basic biochemistry experiments. Acquaints students (largely biochemistry majors) with basic biochemical laboratory techniques. Prerequisite: BIOC 440, which may be taken concurrently. Offered: ASP.

BIOC 440 Biochemistry (4) NW Brockerhoff, Klevit Biochemistry and molecular biology for undergraduate students in molecular and cellular biology, for biochemistry majors, and graduate students in other science departments. Prerequisite: minimum grade of 2.5 BIOL 200; 2.5 in either CHEM 224, CHEM 239, or CHEM 337; 2.0 in either MATH 124, MATH 134, or MATH 144. Offered: A.

BIOC 441 Biochemistry (4) NW Merz, Miller Biochemistry and molecular biology for undergraduate students in mo-

lecular and cellular biology, for biochemistry majors, and graduate students in other science departments. Prerequisite: minimum grade of 2.2 in BIOC 440. Offered: W.

BIOC 442 Biochemistry (4) NW Kimelman, Palmiter Biochemistry and molecular biology for undergraduate students in molecular and cellular biology, for biochemistry majors, and graduate students in other science departments. Prerequisite: either 2.2 in BIOC 406 or 2.2 in BIOC 441. Offered: Sp.

BIOC 499 Undergraduate Research (*, max. 35) Investigative work on enzymes, proteins, lipids, molecular biology, developmental biology, intermediary metabolism, physical biochemistry, and related fields. Credit/no-credit only. Offered: AWSpS.

BIOC 510 ISCRM Research Updates and Stem Cell Club ([0/1]-, max. 12) Ruohola-Baker, Ware Presents ongoing research at the Institute for Stem Cell and Regenerative Medicine. Includes diverse subject matter in regenerative medicine, with new, unpublished data, and opportunity to identify collaborations and contacts for discussion, and an understanding of the state of the art. Credit/no-credit only. Offered: jointly with CONJ 510.

BIOC 520 Seminar (1) J. HURLEY Seminar dealing with timely topics in the field of biochemistry. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSp.

BIOC 530 Introduction to Structural Biology (3) Baker, Daggett, Hol, Klevit, Merritt, Verlinde, Weiner, Zheng Graduate-level discussion of the structure, function, and chemistry of proteins, control of enzymatic reactions. Prerequisite: a comprehensive course in biochemistry and permission. Offered: A.

BIOC 533 Topics In Biochemistry (1, max. 30) Provides in-depth examination of current topics in biochemistry, molecular biology, and structural biology. Designed to help participants in basic science departments become acquainted with latest ideas on selected topics. Emphasis on analysis of key concepts in the field with reference to classical papers and recent literature. Prerequisite: permission of instructor. Instructor: Miller Offered: AWSp.

BIOC 534 Topics In Molecular Biophysics (1.5, max. 30) Emphasis on methods used to study macromolecular structure and dynamics, including x-ray crystallography, NMR, optical spectroscopy, computer modeling, protein folding and ligand binding. Two topics covered each quarter; students may register for one or both. Prerequisite: permission of instructor. Offered: AWSp.

BIOC 540 Literature Review (2) S. HOPPINS Emphasizes critical evaluation of original articles in the literature. For first-year graduate students in biochemistry and students of other science departments, with permission of instructor. Offered: jointly with BPSD 540; A.

BIOC 541 Literature Review (2) Loeb, Palmiter Emphasizes critical evaluation of original articles in the literature. For first-year graduate students in biochemistry and students of other science departments, with permission of instructor. Offered: W.

BIOC 542 Literature Review (2) Hauschka Emphasizes critical evaluation of original articles in the literature. For first-year graduate students in biochemistry and students of other science departments, with permission of instructor. Offered: Sp.

BIOC 581 Introduction to Biochemical Research (4, max. 16) Student works with one of the research groups within the department for one quarter and then rotates to other laboratories for second and third quarters. Prerequisite: graduate standing in biochemistry or permission of instructor. Credit/no-credit only. Offered: AWSpS.

BIOC 600 Independent Study or Research (*-) Offered: AWSpS.

BIOC 700 Master's Thesis (*-) Offered: AWSpS.

BIOC 800 Doctoral Dissertation (*-) Offered: AWSpS.

Bioethics and Humanities

A204 Health Sciences Building

UNDERGRADUATE PROGRAM

Adviser

A204 Health Sciences Building

Box 357120

(206) 543-5145

bhinfo@uw.edu

The Department of Bioethics and Humanities offers the following program of study:

- A minor in bioethics and humanities

Minor

Minor Requirements: 25 credits, as follows:

1. One of the following core courses: B H 311, B H 420, B H 456, B H 474/PHIL 411, or PHIL 242
2. One of the following core courses: B H 401, B H 481, or B H 485
3. Electives from an approved list to reach 25 credits. Core courses (listed in items 1 and 2, above) may be used as electives if they are not counted toward the core requirements. If a B H course is cross-listed with another department's course, the course may be counted toward the B H-course minimum even if taken under the other department's prefix. See program website for more information on electives.
4. Minimum 15 credits of bioethics and humanities courses
5. Minimum 2.0 grade in courses presented for the minor

GRADUATE PROGRAM

Graduate Program Coordinator

(206) 221-6548

gradprog@uw.edu

The department offers a two-year Master of Arts in bioethics, which provides students the foundational knowledge, skills, and experience to enrich their careers and broaden their competency in bioethics. The program offers training in research and clinical aspects of bioethics as well as empirical and normative methods of analysis.

Students have the opportunity to study with diverse and well-respected faculty from the University of Washington, the Treuman Katz Pediatric Bioethics Center, and the Seattle Veterans' Health Administration. The program helps prepare students to teach, publish, and conduct research that incorporates bioethics analysis.

Application and Admission

Qualified candidates include:

1. Practicing clinicians, biomedical scientists, health lawyers, post-doctoral fellows, and physicians accepted into a UW clinical fellowship program or the Treuman Katz Pediatric Bioethics Fellowship program.
2. Students currently enrolled in a professional degree program at the University of Washington (i.e. Law, Nursing, or Medicine).

Candidates should possess strong writing, critical thinking, and verbal communication skills. GRE scores are not required. Application due date is March 1.

Degree Requirements

40 credits, as follows:

1. Ethical theory (10 credits)
2. Empirical research methods (6 credits)
3. Clinical ethics (6 credits)
4. Research ethics (3 credits)
5. Approved electives (6 credits)
6. Practicum (3 credits)
7. Master's project (6 credits)

Students are encouraged to take additional electives based on interest and area of specialty, with guidance from their faculty mentor(s).

Opportunities for in-depth study on a topic of interest are available through elective courses, mentored research, and practicum experiences.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

B H 201 Topics in Bioethics and Humanities (2) Introduces topics in clinical, research, and population health ethics and methods of ethical analysis and argumentation. Addresses topics such as the birth of bioethics, informed consent, end-of-life care, genomic medicine, social justice in healthcare and in population health, and global bioethics. Credit/no-credit only.

B H 311 Ethical Issues in Modern Medicine (3) I&S N. JECKER Case-based approach to ethical topics in medicine, such as abortion, genetic testing, physician-assisted death, and euthanasia. Emphasizes utilizing ethical principles and methods of case analysis. Offered: Sp.

B H 401 History of Modern Medicine (3) I&S Berryman Survey of evolution of medical theory, practice, and institutions in European and American society from the late eighteenth century to the present. Medical background not required.

B H 402 Ethical Theory (5) I&S N. JECKER Studies the major normative ethical theories, including both teleological and deontological approaches. Emphasizes moral philosophy during the eighteenth and nineteenth centuries, as well as contemporary commentary. Offered: jointly with PHIL 412.

B H 404 Metaethical Theory (5) I&S N. JECKER Studies the major metaethical theories, including both cognitivist and noncognitivist approaches. Emphasizes moral philosophy during the twentieth century, as well as contemporary commentary. Offered: jointly with PHIL 413.

B H 420 Philosophical Problems in Bioethics (3) I&S Jecker Introduces the philosophical concepts and controversies that underlie contemporary bioethical debates. Explores issues using the literature of bioethics and philosophy, contemporary film, works of fiction, and conversations with health professionals. Students learn philosophical methods of analysis and argument, and debate different sides of ethical issues.

B H 421 History of Eugenics (5) I&S Wojak Examines the history of ideas, policies, and practices associated with eugenics and human genetics from the late nineteenth century to the present in American society and other national contexts. Offered: jointly with DIS ST 421.

B H 440 Philosophy of Medicine (5) I&S N. JECKER Familiarizes students with central issues in the philosophy of medicine. Focuses on the nature of medical knowledge, the connection between theory and observation, the meaning of medical concepts, and the relationship between theories and the world. Offered: jointly with PHIL 459.

B H 456 Social Justice and Health (5) I&S Blacksher Examines the moral grounds for the view that social inequality

ties in health are unjust using contemporary literature from moral philosophy and bioethics, case studies, and film. Explores basic questions integral to determinations of social injustice as well as moral constraints on the pursuit of health equity.

B H 460 Reflections on Research, Responsibility, and Society (3) I&S Explores ethical and policy issues that emerge in the conduct of basic, applied, translational, community-based, and collaborative research. Addresses the ethical debates that arise in the context of planning, implementing, and disseminating research.

B H 474 Justice in Health Care (5) VLPA/I&S N. JECKER Examination of the ethical problem of allocating scarce medical resources. Emphasizes the fundamental principles of justice that support alternative health policies. Offered: jointly with PHIL 411.

B H 481 The Pursuit of Health in American Society (3) I&S Whorton Examination of the development of concern for personal health over the past two centuries, and of the evolution of philosophies and practices of health promotion. Emphasis on the influence of both medicine and popular culture on shaping of attitudes toward diet, exercise, alcohol, drugs, sex, and other health behavior.

B H 483 The Rise and Development of Sports Medicine (3) I&S Berryman Evolution of medical thought related to exercise for good health, training for sport participation, and treatment of sport-related injuries. Begins with ancient period, concludes with present. Development of specialization in sports medicine, sport team physicians, preventive medicine, concepts of fitness and wellness as related to exercise prescription, and exercise science.

B H 485 Concepts of the Body in Nineteenth- and Twentieth-Century America (3) I&S Berryman Investigation of ideas relating to corporeal self in nineteenth- and twentieth-century America. Evolution of physical ideals of manliness/femininity, how ideals related to surrounding culture, how different bodily activities developed to realize ideals. Athleticism, physiognomy, beauty contests, body building, decorations, cosmetics, anthropometry, and phrenology.

B H 497 Bioethics and Humanities Special Electives (*-, max. 30)

B H 499 Undergraduate Research (*, max. 5) Investigative work in biomedical ethics or history of the biomedical sciences.

B H 501 Alternative Approaches to Healing (2) Surveys the different philosophies and practices of the major alternative approaches to healing. Provides a characterization of alternative medicine accompanied by presentations by practitioners of chiropractic, naturopathic, homeopathic, traditional Chinese medicine, energy, and mind-body therapies. Credit/no-credit only.

B H 502 Ethical Theory (5) Jecker Studies the major normative ethical theories, including both teleological and deontological approaches. Emphasizes moral philosophy during the eighteenth and nineteenth centuries, as well as contemporary commentary. Offered: A.

B H 505 Professional Seminar I (3) Methods for identifying a bioethics research question and developing a systematic approach to investigating it, including utilization of bibliographic sources in bioethics, philosophy, history. Prerequisite: permission of instructor.

B H 506 Professional Seminar II (2) Includes conducting research in ethics, writing, giving oral presentations, facilitating seminars, developing curriculum vitae, and career planning.

B H 509 Ethics and the Social Determinants of Health (2) Blacksher Engages student in ethical questions that confront healthcare workers who serve poor and minority patient populations. Using literature from social epidemiology, bioethics, and case studies, students examine questions about clinicians' duties and patient responsibilities, controversial disease prevention programs and policies,

and broader questions of social justice. Credit/no-credit only. Offered: Sp.

B H 511 P-Medical Ethics (2) McCormick Studies ethical problems arising in clinical settings of medicine; introduces philosophical analysis and argument in practical contexts. Includes clinician-guest speakers. Credit/no-credit only.

B H 512 P-The Human Face of Medicine (2) McCormick Readings and discussing literature by and about physicians and patients to better understand the human values undergirding medical practice and ethical issues arising in the "doctor-patient" relationship.

B H 513 P-Ethical Responsibilities of Medical Practice (2) Dudzinski, McCormick Provides intensive and practical guidance about management of principal ethical and legal problems that arise in clinical practice: informed consent, confidentiality, decisions regarding life-support, advance directives and surrogate decision-makers, duty to care for indigent and risky patients. One week intensive course. Offered: S.

B H 514 Legal, Ethical, and Social Issues in Public Health Genetics (3) Equips the student to anticipate and assess potential legal, ethical, and social barriers complicating the incursion of new genetic advances, information, and technologies into public and private healthcare delivery efforts. Prerequisite: GENOME 361, GENOME 371, or equivalent. Offered: jointly with LAW H 504/PHG 512; A.

B H 518 Spirituality in Healthcare (2) Examination of the beliefs, values, meaning, and spirituality of health professionals for the well-being of their patients as well as for themselves. Offered: jointly with FAMED 547/SOC W 587; Sp.

B H 527 Social Science Research Methods (3) D. BOWEN Introduces students to research methods in bioethics, ranging from qualitative to quantitative: interviews, focus groups, surveys, and experimental and observational designs. Students write research questions, match research methods to research questions, and conclude with a proposal that uses a social sciences empirical approach to address their research question. Offered: Sp.

B H 530 Genetic Discovery in Medicine and Public Health (3) Burke Addresses the implications of genetic science for clinical and public health practice, with an emphasis on health policy and ethics. Offered: jointly with PHG 542; W.

B H 535 Medical Ethics and Jurisprudence (3-) Dudzinski, Kuzzler Examines the relationship between bioethics and law. Reviews the basic concepts of both disciplines; their theoretical and practical connections. Analysis of principle legal cases and statutes illustrating such issues as informed consent to treatment, foregoing life support, research with human subjects, confidentiality, and allocation of health care resources. Offered: jointly with LAW H 503.

B H 536 Research Ethics and Regulation (3) Mastroianni Explores the ethical foundations, principles and concepts, and U.S. laws related to the conduct of research with human subjects. Required for graduate students in the Department of Bioethics and Humanities, School of Medicine. Offered: jointly with LAW H 536; W.

B H 548 Methods in Clinical Ethics (3) Schellenberg Introduces the history, practice, and research methods in clinical ethics. Case-based examination of methods including principlism, casuistry, narrative methods, virtue ethics. Prerequisite: permission of instructor. Offered: A.

B H 549 Classic Cases in Bioethics (3) Dudzinski Analysis of complex ethical cases from UWSOM clinical departments, case law, literature, and media. Case discussions focus on implications for delivery of medical care. Prerequisite: permission of instructor.

B H 550 Current Topics in Bioethics (3) Edwards Analysis of complex ethical cases from UWSOM clinical departments, literature, and media. Case discussion focuses on public policy implications. Prerequisite: permission of instructor.

B H 551 Human Genomics: Science, Ethics, and Society (3) Fullerton Explores the ethical and social implications of human molecular genetics and genomics investigation. Recent research is critically evaluated for its potential impact on scientific practice, research participation, and societal understandings. Prerequisite: LAW H 504/B H 514/ PHG 512 or permission of instructor. Offered: jointly with GENOME 573/PHG 551; A.

B H 552 Advanced Qualitative Methods (4) Starks Examines and compares phenomenology, discourse analysis, and grounded theory. Reviews the history of ideas and critically reads examples of published articles to appreciate how each method frames questions and produces different analyses.

B H 553 International Research Ethics, Law, and Policy (3) Kuzler, Rivin Exploration of legal requirements and ethical principles related to responsible conduct and research in a variety of different government structures, healthcare systems, and research environment. Compares and contrasts law and ethical standards applicable to research enterprises in developing countries, industrialized countries, and ethically distinct communities. Offered: jointly with LAW H 511; A.

B H 554 Ethics in Clinical Contexts (2) Cooper, Edwards Introduces the tools of clinical ethics in the context of case studies drawn from specific medical specialties. Focuses on ethical issues in clinical cases; special emphasis on understanding perspectives of clinician, patient, and trainee. Credit/no-credit only.

B H 556 Social Justice and Health (5) Blacksher Examines the moral grounds for the view that social inequalities in health are unjust, using contemporary literature from moral philosophy and bioethics, case studies, and film. Explores basic questions integral to determinations of social injustice as well as moral constraints on the pursuit of health equity.

B H 560 Genomics, Ethics, and Policy (2, max. 10) Burke, Edwards, Fullerton, Starks Explores the intersection of genomics, ethics, and policy, with a particular focus on examining the benefits of genomics for medically underserved communities. Offered: S.

B H 574 Justice for Healthcare (5) N. JECKER Examination of the ethical problem of allocating scarce medical resources. Emphasizes fundamental principles of justice that support alternative health policies. Offered: W.

B H 595 Ethics Practicum (1-6, max. 6) Students participate in clinical ethics rounds, case discussions, review of research protocols, or other professional activities related to bioethics. Prerequisite: permission of instructor. Credit/no-credit only.

B H 596 Master's Research Project ([1-12]-, max. 12) Research project culminating in a scholarly paper suitable for publication in a peer-reviewed journal. Majors only. Credit/no-credit only.

B H 597 Special Topics in Medical Ethics (1-5, max. 15)

B H 600 Independent Study or Research (*-)

Biological Structure

G520 Health Sciences

The department promotes an understanding of biological processes through the study and analysis of structure-function relationships. The research problems that interest members of the faculty are diverse, including cellular differentiation and development explored in a variety of biological systems, neuroscience, molecular biophysics, biomolecular structure, and quantitative biology with an emphasis on computer-graphic representations of biological structures. This diversity creates a lively atmosphere

in the department that provides a stimulating environment for the training of scientists with a variety of backgrounds.

The Department of Biological Structure recruits students through interdisciplinary PhD programs at the University of Washington. Faculty of the Department of Biological Structure are affiliated with one or more of these programs that provide high quality training in a wide range of scientific research areas. These multidisciplinary programs include faculty from the departments of Biochemistry, Bioengineering, Biological Structure, Biology, Environmental Health, Genetics, Immunology, Microbiology, Molecular Biotechnology, Oceanography, Pathobiology, Pathology, Pharmacology, and Physiology and Biophysics, as well as research groups in the Fred Hutchinson Cancer Research Center.

The department does not offer a specific course of study leading to a Master of Science degree. An MS degree may be awarded, however, for students who meet the following requirements: One year of coursework (30 credits), concentrating in one or more areas that include neurobiology, cell and molecular biology, or developmental biology. Minimum 30 credits of research. Basic knowledge of statistics. One quarter of teaching as an assistant. A thesis committee approves the course of study, administers a general examination, and reviews the research proposal prior to the thesis defense.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/.

B STR 301 General Anatomy (4) NW Survey of systemic human anatomy, including human skeletal system, muscular system, respiratory system, circulatory system, nervous system, digestive system, endocrine system, urinary system, and reproductive system. For second-, third-, and fourth-year undergraduates. Offered: Sp.

B STR 431 Introduction to Neuroanatomy (2) NW *Dhaka, Mulligan, Pasupathy* Anatomy and functional organization of the human central nervous system, with clinical applications. Prerequisite: admission to the School of Dentistry. Offered: W.

B STR 498 Undergraduate Thesis (*, max. 30) Individual research projects under the supervision of an instructor. For senior medical students. Offered: AWSpS.

B STR 499 Undergraduate Research (*, max. 30) Individual research projects in cellular and developmental biology, experimental immunology, reproductive biology, neurobiology, molecular structure, morphometrics, computer modeling, and related fields under the supervision of an instructor. Offered: AWSpS.

B STR 501 P-Human Anatomy and Embryology (1-13, max. 13) *Clark* Dissection course in regional anatomy: thorax, abdomen, pelvis, perineum. Prerequisite: permission of instructor. Offered: A.

B STR 502 P-Human Anatomy and Embryology (1-5, max. 5) Dissection course in regional anatomy: upper and lower extremities. Prerequisite: permission of instructor. Offered: W.

B STR 510 Seminar in Anatomy (1) Scientific and historical basis of selected studies in biological structure, anatomy, and human development. Original literature used as basis for textbook descriptions. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

B STR 512 Human Microanatomy (4) *Birmingham-McDonogh* Treating the specialized tissues and organs of the body from the microscopic and ultramicroscopic points of view. Prerequisite: permission of instructor. Offered: A.

B STR 515 Biological X-Ray Structure Analysis (3) *Stenkamp* Theory of x-ray diffraction, with emphasis on appli-

cations to biological systems. Prerequisite: permission of instructor. Offered: W.

B STR 519 Current Problems in Macromolecular Structure (2, max. 10) *Stenkamp* Macromolecular structures related to specific areas of biological research. Emphasis on discussion of relevant research papers and use of computer graphics to visualize the molecular structures. Offered: AWSpS.

B STR 520 Structure Based Design of Drugs (3, max. 9) *Hol, Verlinde* Research papers illustrating protein-structure-based design of new drugs. Review of methods and extensive discussion of all known mechanisms of drug resistance. Offered: W, even years.

B STR 521 Advanced Biomacromolecular Crystallography (3, max. 9) *Hol, Merritt, Stenkamp* Aspects of protein crystallography ranging from crystal growth, phase determination methods, density averaging to refinement, fiber diffraction of DNA and proteins. Offered: W, odd years.

B STR 530 P-Human Anatomy and Embryology for Dental Students (8/13) *Clark, Mulligan* Normal anatomy of the thorax, abdomen, pelvis, and perineum are discussed and dissected employing cadavers. Development of the organ systems related to definitive adult structure. Developmental anomalies and diagnostic anatomy. Prerequisite: admission to School of Dentistry. Offered: A.

B STR 540 Special Problems in Anatomy (1-6, max. 6) Special projects in anatomy under sponsorship of faculty member. Prerequisite: graduate, medical, or dental student standing and permission of instructor. Offered: AWSpS.

B STR 541 P-Microscopic Anatomy for Dental Students (6) *Birmingham-McDonogh* Lecture and laboratory work in microscopic anatomy. For dental students taking HUBIO 510; others by permission of instructor. Offered: A.

B STR 555 Laboratory Rotation in Biological Structure (*, max. 5) Introduction to experimental design, research methods, and scientific thought in laboratories of faculty members. Provides hands-on experience, an entrance into the literature of the field, and opportunities for discussion with all members of the laboratory. First-year dental students only. Prerequisite: permission of instructor. Offered: AWSpS.

B STR 557 Biomolecular Structure Seminar (1, max. 9) *Hol* Literature review of key research in biomolecular structure in the form of short presentations by participants followed by discussion. Critical evaluation of methods and results regarding properties and protein structure determination. Prerequisite: graduate standing in biological structure or biochemistry and permission of instructor. Credit/no-credit only. Offered: AWSpS.

B STR 580 P-Anatomy Teaching Practicum (*, max. 8) *Clark* Opportunity for medical student (or other professional student) to gain teaching experience in biological structure and human biology courses, including gross anatomy, histology, and neuroanatomy. May include lecture, laboratory, conference, depending on student interest, experience. Credit based on course credit in which student is assisting. Prerequisite: permission of course chairperson. Offered: AWSpS.

B STR 584 Seminar in Neurogenesis (1, max. 16) *Birmingham-McDonogh, Dhaka* Current research on process by which neurons are generated in the nervous system. Prerequisite: permission of instructor. Offered: AWSpS.

B STR 590 Electron Cryo-Microscopy of Biological Macromolecules and Complexes (3) *Wang* Introduces high-resolution cryo-electron microscopy (cryoEM); image formation and three-dimensional reconstruction theories and available software. Includes hands-on experience using the cryoEM facility for data collection and analysis; and presentations on student projects. Offered: Asp.

B STR 591 X-Ray and NMR Analysis of Macromolecular Structure (1, max. 9) *Hol* Current topics in research on molecular structure, usually emphasizing techniques of x-

ray crystallography. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

B STR 598 Reading in Biological Structure (2) Critical evaluation of research in biological structure, including current problems, methods, and future directions by reading and discussing research and review papers. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

B STR 600 Independent Study or Research (*-) Offered: AWSpS.

B STR 700 Master's Thesis (*-) Offered: AWSpS.

B STR 800 Doctoral Dissertation (*-) Offered: AWSpS.

Biomedical Informatics and Medical Education

E312 Health Sciences

The Department of Biomedical Informatics and Medical Education is comprised of two units: (1) the Division of Medical Education and Evaluation and (2) the Division of Biomedical and Health Informatics. The Division of Medical Education and Evaluation provides training, research and service in educational areas central to medical education including faculty and course evaluation, construction and scoring exams, curriculum development, implementation of innovative educational methodologies such as standardized patients and web-based simulated patients, faculty development, and research consultation (www.meded.washington.edu). The Division of Biomedical and Health Informatics consists of a research and training program that emphasizes both basic and applied aspects of informatics with a view toward making a difference in people's lives through interdisciplinary collaboration between faculty and students (www.bhi.washington.edu). BHI houses a National Library of Medicine Training Grant in Biomedical and Health Informatics supporting pre- and postdoctoral fellows.

The Department of Biomedical Informatics and Medical Education offers courses in the theory and application of medical education and biomedical and health informatics. Courses are designed for faculty, graduate and undergraduate students, postgraduates and fellows in the health sciences who desire further training in the methods, issues, research, and technology of medical education and biomedical informatics. BIME offers applied and research master's and doctoral degrees, as well as fellowship training, in biomedical and health informatics.

GRADUATE PROGRAM

Graduate Training Program Coordinator

I-264 Health Sciences, Box 357240

(206) 616-0369

informat@uw.edu

Master of Science

Admission Requirements

1. Possession of a baccalaureate degree from an institution within the United States or an equivalent degree from a recognized college or university from outside the United States
2. Minimum 3.00 undergraduate GPA, for the last 90 graded quarter credits or 60 graded semester credits.
3. Prior formal college-level coursework, verified by official transcripts, in mathematics (including statistics), computer programming (at least two quarters), and biology (or zoology), as evidenced by official transcripts

- GRE scores are required unless the applicant holds an earned doctorate (such as PhD, DDS, MD, EdD, JD) from an accredited U.S. institution. GRE scores must be from testing within the past five years.
- GRE scores are required for all international applicants, including holders of foreign doctorates (such as PhD, DDS, MD, EdD, JD).
- A test of English language proficiency (usually the TOEFL) is also required for most international applicants, unless they have an earned undergraduate or graduate degree from an accredited U.S. institution. For the TOEFL a minimum score of 600 (paper-based) or 250 (computerized) is required, and the scores must be from a test taken within the past two years.

Degree Requirements

60 credits, as follows:

- Foundational Courses:** MEBI 530, MEBI 550, MEBI 552; either LIS 510 or LIS 544; two of the following courses: MEBI 534, MEBI 535, HSERV 503/EPI 503; a graduate-level statistics class
- Elective Courses:** Four additional courses to establish depth of knowledge in the student's chosen area of specialization. These must be approved by the student's academic adviser.
- Research Seminars:** At least 3 credits of MEBI 590 and at least 3 credits of MEBI 591
- Thesis and Final Examination:** All students must complete an M.S. thesis and pass a final examination for the master's degree.

Doctor of Philosophy

Admission Requirements

- Possession of a baccalaureate degree from an institution within the United States or an equivalent degree from a recognized college or university from outside the United States.
- A minimum 3.00 undergraduate GPA for the last 90 graded quarter credits or 60 graded semester credits.
- Prior formal college-level coursework, verified by official transcripts, in mathematics (including statistics), computer programming (at least two quarters), and biology (or zoology), as evidenced by official transcripts.
- GRE scores are required unless the applicant holds an earned doctorate (such as PhD, DDS, MD, EdD, JD) from an accredited U.S. institution. The GRE scores must be from testing within the past five years.
- GRE scores are required for all international applicants, including holders of foreign doctorates (such as PhD, DDS, MD, EdD, JD).
- A test of English language proficiency (usually the TOEFL) is also required for most international applicants, unless they have an earned undergraduate or graduate degree from an accredited U.S. institution. For the TOEFL a minimum score of 600 (paper-based) or 250 (computerized) is required, and the scores must be from a test taken within the past two years.

Degree Requirements

90 credits, to include:

- Foundational Courses:** MEBI 520, MEBI 530, MEBI 550, MEBI 552; either LIS 510 or LIS 544; two of the following: MEBI 534, MEBI 535, HSERV 503/EPI 503; a graduate level statistics class
- Courses for Depth of Knowledge:** Five additional courses to establish the necessary depth of knowledge in the student's chosen area of specialization. These must be approved by the student's academic adviser.

- Research Seminars:** 12 credits of research seminars that must include at least 3 credits of MEBI 590 and at least 6 credits of MEBI 591
- Oral Presentations:** All students must satisfactorily present material in an oral format. Students should present at least once per year. This requirement is fulfilled by journal club and research seminar (MEBI 590 and MEBI 591) presentations.
- Formal Examinations:**
 - The Qualifying Examination:** All students must pass a qualifying examination (oral and written) that covers breadth of knowledge prior to formally creating a PhD Supervisory Committee and proceeding with their dissertation research.
 - The General Examination:** The general examination includes an oral and written part. The oral portion is a public presentation of the student's area of research, and includes an oral examination covering the student's in-depth knowledge of her or his area.
 - Final Examination (Dissertation Defense):** A candidate for the PhD must present a dissertation demonstrating original and independent investigation and significant achievement in the field of biomedical and health informatics.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

BIME 498 Special Topics in Biomedical and Health Informatics (1-5, max. 15) Readings, lectures, and discussions pertaining to significant problems or issues in biomedical and health informatics.

BIME 499 Undergraduate Research (*, max. 12) Investigative research or directed readings in medical education and in biomedical and health informatics. Prerequisite: permission of instructor.

BIME 520 Teaching Methods in Medical Education (2) C. SCOTT Empirical and theoretical merits of different teaching methods as applied to medical education. Structuring and leading group discussions, using questions, organizing and delivering lectures, identifying styles of clinical supervision, providing constructive feedback, and presenting effective clinical demonstrations. Offered: Sp.

BIME 521 Evaluation of Learning in the Health Sciences (3) J. CARLINE Basic issues and methods for evaluation of learning: cognitive performance, psychomotor skills, and reasoning abilities in classroom, laboratory, and clinical settings. Practical applications of instruments such as multiple-choice questions, essays, oral examinations, checklists, rating scales, simulations, and patient management problems.

BIME 522 Research in Medical Education (2) C. SCOTT Individualized, problem-based overviews of research methods and research design pertinent to research and scholarship in medical education. Development and sequencing of research projects from conceptualization through literature review, including proposal development, project implementation, data management, analysis, and write-up. Assessment and critical reading of related literature stressed. Offered: A.

BIME 530 Introduction to Biomedical and Health Informatics (3) J. GENNARI Overview of biomedical and health informatics concepts, theories, and applications, including the historical evolution and the current and future research directions within the context of information flow in health-care settings. Offered: A.

BIME 533 Public Health and Informatics (3) A. TURNER Introduction to the emerging field of public health informatics. Covers general public health topics as well as key pub-

lic health informatics issues and applications. Evaluates a public health information system. Prerequisite: either BIME 530 or permission of instructor. Offered: jointly with HSERV 509; W.

BIME 534 Biology and Informatics (3) N. ABERNETHY Provides an introduction to some of the fundamental concepts in core fields of biology; the information representation and management problems that arise from these fields; and current and potential informatics solutions to these problems. Offered: Sp.

BIME 535 Clinical Care and Informatics (3) D. MASUDA Explores the ways in which information technology affect healthcare delivery system design and delivery. Considers current and future research questions and trends as well as current and future application opportunities and challenges. Offered: A.

BIME 536 Bioinformatics and Gene Sequence Analysis (3) T. ROSE Nature and relevance of molecular sequence information, computer-based protein, and DNA sequence analysis, molecular sequence and genomic databases, and methods for database accession and interrogation. Prerequisite: background in molecular biology and permission of instructor. Offered: jointly with PABIO 536/PHG 536; Sp.

BIME 537 Informatics Research and Evaluation Methods (4) N. ABERNETHY Introduces the many facets of evaluation and research for biomedical and health informatics projects. Focuses on formal studies of the application of information technology in medicine, conducted while an information resource is under development and after the resource is in routine service. Offered: W.

BIME 539 Teaching, Learning, and Communication in Biomedical and Health Informatics (4) D. MASUDA Covers learning theory and teaching/communication skills specific to informatics practitioners and researchers. Reviews current learning theories applicable to undergraduate and graduate education. Helps to develop and practice effective teaching techniques. Offered: Sp.

BIME 540 Critically Appraising and Applying Evidence in Healthcare (3) F. WOLF Literature appraisal skills for various articles (therapy effectiveness, diagnostic tests, literature reviews, clinical measurement, prognosis, quality of care, decision analysis, causation/etiology, guidelines, and economic evaluation). Appraisal of clinical information from literature, strengths/weaknesses of data, analyses, study design/applicability to a current patient's problem. Prerequisite: permission of instructor. Offered: jointly with HSERV 528; W.

BIME 541 Introduction to Systematic Reviews and Meta-Analysis of Evidence (3) E. DEVINE, F. WOLF Conceptual understanding of the quantitative methods used to synthesize evidence. Methods for pooling evidence across independent studies, pooling binary/continuous outcomes, differences between fixed and random effects models, and guidelines for appraising published systematic reviews/meta-analyses. Prerequisite: either introductory level courses in statistics, epidemiology, or biostatistics or permission of instructor. Offered: jointly with EPI 541/HSERV 529/PHARM 529; Sp.

BIME 550 Knowledge Representation and Applications (3) J. GENNARI Defines knowledge representations and explores how knowledge presentations and ontologies are used in the semantic web and why these issues are important for biomedical informatics application builders. Uses a research focus to explore foundational theoretical issues and choices facing application builders. Offered: W.

BIME 554 Biomedical Information Interactions and Design (4) Introduction to theoretical frameworks and research methodologies that underpin the study of human-information interactions and the design of biomedical information systems to support them. Emphasis on understanding informational needs and specifications that drive the design of health information systems. Offered: Sp.

BIME 570 Health Sciences Information Needs, Resources, and Environment (3) S. FULLER Characteristics of users of health sciences information; health professionals, researchers, consumers and patients; environments (academic health sciences centers, hospitals, clinics, and public libraries); evaluation of information resources in health care; types and uses of health information management systems; policy issues, professional standards, education, and certification. Offered: jointly with LIS 528; Sp.

BIME 581 Telehealth Systems and Applications (4) G. DEMIRIS Prepares consumers, managers, and researchers of telehealth systems through guided exploration into the components of such systems. Introduces challenges and opportunities facing designers and managers of telehealth and remote healthcare delivery networks. Offered: jointly with NSG 540.

BIME 590 Selected Topics in Biomedical and Health Informatics (1-3, max. 12) Computers and information technology are improving and changing healthcare education, research, and clinical practice. Informatics faculty and researchers from the UW and affiliated institutions present their research findings as well as discuss their views of national developments in their respective disciplines. Prerequisite: permission of instructor. Credit/no-credit only.

BIME 591 Biomedical and Health Informatics Research Colloquium (1, max. 12) Provides forum for extensive interactive research discussions. Format is round table with short presentations and long facilitated discussion amongst students and core BHI faculty. Both students and faculty present. Topics primarily research focused (ongoing and proposed research.), but also journal articles, current topics of debate, and other. Credit/no-credit only.

BIME 598 Special Topics in Biomedical and Health Informatics (1-4, max. 12) Readings, lectures, and discussions pertaining to a significant biomedical and health informatics problem or an emerging issue. Topics vary.

BIME 600 Independent Study/Research ([1-10]-) Individual readings or study, including independent study in preparation for doctoral examinations, research, etc. Prerequisite: permission of instructor.

BIME 700 Master's Thesis ([1-15]-) Prerequisite: permission of instructor.

BIME 800 Doctoral Dissertation ([1-10]-)

Comparative Medicine

T142 Health Sciences

The Department of Comparative Medicine provides education and research opportunities in the use of animals in biomedical research, testing, and education. In addition, training is provided for veterinarians in the diagnosis, treatment, and prevention of the diseases of laboratory animals. Current educational programs include scheduled courses in the principles and techniques of animal experimentation (C MED 407) for biomedical graduate students, zoonotic diseases, and training in laboratory-animal medicine for veterinary medical students and veterinarians, combined with a Master of Science degree program in comparative medicine. Areas of current research interests include enteric disease, lymphocyte biology, biology of aging, mouse genomics, generation and characterization of transgenic animal models, somatic cell gene transfer, and animal models of gene therapy.

GRADUATE PROGRAM

Graduate Program Coordinator

T136 Health Sciences, Box 351790

(206) 685-3261

Postdoctoral Program

Postdoctoral training in the areas of laboratory animal medicine and comparative pathology is offered to persons with a D.V.M. or equivalent degree. Training consists of a combination of coursework, clinical residency rotations, and research leading to a Master of Science degree in comparative medicine. The program also prepares participants for specialty certification by the American College of Laboratory Animal Medicine. Financial assistance is normally provided. A detailed description of the postdoctoral program is available on the department's website at depts.washington.edu/compmed/.

Master of Science

The Master of Science degree in comparative medicine provides advanced training in comparative medicine to veterinarians. Admission to the degree program requires acceptance into the department's postdoctoral training program. The degree option involves additional elective courses, the completion of a more-involved research project, and a thesis.

Predocutorial Program

This program is designed to acquaint veterinary medical students with laboratory-animal medicine as a veterinary specialty. Specific areas covered include control/treatment of the principal diseases of common laboratory animals and their role in biomedical research. Blocks of four to eight weeks are available for fourth-year students year-round. Stipend support is normally provided.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsat/.

C MED 499 Undergraduate Laboratory Research (1-6, max. 12) B. IRITANI, W. LADIGES, L. PRICE, M. RUDELL Specific problems in comparative medicine. Credit/no-credit only. Offered: AWSpS.

C MED 512 Introduction to the Anatomical Analysis of Animal Disease (2, max. 10) J. SNYDER, P. TREUTING Use of animals in experimental study of disease; techniques of animal necropsy, characterization, interpretation of gross and microscopic lesions, correlation of lesions with altered physiological processes, differentiation between naturally occurring and experimentally induced lesions. Prerequisite: PATH 444, PATH 445, or equivalent, and permission of instructor. Enrollment limited: two students per quarter. Offered: AWSpS.

C MED 514 Comparative Pathology Rounds (1, max. 6) J. SNYDER, P. TREUTING Focus on histopathology of naturally occurring and experimentally induced lesions of primates, laboratory and domestic animals, fish, wildlife, and birds. Participants discuss the lesions and the basic pathogenetic mechanisms that underline them. Prerequisite: PATH 500 or equivalent and permission of instructor. Credit/no-credit only. Offered: AWSpS.

C MED 516 Research and Literature Review Seminar (1, max. 12) C. HSU, B. IRITANI Alternates between research seminars and literature review presentations. Research seminar topics relate to basic and translational animal models. Literature review seminars involve critical evaluation of recent articles on laboratory animal medicine and

other scientific or medical topics. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

C MED 518 Clinical Conference and Comparative Pathology Seminar (1, max. 12) L. PRICE, P. TREUTING Alternates between clinical veterinary medicine and comparative pathology discussions. Clinical discussions include case reports of spontaneous and induced diseases. Comparative pathology discussions cover gross and histopathology of natural occurring and experimentally induced lesions in laboratory animals and wildlife. Prerequisite: either PATH 500 or equivalent and permission of instructor. Credit/no-credit only. Offered: AWSpS.

C MED 520 Biology of Laboratory Animals (1) T. BRABB, B. IRITANI, P. TREUTING Fundamentals of morphological, functional, and applied aspects of anatomy, physiology, pharmacology, biochemistry, and immunology of commonly used laboratory animal species. Discusses similarities and differences within and between species, including humans. Other topics include husbandry, genetics, behavior, and nutrition. Prerequisite: permission of instructor. Offered: A.

C MED 521 Biology of Laboratory Animals (1) T. BRABB, B. IRITANI, P. TREUTING Fundamentals of the morphological, functional, and applied aspects of anatomy, physiology, pharmacology, biochemistry, and immunology of the commonly used laboratory animal species. Similarities and differences within, and between, species, including humans are discussed. Other topics include husbandry, genetics, behavior, and nutrition. Prerequisite: permission of instructor. Offered: W.

C MED 530 Diseases of Laboratory Animals (1-) T. BRABB, B. IRITANI, P. TREUTING Analysis of etiology, pathogenesis, pathology, and disease processes in rodents, lagomorphs, carnivores, and nonhuman primates. Prerequisite: permission of instructor. Offered: A.

C MED 531 Diseases of Laboratory Animals (1-) T. BRABB, B. IRITANI, P. TREUTING Analysis of etiology, pathogenesis, pathology, and disease processes in rodents, lagomorphs, carnivores, and nonhuman primates. Prerequisite: permission of instructor. Offered: W.

C MED 540 Animal Models (2) T. BRABB, G. HISH JR, C. HSU, B. IRITANI, P. TREUTING Naturally occurring and experimentally induced analogs of human diseases in animals with emphasis on diseases lacking animal models, and approaches to identifying new models. Discusses animal models of categorical disease (e.g., cancer, atherosclerosis, gerontology). Prerequisite: permission of instructor. Offered: Sp.

C MED 590 Selected Topics in Animal Medicine (1-5, max. 10) T. BRABB, L. COLBY, C. FREVERT, B. IRITANI, P. TREUTING Radiation biology, genetics, anesthesiology and experimental surgery, preventive medicine, and ethical aspects of use of animals in biomedical teaching and research. Specific topics vary from year to year, depending on expertise of the annual visiting professor. Prerequisite: permission of instructor. Offered: AWSpS.

C MED 592 Comparative Pathology for the Scientist (3) C. FREVERT Introduces the interpretation of pathological changes in animals used for biomedical research, with a focus on the mouse. Covers study design and interpretation, techniques to measure pathological changes in major organ systems, plus other topical material related to pre-clinical drug studies and translational research.

C MED 600 Independent Study or Research (*-) Credit/no-credit only. Offered: AWSpS.

C MED 601 Internship Rotation - Laboratory Animal Medicine (*-) Prerequisite: DVM degree. Credit/no-credit only. Offered: AWSpS.

C MED 700 Master's Thesis (*-) Credit/no-credit only. Offered: AWSpS.

Conjoint Courses

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

CONJ 401 Human Anatomy and Physiology (4) *T. LINDER, A. MELBY* Structure and function of the human body with laboratory work in gross anatomy, histology, and physiology. Primarily for pharmacy doctoral students. Others by special permission of instructors. Prerequisite: BIOL 220; either CHEM 155 or CHEM 162. Offered: A.

CONJ 402 Human Anatomy and Physiology (4) *T. LINDER, A. MELBY* Structure and function of the human body with laboratory work in gross anatomy, histology, and physiology. Primarily for pharmacy doctoral students. Others by special permission of instructors. Prerequisite: CONJ 401. Offered: W.

CONJ 403 Human Anatomy and Physiology (4) *T. LINDER, A. MELBY* Structure and function of the human body with laboratory work in gross anatomy, histology, and physiology. Primarily for pharmacy doctoral students. Others by special permission of instructors. Prerequisite: CONJ 402. Offered: Sp.

CONJ 475 Alcoholism: A Course for Medical Students and Students in the Allied Health Sciences (2) *Kivlahan, Samson* For medical students in the allied health sciences in any year that covers an introduction to the epidemiology, diagnostic strategies, natural history, physiologic effects, and treatment of alcohol-related disorders. Offered: Sp.

CONJ 480 Neuroscience for Rehabilitation Professionals (5) *Anderson, Mulligan, Slomp* Structure and function of the central nervous system, emphasizing sensorimotor systems and higher integrative functions, coupled with clinical correlations. Required for occupational therapy, physical therapy, and prosthetic/orthotic students. Others by permission.

CONJ 504 Topics of Molecular Medicine (1.5, max. 5) Focuses on an important topic in medicine and science. Lectures introduce clinical and basic science background, followed by a seminar/discussion with speakers. Prerequisite: Graduate standing and permission of instructor. Offered: jointly with MOLMED 504; Sp.

CONJ 505 P-Pain Clinic Preceptorship (1, max. 12) One morning a week for a total of 30 hours per quarter spent observing patient care in either inpatient or outpatient settings at UW Medical Center; associated readings. Prerequisite: first- or second-year medical student standing. Coordinator: Pain Center.

CONJ 510 ISCRM Research Updates and Stem Cell Club ([0/1]-, max. 12) *Ruohola-Baker, Ware* Presents ongoing research at the Institute for Stem Cell and Regenerative Medicine. Includes diverse subject matter in regenerative medicine, with new, unpublished data, and opportunity to identify collaborations and contacts for discussion, and an understanding of the state of the art. Credit/no-credit only. Offered: jointly with BIOC 510.

CONJ 511 Genomic Dissection (1) *Clark, Horwitz, Shedure* Uses state of the art technology to sequence the genome of a cadaver. Explores the structure of the genome, as well as genetic variants responsible for human individualization and disease. Credit/no-credit only. Offered: A.

CONJ 512 Scientific Speaking Seminar (1.5) *Biggins, Peichel* Teaches how to effectively give a scientific seminar about research. Offered: jointly with MCB 512; W.

CONJ 513 Clinical Medical and Human Genetics (4) *Byers* Rotations through medical genetics clinics for graduate students enrolled in the molecular medicine pathway. Students review clinical data, identify the molecular basis of

genetic disorders, and assess how scientific studies have changed the assessment and natural history of these conditions. Limit of four students per quarter. Offered: jointly with MOLMED 513; AWSp.

CONJ 514 Molecular Medicine (1.5, max. 3) *Eary, Rosen* Introduces how basic sciences impact the practice of medicine, using patient case histories to introduce key areas of clinical research and investigative medicine. Topics include cancer biology; drug development; gene- and cell-based therapeutics; inflammation and host response; vascular disease; and obesity and weight regulation. Offered: jointly with MOLMED 514; W.

CONJ 515 Interdisciplinary Health and Human Services Delivery in Rural Communities (1) *House* Provides opportunities for students in health and human services to explore current trends and issues of service delivery in rural communities. Addresses demographics, economics, community structure, culture, and professional/personal issues. Field trip fee. Prerequisite: major standing in a health or human services profession. Credit/no-credit only. Offered: Sp.

CONJ 516 What Every Physician Should Know about Oral Health (1) *Lewis, Mouradian, Slayton* Didactic elective for students interested in understanding oral health and its relationship to systemic health. Special interest to students planning careers in primary care, public health, or who are likely to practice in rural or underserved communities. Includes weekly seminars and clinical demonstrations. Credit/no-credit only. Offered: Sp.

CONJ 524 Structural Basis of Signal Transduction (1.5) *Xu* Focuses on the structure-function relationship of key enzymes in signal transduction (protein/lipid kinases; phosphatases etc.) and the structural consequences of protein phosphorylation. Teaches students to look into critical structural details using PC or Mac. Prerequisite: undergraduate course in biochemistry and basic cell biology, or permission of instructor. Offered: W.

CONJ 526 Introduction to Systems Biology and Quantitative Approaches to Biomedical Sciences (1.5) *Aitchison* Covers philosophy of systems biology, experimental design, and the linkages between discovery and hypothesis-driven science. Reviews quantitative systems biology tools for genomics, proteomics, modeling and data integration, and emerging technologies. Offered: W.

CONJ 529 Cell Migration (1.5) *Cooper, Moens* Explores mechanisms of cell migration in vivo and in cell culture. Discusses the cell biology of different forms of cell migration, the extracellular cues that direct migration, and how these cues are integrated by the migrating cell. Offered: jointly with MCB 529; W.

CONJ 530 Directing Stem Cells Toward Regenerative Medicine (3) An introduction to the rapidly developing field of human embryonic stem cells in regenerative medicine crossing all medical disciplines including ethics. Requires a strong background in biological sciences. Offered: Sp.

CONJ 531 Signaling Mechanisms in Excitable Cells (1.5) *W. ZAGOTTA* Mechanisms of cellular signaling, particularly in nerve and muscle. Electrical, chemical, and mechanical signaling in the cell that lead to processes such as electrical excitability, action potentials, and muscle contraction. Prerequisite: comprehensive undergraduate course in general biochemistry and molecular biology, or permission of instructor. Offered: A.

CONJ 532 Signal Transduction from the Cell Membrane to the Nucleus (1.5) *Beavo, Moon, Storm* Intracellular signaling pathways leading from cell membrane receptors to nucleus. Pathways activated by seven transmembrane receptors and G-proteins, insulin/PI3 kinase, nitric oxide and WNTs and mechanisms of signal termination. Cytokine/Jak/Stat signaling and role of subcellular localization in signal transduction. Prerequisite: basic knowledge of biochemistry. Offered: A.

CONJ 533 The Dynamic Chromosome (1.5) *Henikoff, Roth* The chromosome viewed as the ultimate organelle. How chromosomes are maintained and propagated. Epigenetic regulation of genes. Genetic, biochemical, and cytologic methods for understanding chromosome functions. Prerequisite: cell biology, biochemistry, and genetics. Offered: A.

CONJ 534 Selected Problems in Nervous System Development (1.5) Introduces students to current issues in developmental neurobiology. Topics include regionalization of the neuroectoderm, mechanisms of neurogenesis, axon patterning and plasticity, and cell death. Not intended to be comprehensive; examines the experimental basis for current views in the field of a few topical issues.

CONJ 537 Mechanism of Transcriptional Regulations (1.5) *Tsukiyama* Biochemical mechanisms of gene transcription covering a broad range of transcriptional regulation, including mechanisms of transcriptional initiation, elongation, and termination. Regulation of transcription by chromatin. Includes a special lecture regarding regulation of transcription in cell growth and differentiation. Offered: A.

CONJ 538 Genetic Instability and Cancer (1/1.5) *Maizels, Monnat* Seminar focusing on molecular pathways that maintain genomic stability in all cells and that carry out programmed changes in genomic structure in the immune system. Special attention devoted to understanding how failure in these pathways leads to genomic instability and malignancy. Prerequisite: permission of instructor.

CONJ 539 Modern Approaches to Vaccines (1.5) *Fuller* Covers selected topics based on recent publications in viral and bacterial vaccine research. Emphasizes understanding the latest advanced and issues in vaccine discovery, mechanisms of action, and special topics in viral vaccines. Offered: Sp.

CONJ 540 Basic Science of Urologic Complications (3) Introduction to the multidisciplinary nature of the most common urologic complications ranging from prostate cancer to erectile dysfunction. Covers epidemiology, clinical and surgical treatments, current dogmas and approaches/models in basic study of underlying disease mechanisms, and a journal review of each complication. Prerequisite: biological science course.

CONJ 541 Molecular Biology of Cellular Processes (1.5) *Bornstein* Translational control; cytoskeleton and molecular motors; protein targeting, sorting and secretion; apoptosis; regulation of cell function by extracellular matrix. Prerequisite: comprehensive undergraduate course in biochemistry and molecular biology or permission of instructor. Offered: Sp.

CONJ 542 Development (1.5) *Li* Molecular mechanisms of development; molecules and pathways used for the patterning of developing organisms. Similarities and differences in the making of plants, invertebrates, and vertebrates. Prerequisite: comprehensive undergraduate courses in biology, molecular biology, or permission of instructor. Offered: W.

CONJ 544 Protein Structure, Modification and Regulation (1.5) *Stoddard, Strong* Overview of general principles of protein structure, including forces that contribute to folding and stabilization, followed by an extended coverage of the means by which protein structure and function are modified and regulated. Examples from recent developments in protein folding, processing, and allosteric regulation. Prerequisite: introductory biochemistry and cell biology.

CONJ 545 Molecular Interactions and Medicine (1.5) *Verlinde* Forces governing molecular interactions in biology; with a focus on medicine. Principles of computer modeling techniques in use for predicting the molecular behavior of proteins, ligands, and their complexes. In computer ligand discovery; drug design, and the understanding at the atomic level of some genetic diseases. Two computer lab sessions. Offered: Sp.

CONJ 546 Survey of Technologies for Molecular Biology (1.5) *Bumgarner* Broad overview of modern technologies used in molecular biology with particular emphasis on DNA sequencing and gene expression. In addition to methods and applications for the technologies, examines the theoretical basis and underlying instrumentation through which these technologies are implemented. Offered: A.

CONJ 547 Molecular Evolution of Viral-Host Interactions (1.5) *Katze* Interactions between viruses and the cells they infect, with special emphasis on evolutionary battle that occurs between the invading virus and its host. Examines new technologies being used to molecularly dissect virus-host interactions. Offered: Sp.

CONJ 548 Modeling Proteins and Proteomes (1.5) *Samudrala* Hands-on experience for modeling protein structures, using the models to predict function, and applying the prediction methods to all proteins encoded by an organismal genome. Provides an overview of protein structure, how it mediates function, and its importance for understanding protein interaction networks. Technologies involved for protein structure modeling. Offered: W.

CONJ 549 Microbial Population Biology (1.5) *Mittler* Principles of ecology and evolution as they apply to microorganisms. Prerequisite: advanced undergraduates with permission of instructor. Offered: Sp, even years.

CONJ 550 P-Clinical Infectious Diseases (3) Lecture series by faculty members from various departments, authorities in the field of clinically important infectious diseases. Lectures, reading assignments, and handouts emphasize epidemiology, clinical manifestations, laboratory findings, diagnosis, treatment, and prevention. Oriented for second-year medical students. Credit/no-credit only.

CONJ 551 Immunity (1.5) *Strong* Provides an understanding of the central cellular and molecular players in the mammalian immune system at a level appropriate for the non-specializing graduate student. Selected topics include the molecular basis of B and T cell activation and effector functions and the mechanisms of innate immunity. Offered: Sp.

CONJ 552 Metabolic Flexibility in Biology (1.5) Small molecules and the ways that chemistry of these molecules facilitates life under changing conditions. Includes systems from microbiology to human physiology to understand aspects of cancer, aging, and animation. Explores topics including bioenergetics/metabolic flux, adaptation, and allometric scaling. Prerequisite: undergraduate organic chemistry and biochemistry.

CONJ 553 Clinical Management of HIV (2-3) *M. CHUNG, H. KIM* Provides in-depth case-based training on the diagnosis and clinical management of HIV and associated conditions. Includes interactive format with speakers who have experience in both resource-rich and resource-limited settings. Offered: jointly with G H 573; Sp.

CONJ 554 Fundamentals of Hypnosis (1) *McCann, Schnee-weiss* Examines phenomena associated with hypnosis, as well as its safe use in clinical practice. Credit/no-credit only. Offered: W.

CONJ 556 Drug Addiction: Mechanisms, Prevention, and Treatment (2) *Chavkin* Key advances, insights, methods, and challenges for our understanding of drug addiction from psychological, pharmacological, psychiatric, community prevention, legal, and neurodevelopmental perspectives. Enhances familiarity with the multidisciplinary approaches required to understand addiction as a disease. Offered: A.

CONJ 557 Microbial Evolution and Ecology (2) Selected topics in microbial evolution including evolution of the main lines of descent, and bacterial and archaeal speciation and co-speciation, and evidence for early microbial life on Earth. Prerequisite: MICROM 412 or general microbiology background. Offered: ASP.

CONJ 558 Fundamentals of Prokaryotic Biology (1.5) *Harwood, Leigh* Basic principles in prokaryotic cell structure,

genomics, and metabolism. Introduction to prokaryotic physiology, bacterial pathogenesis, and microbial ecology.

CONJ 559 Scientific Ideas at Work (1.5) *Gray, Maizels* Examines how basic biomedical research leads to discovery of new therapeutics and diagnostics for treatment of human disease. Considers disease mechanism and impact, need for a drug, preclinical studies, clinical testing and drug approval, and how technology developed in an academic laboratory is translated into a commercial product. Offered: jointly with MOLMED 559; Sp.

CONJ 562 Advanced Topics in Bacterial Physiology (1.5) Covers cutting edge research and concepts pertaining to the complexity of the bacterial cell with an emphasis on primary literature and discussion. Offered: Sp.

CONJ 570 Introduction to the Clinical Management of Transgender Patients (1) Covers the steps and protocols providers need to know to provide culturally proficient care for trans-identified patients. Prior completion of FAMED 561 highly recommended. Prerequisite: current graduate health science student and permission of course coordinator. Credit/no-credit only.

CONJ 583 Molecular Targets in Cancer Therapy (1.5) *Maizels, Monnat* Examines how molecular targets for cancer therapies are discovered and validated. Covers disease mechanisms, need for new therapeutics, how small molecule and antibody therapeutics are identified and developed, and how preclinical studies are used to establish safety and efficacy. Offered: jointly with MOLMED 583; A.

CONJ 585 Surgical Anatomy (1-3, max. 12) *Graney* Guided dissection of selected regions, supplemented by conferences. Offered conjointly by the departments of Biological Structure and Surgery. Prerequisite: permission of department. Coordinator: Department of Biological Structure.

CONJ 616 P-Prison/Corrections Medicine Clerkship - Washington (*, max. 16) Covers a wide variety of diseases in a variety of outpatient settings, including urgent care, a chronic care clinic, and a long-term care facility for elderly and medically frail inmates in a men's prison setting. Also includes the option to learn common procedures including suturing, joint injections, skin biopsies, and toenail removals. Prerequisite: completion of the medicine and family medicine required clerkships. Offered: AWSpS.

CONJ 617 P-Subinternship in Neurocritical Care Medicine (8) As sub-interns on the Neurocritical Care Service, students learn about critical illness, focusing on neurosurgical critical illness. Through direct patient care responsibilities, students gain experience managing traumatic brain injury, acute spinal cord injury, acute cerebral hemorrhage, and other common critical-care issues. Offered: AWSpS.

CONJ 625 Global Health Clinical Elective (*, max. 24) *S. McClelland* Provides a better understanding of the challenges of providing medical care in international resource-limited settings. Students spend a minimum of five weeks at a developing county medical center, with the goal of learning more about the local burden of disease and strategies for diagnosis and treatment. Prerequisite: fourth year medical students. Offered: WSp.

CONJ 626 Global HIV Medicine Elective (10-20, max. 20) *Chung* Prepares health profession students for work in developing countries. Includes experience treating HIV-positive patients in resource-poor settings, analyzing the relationship between poverty and health, recognizing tropical diseases that are common in Sub-Saharan Africa or Southeast Asia, and understanding the epidemiology of HIV in Sub-Saharan Africa or Southeast Asia. Offered: AWSpS.

CONJ 630 P-Write Chronic Care Clerkship (8) Basic clinical clerkship for students enrolled in the WRITE Program. Prerequisite: approved by the WRITE committee.

CONJ 655 P-Chronic Care - Olympia (8) Exposure to rehabilitation. Students are assigned to a preceptor and clinical site to concentrate their clinical activities. Includes didac-

tic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 656 P-Chronic Care/Palliative Care - Cheyenne, WY (8) Exposure to palliative care. Students are assigned to a preceptor and clinical site to concentrate their clinical activities. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 657 P-Chronic Care/Pain - VAPSHCS - Seattle, WA (8) Exposure to pain management. Students are assigned to a preceptor and clinical site to concentrate their clinical activities. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 658 P-Chronic Care/Palliative Care - Providence Spokane (8) Exposure to rehabilitation, palliative care, and pain management. Students focus on one area and are assigned to a preceptor and clinical site to concentrate clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 659 P-Chronic Care/Geriatrics - Missoula VHC (8) Exposure to rehabilitation, palliative care, pain management, and geriatrics. Students focus on one area and are assigned to a preceptor and clinical site to concentrate clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 660 P-Chronic Care/Palliative Care - Group Health Everett (8) Exposure to rehabilitation, palliative care, and pain management. Students focus on one area and are assigned to a preceptor and clinical site to concentrate clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 661 P-Chronic Care/Palliative Care - Coeur d'Alene (8) Exposure to rehabilitation, palliative care, and pain management. Students focus on one area and are assigned to a preceptor and clinical site to concentrate clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 662 P-Chronic Care/Alaska - Fairbanks APCA (8) Exposure to rehabilitation, geriatrics, palliative care, and pain management through the Chronic Care website and didactics. Students focus their clinical activities on chronic pain management.

CONJ 663 P-Chronic Care/Alaska - Providence Palliative Care (8) Exposure to the areas of rehabilitation, geriatrics, palliative care, and pain management. Includes didactic orientation of the first day, and patient case presentations during didactics on last day.

CONJ 664 P-Chronic Care/Palliative Care - Kline Galland Home (8) Exposure to rehabilitation. Students assigned to a preceptor and clinical site to concentrate their clinical activities. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 665 P-Chronic Care/Palliative Care - PHOS (8) Exposure to rehabilitation, palliative care, and pain management. Students focus on one area and are assigned to a preceptor and clinical site to concentrate clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 666 P-Chronic Care/Spokane - VAMC Geriatrics Unit (8) Exposure to rehabilitation, palliative care, and pain management. Students focus on one area and are assigned to a preceptor and clinical site to concentrate clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 667 P-Chronic Care/Palliative Care - Evergreen Hospice (8) Exposure to rehabilitation, palliative care, and pain management. Students focus on one area and are as-

signed to a preceptor and clinical site to concentrate clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 668 P-Chronic Care/Spokane - St. Luke's Rehab, Pain Management (8) Exposure to rehabilitation, palliative care, and pain management. Students focus on one area and are assigned to a preceptor and clinical site to concentrate clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 669 P-Chronic Care/Spokane - Deaconess Palliative Care (8) Exposure to rehabilitation, geriatrics, palliative care, and pain management. Students are assigned to a preceptor and clinical site to concentrate clinical activities.

CONJ 670 P-Chronic Care/Billings - St. Vincent Healthcare (8) Exposure to rehabilitation, geriatrics, palliative care, and pain management. Includes didactic orientation on the first day, and patient case presentations during didactics on last day.

CONJ 671 P-Chronic Care/Boise - Saint Alphonsus Palliative Care (8) Exposure to rehabilitation, geriatrics, palliative care, and pain management. Includes didactic orientation on the first day, and patient case presentations during didactics on last day.

CONJ 672 P-Chronic Care/Boise - St. Luke's Palliative Care (8) Exposure to rehabilitation, geriatrics, palliative care, and pain management. Includes didactic orientation on the first day, and patient case presentations during didactics on last day.

CONJ 673 P-Chronic Care/Boise - VAMC (8) Exposure to rehabilitation, geriatrics, palliative care, and pain management. Students are assigned to a preceptor and clinical site to concentrate their clinical activities.

CONJ 674 P-Chronic Care/Alaska - Anchorage APCA (8) Exposure to rehabilitation, geriatrics, and pain management. Students are assigned to a preceptor and clinical site to concentrate their clinical activities.

CONJ 675 P-Chronic Care/Palliative Care - GHHS Tacoma (8) Exposure to rehabilitation, palliative care, and pain management. Students focus on one area and are assigned to a preceptor and clinical site to concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 677 P-Clinical Allergy and Immunology (*, max. 12) Clinic and office experience in diagnosing and managing allergic disease. Clinical conferences, hospital rounds on clinical immunology and allergy. Student may elect a flexible program, emphasizing adult or pediatric allergy. (Four weeks, full-time). Prerequisite: MED 665 or basic clerkships in departments of Family Medicine or Pediatrics.

CONJ 679 P-Chronic Care/Palliative Care - PRMC (8) Exposure to palliative care. Students are assigned to a preceptor and clinical site to concentrate their clinical studies. Includes didactic orientation on the first day and patient case presentations during didactics on last day.

CONJ 680 P-Detoxification and Rehabilitation Program for Alcoholism and Drug Abuse (*, max. 16) J. REOUX Supervised introduction to alcoholic detoxification and rehabilitation and drug abuse. Supervised clinical experience in a variety of alcoholism and drug abuse treatment programs; accompanied by a core series of lectures and discussions. For medical students only. Prerequisite: Completion of 3rd year psychiatry clerkship.

CONJ 681 P-Chronic Care/Palliative Care - Children's (8) Exposure to palliative care. Students are assigned to a preceptor and clinical site to concentrate their clinical activities. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 682 P-Chronic Care/Palliative Care - HMC (8) Exposure to palliative care. Students are assigned to a preceptor

and clinical site to concentrate their clinical activities. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 683 P-Chronic Care/Palliative Care - UWMC PC Consult (8) Exposure to palliative care. Students are assigned to a preceptor and clinical site to concentrate their clinical activities. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 684 P-Chronic Care/Palliative Care - Multicare Hospice (8) Exposure to palliative care. Students are assigned to a preceptor and clinical site to concentrate their clinical activities. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 685 P-Chronic Care/Palliative Care - Providence Everett (8) Exposure to rehabilitation, palliative care, and pain management. Students focus on one area and are assigned to a preceptor and clinical site to concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 686 P-Chronic Care/Rehab - Children's (8) Exposure to rehabilitation. Students focus on one area and are assigned to a preceptor and clinical site to concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 687 P-Chronic Care/Rehab - HMC (8) Exposure to rehabilitation. Students focus on one area and are assigned to a preceptor and clinical site to concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 688 P-Chronic Care/Rehab - VA RMS (8) Exposure to rehabilitation. Students focus on one area and are assigned to a preceptor and clinical site to concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 689 P-Chronic Care/Rehab - VA SCI (8) Exposure to rehabilitation. Students focus on one area and are assigned to a preceptor and clinical site to concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 690 P-Chronic Care/Rehab - UWMC (8) Exposure to rehabilitation. Students are assigned to a preceptor and clinical site to concentrate their clinical activities. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 691 P-Clerkship in Chronic Care - Boise PMR (8) Required clerkship for fourth year medical students, concentrating on geriatrics, palliative care, and rehab medicine using lectures, group discussions, standardized patients, and case scenarios.

CONJ 692 P-Chronic Care Clerkship - Spokane, St. Luke's Rehab (8) Exposure to geriatrics. Students focus on one area and are assigned to a preceptor and clinical site to concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 693 P-Chronic Care/Geriatrics - HMC (8) Exposure to geriatrics. Students focus on one area and are assigned to a preceptor and clinical site to concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 694 P-Chronic Care/Geriatrics - VA (8) Exposure to geriatrics. Students focus on one area and are assigned to a preceptor and clinical site to concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 695 P-Chronic Care/Pain Management - Roosevelt (8) Exposure to pain management. Students focus on one area and are assigned to a preceptor and clinical site to concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 696 P-WRITE Clinical Electives (*, max. 24) Clinical electives for WRITE program. Offered: AWSpS.

CONJ 697 International Exchange Clerkship (12) Hunt Participation in healthcare delivery systems in developing countries; observation of relationship of host country's traditional medicine with Western medicine. Students live in cross-cultural setting to better understand their own assumptions about healthcare and life styles. Offered: Sp.

CONJ 698 P-Foreign Medical Student Clerkship (*, max. 24) A limited number of students from foreign medical schools are accepted for individually designed clinical clerkships at available sites after all UWMC students are accommodated. Prerequisite: permission of Associate Dean for Academic Affairs, School of Medicine.

CONJ 699 P-Clinical Clerkships (*, max. 32)

Family Medicine

C408 Health Sciences

The University of Washington Department of Family Medicine, founded in 1971, improves the health and well-being of individuals, families, and communities through leadership in education, scholarship, and clinical care. With over 800 clinical faculty members located throughout the Washington, Wyoming, Alaska, Montana and Idaho (WWAMI) region, and approximately 40 regular faculty located at the University site in Seattle, the department is one of the largest of its kind in the country.

Direct patient care is offered primarily through the clinical operations at the UW Neighborhood Clinic in Northgate and the Family Medicine Clinic at Harborview. The Medical Student Education Section develops and delivers innovative, high-quality training to students who serve the evolving needs of the diverse individuals, families, and communities of the WWAMI region, with emphasis on rural and urban underserved and other vulnerable populations. The residency program is known for its full spectrum training of residents that allows its graduates to enter a variety of practice settings, including careers with an academic or health policy focus. The UW Family Medicine Residency Network is a group of 18 family medicine residency programs located within the WWAMI region. The network exists to promote excellence in family medicine residency education, provide academic leadership, and to respond to societal needs for family physicians. Organized in October 1977, the research section's efforts are focused primarily in four areas – rural health, the health workforce, chronic disease, and medical education. MEDEX Northwest, established in 1969, joined the Department in 2011. Its mission is to train physician assistants who will primarily practice in medically underserved and rural areas of WWAMI.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsct/

FAMED 499 Undergraduate Research (*, max. 35) W. PHIL-LIPS Research activities arranged with University or community-based physicians in diverse areas relating to family medicine. Prerequisite: permission of course coordinator. Offered: AWSpS.

FAMED 501 P-Introduction to Family Medicine: Preceptorship (2, max. 12) *J. CAWSE-LUCAS* Medical students spend one morning per week for one or more quarters working with a practicing community family physician. Prerequisite: first- and second-year medical students, permission of course coordinator. Offered: AWSpS.

FAMED 502 P-Preclinical Continuity Preceptorship in Family Medicine (1-8, max. 12) *J. CAWSE-LUCAS* Introduces medical students to continuity of care in family medical settings, especially regarding what it means to be someone's doctor and what it is like to work with individuals to help them achieve optimal health for a minimum of two quarters. Prerequisite: first- and second-year medical students; permission of course coordinator. Offered: AWSpS.

FAMED 525 African American Health and Health Care Disparity (1) *F. OVERSTREET* Examines the most pressing health issues facing African Americans. Provides a forum to examine the root causes of health disparity in African descendants. Explores strategies to remedy problems in public health and healthcare delivery systems. Prerequisite: current graduate health science student; permission of course coordinator. Credit/no-credit only. Offered: A.

FAMED 530 Primary Care (1) *W. PHILLIPS* Introduces primary care, the foundation of medical care and cornerstone of healthcare reform. Addresses history, clinical content, practitioner workforce, delivery models, research methods, and policy issues. Explores the role of primary care in personal and population health. Includes lectures, discussions, student presentations, and practice observation. Prerequisite: permission of course coordinator. Offered: W.

FAMED 540 Topics in Health and Human Services in Rural Communities (1) *Shin* Explores topics important to rural clinical practice. Includes rural health research, rural health policy, cultural competency, models of rural health practice, and others. Includes panel discussions, a case study, and a required field trip to a rural community. Prerequisite: permission of course coordinator. Offered: W.

FAMED 547 Spirituality in Healthcare (2) Examination of the beliefs, values, meaning, and spirituality of health professionals for the well-being of their patients as well as for themselves. Offered: jointly with B H 518/SOC W 587; Sp.

FAMED 556 Spanish for Health Professionals (1) Instruction in interviewing/history taking Spanish-speaking patient. Prerequisite: Spanish fluency at intermediate level; current graduate health science student; permission of course coordinator. Credit/no-credit only. Offered: Sp.

FAMED 559 Tobacco Related Health Disparities (1/2) Integrates multiple disciplinary perspectives to address the pressing issue of disproportionate tobacco use and related diseases among marginalized populations, including those defined by socioeconomic status, race/ethnicity, and sexual orientation. Explores links between, and intervention strategies for, smoking and mental illness, social stress, acculturation processes, and genetics. Offered: jointly with HSERV 556.

FAMED 561 LGBTQ Health and Health Disparities (1) Covers the history and health status of the Lesbian, Gay, Bisexual, Transgendered, and Queer (LGBTQ) community in the United States; effective strategies and skills for working with the LGBTQ community; designed to help the learner understand and respond better to healthcare needs of the LGBTQ community. Prerequisite: current graduate health science student; permission of course coordinator. Offered: W.

FAMED 630 P-WRITE Family Medicine Clinical Clerkship (*, max. 24) Basic clinical clerkship for students enrolled in the WRITE Program. Prerequisite: permission of course coordinator.

FAMED 631 P-LIC Family Medicine Clinical Clerkship - Olympia, WA (12) Basic clinical clerkship for students enrolled in the LIC program. Prerequisite: permission of course coordinator.

FAMED 632 P-Clinical Clerkship in Family Medicine - Bozeman (12) Ambulatory primary care with emphasis on comprehensive, continuity, integrated care to patients of both genders and all ages in a culturally responsive manner. Student functions as clerk in community or residency site, and participates in care of assigned patients in a variety of settings: office, hospital, home, community resources. Prerequisite: third- or fourth-year medical students. Offered: AWSpS.

FAMED 633 P-Clinical Clerkship in Family Medicine - Leavenworth (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 634 P-Clinical Clerkship in Family Medicine - Sitka (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 635 P-Clinical Clerkship in Family Medicine - Cheyenne (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 636 P-Clinical Clerkship in Family Medicine - Wenatchee (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 637 P-Clinical Clerkship in Family Medicine - Spokane GHC (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 638 P-Clinical Clerkship in Family Medicine - Othello (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 640 P-Clinical Clerkship in Family Medicine - Boise (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 641 P-Clinical Clerkship in Family Medicine - Spokane (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 642 P-Clinical Clerkship in Family Medicine - Madigan (12) For description and prerequisite, see FAMED 636. Offered: AWSpS.

FAMED 643 P-Clinical Clerkship in Family Medicine - Tacoma (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 644 P-Clinical Clerkship in Family Medicine - University of Washington Medical Center (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 645 P-Clinical Clerkship in Family Medicine - Group Health (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 646 P-Clinical Clerkship in Family Medicine - Swedish First Hill (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 647 P-Clinical Clerkship in Family Medicine - Swedish Cherry Hill (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 648 P-Clinical Clerkship in Family Medicine - Renton Valley (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 649 P-Clinical Clerkship in Family Medicine - Olympia (12) For description and prerequisites, see FAMED 636. Offered: AWSpS.

FAMED 650 P-Clinical Clerkship in Family Medicine - Anacortes (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 651 P-Clinical Clerkship in Family Medicine - Omak (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 653 P-Clinical Clerkship in Family Medicine - Anchorage (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 656 P-Clinical Clerkship in Family Medicine - Whitefish (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 657 P-Clinical Clerkship in Family Medicine - Po-catello (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 658 P-Clinical Clerkship in Family Medicine - Sea Mar Clinic (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 659 P-Clinical Clerkship in Family Medicine - Country Doctor (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 660 P-Clinical Clerkship in Family Medicine - Yakima (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 661 P-Clinical Clerkship in Family Medicine - Bremerton (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 662 P-Clinical Clerkship in Family Medicine - Buffalo (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 663 P-Clinical Clerkship in Family Medicine - Petersburg (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 664 P-Clinical Clerkship in Family Medicine - Billings (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 665 P-Clinical Clerkship in Family Medicine - Missoula (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 666 P-Clinical Clerkship in Family Medicine - Torrington (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 669 P-Clinical Clerkship in Family Medicine (12) For description and prerequisite, see FAMED 632.

FAMED 670 P-Advanced Underserved Clerkship (*, max. 24) Students gain experience, knowledge, and skills needed to care for rural, specific ethnic, or underserved populations. Prerequisite: third- or fourth-year medical students, permission of course coordinator. Offered: AWSpS.

FAMED 672 P-Advanced Preceptorship International (*, max. 24) For medical students desiring primary care experience abroad. Special project deals with influences of social, cultural, educational, and economic forces on healthcare delivery. Prerequisite: late third- or fourth-year medical students, permission of course coordinator. Offered: AWSpS.

FAMED 674 P-Advanced Interviewing in Primary Care (8) *L. MAUKSCH* Emphasizes developing competency in patient-centered interviewing, interview organization, and time management. Introduces primary care counseling skills and methods of health behavior change. Prerequisite: permission of course faculty.

FAMED 676 P-Clinical Clerkship in Family Medicine - Libby (12) For description and prerequisites, see FAMED 632. Offered: AWSpS.

FAMED 677 P-Clinical Clerkship in Family Medicine - Grand Coulee (12) For description and prerequisites, see FAMED 632. Offered: AWSpS.

FAMED 678 P-Clinical Clerkship in Family Medicine - Port Angeles (12) For description and prerequisites, see FAMED 632. Offered: AWSpS.

FAMED 679 P-Clinical Clerkship in Family Medicine - Fern-dale (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 680 P-Traditional Indian Medicine Clerkship in Primary Care Setting (*, max. 16) Broadens students' knowledge about the traditional Indian perception of health and illness, and expands their experience and skills with Traditional Indian Medicine (TIM) by interacting with a TIM practitioner, Native physician, patients and their families, and the local Native community. Prerequisite: either UCONJ

530, Indian Health Pathway declaration, or permission of course coordinator. Offered: AWSpS.

FAMED 681 P-Indian Healthcare Clerkship (*, max. 16) Examines the health disparities, health systems, and cultural/community strengths associated with American Indian/Alaska Native or other indigenous peoples. Prerequisite: either UCONJ 530, Indian Health Pathway declaration, or permission of course coordinator. Offered: AWSpS.

FAMED 682 P-Clinical Clerkship in Family Medicine - Ellensburg (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 683 P-Clinical Clerkship in Family Medicine - Lewiston (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 684 P-Clinical Clerkship in Family Medicine - Butte, MT (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 685 P-Clinical Clerkship in Family Medicine - Valley - Juneau, AK (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 686 P-Clinical Clerkship in Family Medicine - Port Townsend (12) For description and prerequisite, see FAMED 632.

FAMED 687 P-Clinical Clerkship in Family Medicine - While Salmon (12) For description and prerequisite, see FAMED 632.

FAMED 688 P-Family Medicine Subinternship (*, max. 24) Students serve as interns for family medicine services associated with residency programs under the supervision of family medicine residents and attending physicians. Schedules mix inpatient and ambulatory experiences as determined by the site and the fourth-year student may have the same call as R-1 on service. Prerequisite: permission of course coordinator. Offered: AWSpS.

FAMED 697 P-Family Medicine Special Electives (*, max. 24) Supplemental experience in rural/urban practice or a family medicine department in a setting not already established through the UW SOM family medicine curriculum. Prerequisite: third- or fourth-year medical students, permission of course coordinator. Offered: AWSpS.

FAMED 699 P-WWAMI Family Medicine Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of course coordinator. Offered: AWSpS.

Genome Sciences

S-250 Foege Building

The Department of Genome Sciences was created in 2001 with the merger of the Department of Genetics and the Department of Molecular Biotechnology.

GRADUATE PROGRAM

Graduate Program Coordinator

S-340 Foege Building, Box 355065

(206) 616-7297

gensci@uw.edu

The Department of Genome Sciences offers a graduate program leading to the doctor of philosophy degree. Students are admitted only to the doctoral program.

The faculty and students of the Department of Genome Sciences study a broad range of topics, including the genetics of *E. coli*, yeast, *C. elegans*, *Drosophila*, and mouse;

human and medical genetics; mathematical, statistical, and computer methods for analyzing genomes and theoretical and evolutionary genetics; and genome-wide studies by such approaches as sequencing, transcriptional and translational analysis, polymorphism detection, and identification of protein interactions. Successful completion of the graduate program, generally over a period of five years, leads to the PhD in Genome Sciences.

The department's goal is to address leading edge questions in biology and medicine by developing and applying genetic, genomic, and computational approaches that take advantage of genomic information now available for humans, model organisms, and a host of other species.

Doctor of Philosophy

Admission Requirements

1. Baccalaureate or advanced degree, either in a science such as biology, biochemistry, or related field, or in a computational area such as computer science or mathematics. The ideal candidate has experience in both areas. The most competitive applicants have excellent GRE scores as well as extensive laboratory research experience.
2. Personal statement describing the applicant's academic and scientific background, research goals, and motivation for applying
3. Curriculum vitae
4. Unofficial copies of transcripts.
5. Unofficial copies of GRE scores (and TOEFL scores, for international applicants). Applicants who have provided official scores to the UW Graduate School need not send additional copies.
6. Three letters of reference from professors or others who are able to provide insight on the applicant's qualifications. Reference letters may be submitted online or by hard copy.
7. Applicants still in school who will have earned additional courses not yet listed on the transcript should send a list of such additional courses to be taken before graduation.

Degree Requirements

90 credits, to include:

1. *First Year:* Core courses, covering such topics as gene regulation, genomics, genetic analysis, genomic informatics, computational biology, proteomics, and population genetics, as well as literature review. Students rotate through a minimum of three laboratories before selecting a thesis laboratory at the end of the first year. Actual courses are determined in consultation with adviser.
- Electives focused on specific areas of interest. Students have the option of selecting mentors from core faculty members in the Department of Genome Sciences as well as from adjunct and affiliate faculty members from several UW departments and the Fred Hutchinson Cancer Research Center.
2. *Second Year:* Thesis research and additional electives. At the end of the second year, the student takes the general examination for PhD candidacy.
3. *Third Year:* Students serve as teaching assistants for two undergraduate courses.
4. *Final Years:* Most students complete their research and defend their dissertation during their fifth year.
5. During all years, students participate in the departmental Journal Club and research reports functions, and attend presentations of well-known researchers via the departmental seminar series.

Financial Aid

Genome Sciences provides full funding, including a competitive twelve-month salary, tuition waiver, and health insurance. Support is contingent upon satisfactory academic progress.

Research Facilities

The department is located in the William H. Foege Building. Students are assigned space in the laboratories of faculty members with whom they do their rotations or dissertation research. State-of-the-art research facilities are available in the department for cellular, protein, and DNA analysis. Extensive computer and library resources are available to students.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

GENOME 261 Genomes and Society (4) NW Explores current technological advances in genome research and how these advances are impacting society. Topics include sequencing of the human genome, stem cell research, cloning, genetically modified foods, immunizations/public health, and genetic therapy. Appropriate for non-science majors.

GENOME 351 Human Genetics: The Individual and Society (4) NW Principles of Mendelian inheritance as illustrated by human traits and diseases; chromosomes and sex determination; distribution of genes in populations; natural selection and evolution; counseling and genetic engineering; ethical issues. Appropriate for non-science majors.

GENOME 361 Fundamentals of Genetics and Genomics (3) NW Introduces fundamentals concepts in genetics and genomics including patterns of inheritance, genetic variation, and the relationship between genotype and phenotype. Prerequisite: BIOL 200; may not be taken if GENOME 371 is already taken; may not be repeated. Offered: WSpS.

GENOME 371 Introductory Genetics (5) NW Covers gene transmission, including chromosome mapping, genetic pathways; mutational analysis of biological processes emphasizing mutations affecting chromosome transmission. Introduction to genomics - cloning and sequence analysis of whole genomes. Emphasizes formal genetic mechanisms, molecular techniques. For biological sciences majors. Prerequisite: minimum grade of 1.7 in BIOL 180; minimum grade of 1.7 in BIOL 200; may not be repeated. Offered: A.

GENOME 372 Genomics and Proteomics (5) NW Covers emerging fields of genomics and proteomics. Discusses key technologies and their applications to the study of human and model organism genomes.

GENOME 373 Genomic Informatics (4) NW Focuses on methods for analyzing large genetic data sets and their application to biological problems, including sequence alignment and search methods, gene prediction, phylogenetic trees, and microarray analysis.

GENOME 414 Molecular Evolution (5) NW Survey of empirical approaches to the study of molecular evolution and ecology, drawing on examples from a variety of taxa and the recent literature. Topics include DNA sequencing and systematics, fingerprinting approaches in behavioral ecology, and adaptive evolution at the molecular level. Prerequisite: BIOL 354. Offered: jointly with BIOL 414.

GENOME 453 Genetics of the Evolutionary Process (3) NW Contributions of genetics to the understanding of evolution. Processes of mutation, selection, and random genetic events as they affect the genetic architecture of natural populations and the process of speciation. Em-

phasis on experimental data and observation, rather than mathematical theory. Prerequisite: either GENOME 361 or GENOME 371.

GENOME 454 The Origins of Genetics (4) NW Discovery and eventual triumph of Mendelism in the early twentieth century. Concepts of heredity from ancient times to the nineteenth century. Mendel's work and its rediscovery. Evidence contributing to cornerstone of classical genetics - the chromosome theory of heredity. Prerequisite: either GENOME 351, GENOME 371, or GENOME 372. Offered: A.

GENOME 463 Hands-On Science for Elementary School Teachers (5) Offers prospective and practicing teachers an opportunity to learn science through the hands-on teaching methods recommended for teaching science at the elementary level.

GENOME 465 Advanced Human Genetics (4) NW *Eichler, King* Explores genetic analysis of naturally occurring variation in humans; origins and consequences of mutation, as mediated by selection, migration, population structure and drift; approaches to finding human disease genes and characterizing them at the molecular level; relevance of other species to analysis of human genes. Prerequisite: either GENOME 361 or GENOME 371. Offered: W.

GENOME 466 Cancer Genetics (3) NW Focuses on three types of cancer-related genetics. DNA repair, mitotic recombination, chromosome loss and imbalance, and other aspects of genomic instability. Metastatic cancer as an example of natural selection and evolution. Yeast and nematodes as models for the study of cancer genetics. Prerequisite: either GENOME 361, GENOME 371, or GENOME 372.

GENOME 475 Debates in Genetics (3) NW Utilizes the original scientific literature as the basis for discussion of a range of genetic issues that impact society. Discussions are student-led; evaluations are based both on participation in class and on a research paper. Prerequisite: BIOL 200; either BIOL 355, BIOL 401, BIOL 402, GENOME 361, or GENOME 371.

GENOME 490 Undergraduate Seminar (2, max. 6) NW Seminar for advanced undergraduate students engaged in individual research projects or those who wish to gain an understanding of genetic research by analysis of the primary literature. Assignments emphasize the rationale for research projects and the presentation and interpretation of research findings. Offered: AWSp.

GENOME 496 Peer Teaching Assistants in Genome Sciences (1-5, max. 5) Direct experience in the classroom teaching a discussion section for non-majors in genome sciences courses. Peer teaching assistants attend lectures and weekly preparation meetings and gain in-depth background on the subject material. In addition, peer TAs are given training in teaching techniques and course preparation. Prerequisite: GENOME 371. Credit/no-credit only.

GENOME 499 Undergraduate Research (*, max. 30) Credit/no-credit only. Offered: AWSpS.

GENOME 501 Introduction to Research Materials (1-10, max. 10) The student undertakes a research project in one of the research groups within the department for a quarter at a time. Prerequisite: graduate standing in the Department of Genome Sciences or permission of Graduate Program Coordinator. Credit/no-credit only. Offered: AWSpS.

GENOME 503 An Inquiry Approach to Teaching Genetics at the Introductory High School Level (2, max. 6) Provides advanced science content on topics in genetics and bioethics that are taught in secondary biology classrooms, as well as pedagogical strategies for conveying concepts to pre-college students. Workshop participation required.

GENOME 504 StarNet: Research Experiences for Students and Teachers (3, max. 9) Explores the scientific knowledge, technical skills, and pedagogical strategies related to teaching DNA sequencing and bioethics in a high school classroom. Workshop participation required.

GENOME 505 StarNet: Teacher Research Experience (9) Participating teachers carry out an independent research project in a University of Washington laboratory. Teachers, scientists, and StarNet staff meet weekly for an informal research talk.

GENOME 506 The Science Education Partnership (5, max. 15) Provides secondary school teachers training in molecular biology, genetics, and biotechnology, as well as resources and ongoing support designed to enhance biology instruction. Workshop participation required. Credit/no-credit only.

GENOME 520 Seminar (1, max. 30) Prerequisite: graduate standing in the Department of Genome Sciences or permission of Graduate Program Coordinator. Credit/no-credit only. Offered: AWSp.

GENOME 522 Journal Club (1, max. 30) Presentation and discussion of current scientific literature. For Genome Sciences graduate students only. Credit/no-credit only. Offered: AWSp.

GENOME 523 Research Reports (1, max. 30) *Thomas* Presentation and discussion of current student research. For Genome Sciences graduate students only. Credit/no-credit only. Offered: AWSp.

GENOME 525 Current Literature in Human Genetics (1) Topics from current literature in human genetics. Students and faculty each present one topic per quarter. Prerequisite: graduate or postdoctoral status. Credit/no-credit only. Offered: AWSp.

GENOME 531 Genetics of Human Disease (3) Covers modern approaches to the identification of human disease genes permitted by their isolation. Reviews how functional conservation of proteins throughout eukaryotic evolution is modeled in systems such as somatic cell culture, transgenic mice, menatodes, *Drosophila*, and yeast. Credit/no-credit only.

GENOME 540 Introduction to Computational Molecular Biology: Genome and Protein Sequence Analysis (4) Algorithmic and probabilistic methods for analysis of DNA and protein analysis. Students must be able to write computer programs for data analysis. Prior coursework in biology and probability highly desirable. Prerequisite: permission of instructor. Offered: W.

GENOME 541 Introduction to Computational Molecular Biology: Molecular Evolution (4) Computational methods for studying molecular evolution. Students must be able to write computer programs for data analysis. Prior coursework in biology and probability highly desirable. Offered: Sp.

GENOME 547 Scientific Writing (1.5) For graduate students principally in their second and third year. Focuses on the preparation of research manuscripts for publication. Also considers other scientific writing such as thesis proposals and fellowship and grant applications. Credit/no-credit only.

GENOME 550 Methods and Logic in Genetics (3) Critical reading and detailed discussion of genetics-related scientific research papers. Material emphasizes methodological and logical themes of importance in modern genetics, for example: origin of mutants, genetic epistasis, pulse labeling, and *in vivo* gene function. Prerequisite: first-year genetics graduate students only. Offered: A.

GENOME 551 Principles of Gene Regulation (1.5) A detailed examination of the mechanisms of transcription and translation as determined by experimental genetics, molecular biology, and biochemistry.

GENOME 552 Technologies for Genome Analysis (1.5) Discussion of current and newly-emerging technologies in genome analysis with regard to applications in biology and medicine and to potential advantages and limitations. Prerequisite: permission of instructor. Offered: A.

GENOME 553 Advanced Genetic Analysis (1.5) Classical genetic analysis is a powerful approach to dissect com-

plex biological processes. Selective removal, addition, or alteration of specific proteins to identify and order genes in a pathway, define protein function, determine tissue and temporal requirements for gene function, and distinguish among competing hypotheses to explain biological phenomena.

GENOME 554 Genomic Informatics (1.5) Many complete genome sequences are known. Each of these encodes the instructions for making an entire organism, but how can we hope to decipher the code? Focuses on methods for analyzing genome sequences, ranging from large-scale organizational pattern to gene prediction and detailed local alignment methods.

GENOME 555 Protein Technology (1.5) Focuses on current and emerging technologies and approaches in protein analysis, and considers applications of these technologies in biology, biotechnology, and medicine.

GENOME 559 Introduction to Statistical and Computational Genomics (3) Rudiments of statistical and computational genomics. Emphasis on basic probability and statistics, introduction to computer programming, and relevant web databases.

GENOME 561 Molecular Population Genetics and Evolution (1.5) Surveys recent literature to gain an understanding of the basic principles of molecular population genetics and evolution as applied to analysis of genome data. Requires some computer analysis of genome data.

GENOME 562 Population Genetics (4) *Felsenstein* Mathematical and experimental approaches to the genetics of natural populations, especially as they relate to evolution. Emphasis on theoretical population genetics. Prerequisite: permission of instructor. Offered: W, odd years.

GENOME 565 Advanced Human Genetics (4) *Eichler, King* Explores genetic analysis of naturally occurring variation in humans; origins and consequences of mutation, as mediated by selection, migration, population structure, and drift; approaches to finding human disease genes and characterizing them at the molecular level; relevance of other species to analysis of human genes. Prerequisite: either GENOME 361 or GENOME 371. Offered: W.

GENOME 570 Phylogenetic Inference (3) *Felsenstein* Methods for inferring phylogenies (evolutionary trees) - biological assumptions, statistical foundations, and computational methods. A comprehensive introduction for graduate students in the biological sciences to phylogenetic methods using data from molecular sequences, continuous and discrete characters, and gene frequencies. Prerequisite: introductory courses in evolution and in statistics. Offered: W, even years.

GENOME 573 Human Genomics: Science, Ethics, and Society (3) *Fullerton* Explores the ethical and social implications of human molecular genetics and genomics investigation. Recent research is critically evaluated for its potential impact on scientific practice, research participation, and societal understandings. Prerequisite: LAW H 504/B H 514/ PHG 512 or permission of instructor. Offered: jointly with B H 551/PHG 551; A.

GENOME 576 Genetic and Genomic Analysis of Bacteria (1.5) In-depth coverage of genetic and genomic strategies used to analyze complex biological processes in bacteria. Focuses on general approaches, with examples drawn from studies of pathogenic organisms where possible. A combination of lectures and seminar-style discussions of primary literature.

GENOME 580 Ethics in Biomedical Research and Teaching (1) Explores ethical issues in research and teaching and discusses avenues of responsible conduct. Credit/no-credit only.

GENOME 581 Seminar in *Drosophila* Genetics (1) *Berg* Discussions of contemporary research in and novel methods for genetic, cell biological, and molecular biological analysis of *Drosophila* development. Credit/no-credit only. Offered: AWSp.

GENOME 582 Seminar in Mouse Genetics (1) *Braun* Discussion of contemporary research in and novel methods for genetic, cell biological, and molecular analysis of mammalian development, with utilization of transgenic techniques. Credit/no-credit only.

GENOME 584 Seminar in DNA Replication (1) *Brewer, Fangman* Discussions of contemporary research in and novel methods for genetic, cell biological, and molecular biological analysis of budding yeast, with emphasis on the mechanisms and control of DNA replication. Credit/no-credit only. Offered: AWSp.

GENOME 585 Seminar in Bacterial Genetics (1) Discussions of contemporary research in and novel methods for genetic, cell biological, and molecular biological analysis of bacterial assembly mechanisms, with emphasis on the topogenesis of membrane proteins. Credit/no-credit only.

GENOME 586 Seminar in Mammalian Genetics (1) *Sibley* Discussions of contemporary research in and novel methods for genetic, cell biological, and molecular biological analysis of mammalian genetics, with emphasis on lymphoblast development. Credit/no-credit only.

GENOME 587 Seminar in Nematode Genetics (1) *Thomas* Discussions of contemporary research in and novel methods for genetic, cell biological, and molecular biological analysis of nematode development, with emphasis on neurogenesis and other developmental processes. Credit/no-credit only.

GENOME 590 Population Genetics Seminar (1) *Felsenstein* Weekly presentation by participants of current literature and ongoing research in evolution, molecular evolution, evolutionary genetics of natural populations, human population genetics, and quantitative genetics applied to animal and plant breeding. Prerequisite: GENOME 562 or permission of instructor. Credit/no-credit only.

GENOME 599 Special Topics in Molecular Biotechnology (*, max. 12) Prerequisite: permission of instructor. Offered: AWSp.

GENOME 600 Independent Study or Research (*-) Credit/no-credit only. Offered: AWSpS.

GENOME 700 Master's Thesis (*-) Offered: AWSpS.

GENOME 800 Doctoral Dissertation (*-) Offered: AWSpS.

Human Biology

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at [www.uw.edu/students/crsctat/](http://uw.edu/students/crsctat/).

HUBIO 500 P-Medical Practice Preceptorship at WWAMI Sites (1, max. 3) Personal experience with, and insight into, medical practice situations. Student is stationed with carefully selected clinical faculty members in their offices in accordance with the student's preference of discipline at the WWAMI sites. Registration limited to first-year medical students at WWAMI sites. Offered: AWSpS.

HUBIO 501 P-Human Biology Special Projects (*) Designed for medical students electing a special study project related to the Introduction to Clinical Medicine or other human biology courses, which are offered during the first and second years in the School of Medicine. Primarily intended for students in remedial or extended programs. Prerequisite: permission of assistant dean for curriculum. Offered: AWSpS.

HUBIO 505 P-WWAMI Preceptorship (*, max. 6) Opportunity for first-year medical students at WWAMI sites to gain personal experience with medical practice situations by

being assigned to selected clinical faculty members in their offices. Offered: ASP.

HUBIO 510 P-Microscopic Anatomy: Histology (6) *Bermingham-McDonogh* Lectures and laboratories in microscopic anatomy designed to provide the principles and concepts of histology, to define the morphological characteristics of the cells, tissues, and organs of the human body, and to relate this information to functional processes studied in concurrent and subsequent courses. Offered: A.

HUBIO 511 P-Human Anatomy and Embryology (8/13) *Clark* Structural organization of human body at the macroscopic level to provide a foundation for physical examination and functional assessment of the human organism. Integrates embryological development with study of the cadaver and examination of the normal living body. Concentrates on exploration of the body cavities and the viscera they contain. Offered: A.

HUBIO 512 P-Mechanisms in Cell Physiology (5) *Detwiler* Physiology of the cell membrane, including ionic and electrical potential gradients; active transport, excitability, and action potentials; biophysics of sensory receptors; neuromuscular transmission; muscle energetics and contractility; spinal reflexes and central synaptic transmission; autonomic nervous system; energy metabolism and temperature regulation; epithelial transport; gastrointestinal motility and secretions. Offered: A.

HUBIO 513 P-Introduction to Clinical Medicine (3-) *Issac, Maestas* Instruction in communication skills and interview techniques to form the basis for the doctor-patient relationship and for the skills of communicating with patients. The patient profile is obtained. Attention to developing comfort in the physician role. Offered: A.

HUBIO 514 P-Biochemistry I-A (4-) *Maizels* Explores molecular biology of the genome. Examines how the genome serves as a source of information, how molecular understanding of gene function identifies new therapeutic targets and provides new therapeutic and diagnostic tools. Assumes familiarity with fundamental principles, at the level tested in the MCATs. Offered: A.

HUBIO 516 P-Systems of Human Behavior (5) *Harrington* Effects of behavioral factors in major management problems faced in medical practice relating to cultural background, social role, sexual identity, and belief systems. Acquisition of skills in analyzing behavior, defining objectives, and designing precise treatment strategies. Offered: A.

HUBIO 522 P-Introduction to Clinical Medicine (-4-) *Isaac, Maestas* Medical history is introduced and instruction in data collection is begun. Experience in conducting medical interviews with patients to obtain the medical history and patient profile. Special problems related to interviewing are addressed. Offered: W.

HUBIO 523 P-Introduction to Immunology (2) *Gale* Topics covered include: basic concepts such as antigens; antibodies; complement; B- and T-lymphocyte function, including interactions with each other and with accessory cells; immunological tolerance; major histocompatibility complex and role of these basic concepts in immunopathology (immunodeficiencies, hypersensitivities, autoimmunity, blood transfusion, and transplantation).

HUBIO 524 P-Biochemistry I-B (-4) *Maizels* Metabolism as integrated in the organs and tissue of the human body for the purpose of generating energy from food and converting small molecules to essential building block of our cells. Discusses principles of nutrition in the context of human health and disease. Assumes familiarity with fundamental principles, at the level tested in the MCATs. Offered: W.

HUBIO 530 P-Clinical Epidemiology and Evidence-Based Medicine (2) *Kestenbaum* Community health and disease, including assessment of disease risk and mechanisms of epidemic detection, spread, and control; interpretation of research design, data analysis, bias source; and clinical epidemiology, including evaluation and application of di-

agnostic tests, natural history of disease, and quantitative aids for clinical decision making. Offered: W.

HUBIO 531 P-Head, Neck, Ear, Nose, and Throat (5)

HUBIO 532 P-Nervous System (8) *Dacey, Mulligan* An integrated approach to the normal structure and function of the nervous system, including the eye. Presents neuropathological examples as well as clinical manifestations of neurological disease.

HUBIO 534 P-Microbiology and Infectious Disease (9) *Moseley* An introduction to medical microbiology and infectious diseases. Emphasizes the biology of microbial pathogens and the mechanisms of pathogenesis. Covers clinical manifestations, epidemiology, general principles of diagnosis, therapy, and prevention of infectious disease. Offered: Sp.

HUBIO 535 P-Introduction to Clinical Medicine (-4) *Isaac, Maestas* Adult screening physical examination is taught through the use of lecture, audiovisual aids, and small-group tutorial, where students in supervised setting practice the physical examination on one other. Further practice in the performance and recording of the patient profile and medical history. Offered: Sp.

HUBIO 540 P-Cardiovascular System (6) *Feigl* Interdisciplinary approach to cardiovascular medicine, including anatomy, physiology, radiology, pathology, medicine, and surgery. Function of the cardiovascular system in health and disease. Offered: A.

HUBIO 541 P-Respiratory System (4) *Culver, Luks* Interdisciplinary approach to the respiratory system, including anatomy of thorax and lungs, ventilation mechanics, blood-gas transport, gas exchange, acid-base balance, and the physiology and pathology of obstructive, restrictive, and pulmonary-vascular diseases. Offered: A.

HUBIO 542 P-Introduction to Clinical Medicine (4-) *McDonough* Advanced instruction in interview technique, history taking, and physical examination, with emphasis on detection of abnormalities. Offered: A.

HUBIO 543 P-Principles of Pharmacology I (5) *McKnight* Includes general principles of pharmacology and the specific pharmacology of major drugs acting on the autonomic and cardiovascular systems. Offered: A.

HUBIO 547 P- Pathology IIA (5) *Norwood* Examines patterns of cell and tissue response to injury. Covers mechanisms of cell injury, the inflammatory process, thrombosis, normal and abnormal growth, neoplasia, and clinicopathological correlation. Includes a description of the major pathologic changes associated with specific diseases in the different organ systems. Uses a multidisciplinary approach to some diseases which effect more than one organ system including cardiovascular, renal, and respiratory and covers molecular changes in response to environmental exposure to pollution, radiation, and physical injury.

HUBIO 548 P-Cases in Clinical Ethics (1) *Edwards, Timberlake* Provides exposure to key issues in clinical ethics as well as the tools for ethical reasoning and critical thinking that support the student's current and future work. Prerequisite: second-year medical students.

HUBIO 550 P-Introduction to Clinical Medicine (-4-) *McDonough* Advanced instruction in interview technique, history taking, and physical examination, with emphasis on identification of problems and correlation of findings with pathophysiological mechanisms. Offered: W.

HUBIO 551 P-Gastro-Intestinal System (4) *Silverstein* Anatomy of the gastrointestinal system; physiology and pathology of digestion and hepatic function; and physical and laboratory examination. Offered: W.

HUBIO 552 P-Hematology (3) *Richard* Familiarizes students with the basic pathophysiologic mechanisms leading to disturbances of red cell, white cell, and platelet production, as well as abnormalities of hemostasis presenting clinical problems. Pathophysiology, rather than minute details of individual disease, is stressed. Offered: W.

HUBIO 553 P-Musculoskeletal System (4) *Schmale* Gross, surface, applied, and radiographic anatomy. Clinical manifestations in the musculoskeletal system and pathophysiology of trauma, aging, infection, and inflammation, as well as congenital and metabolic disorders. Dissections, physical examinations, and problem-based learning. Offered: W.

HUBIO 554 P-Genetics (2) *Mefford* Review of basic genetic principles and their applications in clinical medicine. Includes human chromosomal disorders; patterns of inheritance, genetic counseling, amniocentesis; pathogenesis of hereditary diseases, monogenic and multifactorial; role of genetics in common diseases; behavioral genetics; drug-gene interactions; and prevention and treatment of genetic diseases, including prenatal diagnosis and population screening. Offered: A.

HUBIO 555 P-Medicine, Health, and Society (3) *Allan, Chen* Interdisciplinary introduction to health services designed for future healthcare practitioners. Examines the history, organization, and effectiveness of the U.S. healthcare system. Stresses the student's ability to adopt a broad perspective across healthcare disciplines and traditional boundaries. Offered: W.

HUBIO 556 P-Hormones and Nutrients (4) *DeSantis* Introduction to principles of human endocrinology, metabolism, and nutrition; the physiology and pathophysiology of endocrine systems, glucose and lipid metabolism, and fluid and salt balance; and the importance of proper nutrition in certain disease states.

HUBIO 557 P-Pathology IIB (2-) *Norwood* Examines patterns of cell and tissue response to injury. Covers mechanisms of cell injury, the inflammatory process, thrombosis, normal and abnormal growth, neoplasia, and clinicopathological correlation. Includes a description of the major pathologic changes associated with specific diseases in the different organ systems. Uses a multidisciplinary approach to some diseases which effect more than one organ system including cardiovascular, renal, and respiratory and covers molecular changes in response to environmental exposure to pollution, radiation, and physical injury.

HUBIO 558 P-Rheumatology (1) An intensive immersion course in rheumatology for second year students. Lectures and small group patient demonstrations link concepts of immunology, pathology and pharmacology with inflammatory and autoimmune disease, teach differential diagnosis of symptoms seen in rheumatic disease and use if diagnostic to demonstrate features of common childhood and adult rheumatic diseases and their management.

HUBIO 559 P-Problem Based Learning (3) *Scott* Teaches students to methodically solve medical problems by gathering, sorting, and interpreting data. Students learn life-long self-education and self-evaluation skills. Provides practice working as a healthcare team by including medical, nursing, and physician assistant students in each group. Offered: W.

HUBIO 560 P-Introduction to Clinical Medicine (-5) *McDonough* Introduction to clinical and laboratory diagnosis. Offered: Sp.

HUBIO 562 P-Urinary System (4) *Jefferson* Anatomy, physiology, and pathology of the kidney, ureter, bladder, and prostate; pathophysiology and treatment of common fluid and electrolyte problems; renal pharmacology; major clinical urinary system syndromes, with current diagnostic approaches and therapy. Offered: Sp.

HUBIO 565 P-Reproduction (4) *Steiner* Normal development of the human reproductive system. Sexual differentiation, puberty, endocrine control of testicular and ovarian function, gamete biology, fertilization, implantation, immunology and endocrinology of pregnancy, labor and delivery, pathology of the male and female reproductive organs, contraception, prolactin and lactation, aging and infertility. Offered: Sp.

HUBIO 566 P-Pathology IIC (-3) *Norwood* Examines patterns of cell and tissue response to injury. Covers mecha-

nisms of cell injury, the inflammatory process, thrombosis, normal and abnormal growth, neoplasia, and clinicopathological correlation. Includes a description of the major pathologic changes associated with specific diseases in the different organ systems. Uses a multidisciplinary approach to some diseases which effect more than one organ system including cardiovascular, renal, and respiratory and covers molecular changes in response to environmental exposure to pollution, radiation, and physical injury.

HUBIO 567 P-Skin System (2) *Colven* Gross and microscopic anatomy. Physiology, protection, temperature control, pigmentation, and photosensitivity. Pathology and genetics of skin abnormalities, including tumors. Introduction to clinical evaluation, including physical examination and illustrating examples of inflammatory, vascular, immunological (including drug hypersensitivity), and neoplastic diseases. Offered: A.

HUBIO 569 P-Mind, Brain, and Behavior (6) *O. PASCUALY* Defines and describes major psychiatric disorders and presents a systematic approach to differential diagnosis. Discusses conceptual development, pathogenesis, epidemiology, nomenclature, and the terminology used in psychiatry; along with physiological and biochemical mechanisms, and therapeutic and adverse effects. Offered: Sp.

HUBIO 590 P-Medical Information for Decision Making (1) *Tarczy-Hornoch* Introduction to methods for: a) identifying and retrieving high quality, relevant documents for clinical decision making, b) applying rigorous criteria when reading primary research studies, reviews of primary studies, or other medical information sources that report on the effectiveness of therapeutic or preventive interventions. Prerequisite: first-year medical students. Offered: W.

HUBIO 591 P-WWAMI Non-clinical Selectives - Pullman (*, max. 30) Courses offered at WWAMI university site in Pullman designed to satisfy the non-clinical selective graduation requirements for medical students. Offered: AWSp.

HUBIO 592 P-WWAMI Non-clinical Selectives - Spokane (*, max. 30) Courses offered at WWAMI university site in Spokane designed to satisfy the non-clinical selective graduation requirements for medical students. Offered: AWSp.

HUBIO 593 P-WWAMI Non-clinical Selectives - Laramie (*, max. 30) Courses offered at WWAMI university site in Laramie, WY designed to satisfy the non-clinical selective graduation requirements for medical students. Offered: AWSp.

HUBIO 594 P-WWAMI Non-clinical Selectives - Anchorage (*, max. 30) Courses offered at WWAMI university site in Anchorage, designed to satisfy the non-clinical selective graduation requirements for medical students. Offered: AWSp.

HUBIO 595 P-Independent Investigative Inquiry, IHOP (8) *S. GRAHAM, D. Roesel* With faculty mentorship, students investigate a global health issue, work on a community health project, and create an academic poster. Prerequisite: IHOP students only. Offered: S.

HUBIO 596 P-WWAMI Non-Clinical Selectives - Bozeman (*, max. 30) Courses offered at WWAMI university site in Bozeman, designed to satisfy the non-clinical selective graduation requirements for medical students. Offered: AWSp.

HUBIO 597 P-Independent Investigative Inquiry (8) Independent research with faculty sponsor and completion of paper in fulfillment of the independent investigative inquiry graduation requirement. Offered: Sp.

HUBIO 598 P-WWAMI Non-Clinical Selectives - Moscow (*, max. 30) Courses offered at WWAMI university site in Moscow, ID, designed to satisfy the non-clinical selective graduation requirement for medical students. Offered: AWSp.

HUBIO 599 P-Independent Study in Medical Science (6) Independent research with faculty sponsor and comple-

tion of paper as partial fulfillment of non-clinical selective graduation requirement. Offered: Sp.

HUBIO 600 P-Capstone Course: Preparation for Residency (2, max. 4) A combination of large group lectures and small group discussions and workshops reviewing clinical skills in history-taking and physical examinations, imaging studies, common and emergency drugs, ACLS, infectious disease control, common clinical problems, and other topics that are encountered in residency training. Offered: Sp.

Immunology

H564 Health Sciences

For those contemplating careers in biomedical research, immunology provides challenging and exciting intellectual opportunities. Progress in the discipline in the past decade has been extraordinary, a fact nowhere more visible than at the University of Washington. The Department of Immunology, launched in 1989, now includes more than 30 faculty and 200 scientists, students, post-docs and staff, all engaged in elucidating fundamental immunological mechanisms and how these mechanisms impact human health, infectious, autoimmune and allergic diseases, and cancer. Current members of the department have distinguished records in the area of lymphocyte signaling, T and B cell development, macrophage function, antigen processing, immuno-tolerance, and the structure of antigen receptors.

Consider the fundamental processes that underlie immune function. First, millions of potentially injurious macromolecules must be recognized. Second, recognition of these macromolecules, generally structures associated with potential pathogens, must trigger powerful effector mechanisms that permit elimination of the offending microorganisms. Finally, these recognition and effector systems must distinguish the universe of potentially harmful molecules from an equally diverse repertoire of structurally similar 'self' components. How is such specific molecular recognition achieved? How do the cells responsible for mediating host defense develop, and what signaling systems direct their responses? These are questions being addressed by members of the program at the molecular, cellular, and whole organism levels.

GRADUATE PROGRAM

Graduate Program Coordinator

H564 Health Sciences, Box 357650

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(206) 685-3955, fax (206) 543-1013

The graduate program, organized through the Department of Immunology, occupies contemporary laboratory and office space in the H and I wings of the Health Sciences complex, where many faculty are based. Other members of the training faculty are based in contiguous wings of the Health Sciences complex or at one of four affiliated institutions: Fred Hutchinson Cancer Research Center, Benaroya Research Center at Virginia Mason, Seattle Children's hospital, and the Institute for Systems Biology. The University of Washington is a premier institution for biomedical research in the nation, ranking second among all institutions in overall support from the NIH. The research environment is augmented by affiliated institutions, creating an open and collegial partnership for basic, translational, and clinical research in which collaborations and open sharing of ideas and reagents take place. Members of the program have been instrumental in development and application of contemporary technologies, including flow cytometry, confocal microscopy, high-throughput genomic, proteomic, and computational analysis, and generation and analysis

of transgenic/knockout/knockin mice to address important immunological and biological questions. Training of students occurs in an open environment which is intellectually stimulating, scientifically diverse, and strongly interactive. All immunology graduate students are assured financial support for the term of their studies.

Master of Science

Students are not admitted to the department specifically as candidates for a master's degree. A terminal master's degree can be awarded if the faculty deems the student has made some progress in the program but not enough to be consistent with earning the Ph.D.

Doctor of Philosophy

Admission Requirements

Students are admitted for autumn quarter; application deadline is January 1 for U.S. citizens and November 1 for international applicants. Requirements for admission are flexible. However, most successful applicants have completed survey courses in biology, chemistry, and physics; one year of organic chemistry; and mathematics through integral calculus. Prior exposure to immunology through formal coursework, or especially through laboratory research, is desirable. A bachelor's degree is required, as is evidence of superior scholarship and above average performance on the GRE General Test. A GRE subject test is not required.

International students must take the Test of English as a Foreign Language (TOEFL); 250 is the minimum acceptable score on computer test.

Degree Requirements

90 credits, to include:

1. 18 graded credits in the first two years of study. First-year coursework consists of consecutive five-week-long courses taken autumn through spring quarters – two per quarter (for 1.5 to 2 graded credits each); winter quarter, all first-year students also take IMMUN 532 (4 graded credits), for a total of 13 or 13.5 graded credits the first year, depending on course choices. In the second year, 4.5 or 5 additional graded credits are required, earned by taking electives winter and/or spring quarters. As part of the first- and second-year coursework, students take two five-week courses that specifically focus on cancer immunology.
2. Autumn quarter of the first year, students may take an elective and attend selected lectures of the undergraduate immunology course, IMMUN 441. Students are required to attend the departmental seminar series, Journal Club, and research-in-progress talks beginning the first quarter and continuing throughout enrollment.
3. All elective courses must be relevant to biomedical research, and be rigorous enough to include either a final examination or required written paper for a grade. Elective classes must be at the 500 level, and receive a numerical grade.
4. Each graduate student takes the qualifying examination during July immediately following the second year of classes. (MSTP students take qualifying examinations following the first year of graduate classes.) The qualifying examination is two parts - written and oral.
5. Students who pass the qualifying examination then prepare for the General Examination, which must be taken within 15 months of the qualifying examination.
6. The dissertation must meet all format requirements before being accepted by the Graduate School.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

IMMUN 441 Introduction to Immunology (4) NW General properties of immune responses; cells and tissues of immune system; lymphocyte activation and specificity; effector mechanisms; immunity to microbes; immunodeficiency and AIDS; autoimmune diseases; transplantation. Prerequisite: BIOL 220; may not be repeated. Offered: A.

IMMUN 499 Undergraduate Research (*, max. 24) Investigative work on a variety of topics, including mechanisms of antigen recognition, T-cell development and differentiation, immunogenetics, lymphocyte activation, MHC gene structure and function, retrovirology, and the pathogenesis of autoimmune diseases, among others. Prerequisite: permission of instructor. Offered: AWSpS.

IMMUN 532 Intersection of Innate and Adaptive Immunity in Disease (4) Examines the molecular and cellular basis of immune function. Topics include: hematopoiesis, innate immunity, antigen receptor structure, lymphocyte development, antigen presentation, effector T-cell functions, and immune-mediated diseases. Prerequisite: coursework in molecular genetics; graduate standing in immunology; other graduate students with permission of instructor. Offered: W.

IMMUN 534 Central Issues in Immunology (2, max. 4) Presentations by participants of topics relating to the broad study of immunology. Prerequisite: graduate standing in immunology. Offered: Sp.

IMMUN 537 Immunological Methods (1.5) Fink, Weinmann Introduces whole animal, cellular, biochemical, and molecular techniques used in immunological research. Discusses strengths and limitations of each technique and emphasizes caveats in interpreting the resulting data. Offered: A.

IMMUN 538 Immunological Based Diseases and Treatments (2) E. BETTELLI, R. SAVAN Addresses the mechanisms leading to the development of immunologically based diseases. In particular, covers immunological basis and treatment of infection, autoimmunity, and cancer. Offered: Sp.

IMMUN 550 Selected Topics in Immunology (1, max. 30) Formal seminar-discussion course for advanced students focused on recent developments in the field and consisting of literature research and intensive in-depth study of important and timely topics. Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 551 Research Conference in Regulation of T Cell-Dependent B Cell Maturation (1, max. 30) Clark Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 552 Research Conference in Principles of Antiviral Immunity (1, max. 30) Stetson Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Prerequisite: immunology graduate student; permission of instructor. Offered: AWSpS.

IMMUN 553 Research Conference in Recombination and Repair in B Cell Development (1, max. 30) Maizels Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 554 Research Conference in Immunogenetic Aspects of Human Autoimmunity (1, max. 30) Nepom Weekly group conferences concerning ongoing graduate students

and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 555 Research Conference in Model of Autoimmune Disease and Their Regulation (1, max. 30) Gorman Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 556 Research in Conference in Regulation of Autoimmunity and Allergic Inflammation (1, max. 30) Ziegler Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 557 Research Conference in the Mechanisms and Consequences of Programmed Cell Death (1, max. 30) Oberst Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology or permission of instructor. Credit/no-credit only. Offered: AWSpS.

IMMUN 558 Research Conference in Apoptosis and Autoimmunity (1, max. 30) Elkon Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 559 Research Conference in T Cell Responses during Mycobacterium tuberculosis (1, max. 30) Urdahl Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Student may register for more than one conference each quarter. Prerequisite: immunology graduate student; permission of instructor. Credit/no-credit only. Offered: AWSpS.

IMMUN 560 Research Conference in Progress in T Cell Research (1, max. 30) Bevan, Fink, Gorman, Greenberg, Pepper, Stetson Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 561 Research Conference in Mechanisms of Peripheral Tolerance (1, max. 30) Fink Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 562 Research Conference in Structural Molecular Immunology and Vaccinology (1, max. 30) Strong Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Student may register for more than one conference each quarter. Prerequisite: immunology graduate students; permission of instructor. Credit/no-credit only. Offered: AWSpS.

IMMUN 563 Research Conference in Macrophage Biology: Signaling and Phagocytosis (1, max. 30) Aderem Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 564 Research Conference in Cellular/Molecular Regulation of T Cell Responses (1, max. 30) Greenberg Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each

quarter. Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 565 Research Conference in Innate Immune Defenses against Virus Infection (1, max. 30) *Gale* Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology, with a major focus on understanding virus and host regulation of innate immune processes. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 566 Research Conference in the Studies of Lymphocyte Memory (1, max. 30) *Pepper* Weekly group conferences concerning ongoing graduate students and postdoctoral research immunology. Students may register for more than one conference each quarter. Prerequisite: immunology graduate student and permission of instructor. Credit/no-credit only. Offered: AWSpS.

IMMUN 567 Research Conference in the Role of miRNAs in Modulating the Immune System (1, max. 30) *Savan* Weekly group conferences concerning ongoing graduate students and postdoctoral research immunology. Students may register for more than one conference each quarter. Prerequisite: immunology graduate student and permission of instructor. Credit/no-credit only. Offered: AWSpS.

IMMUN 568 Research Conference in Regulation of the Inflammatory Response of Myeloid Cells (1, max. 30) *Hamerman* Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology, with a major focus placed on understanding the regulation of the inflammatory response of myeloid cells. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 569 Research Conference in T cells in autoimmunity (1, max. 30) *Bettelli* Weekly group conferences concerning ongoing graduate students and postdoctoral research immunology. Students may register for more than one conference each quarter. Prerequisite: immunology graduate student and permission of instructor. Credit/no-credit only. Offered: AWSpS.

IMMUN 570 Research Conference in Mucosal Immunity (1, max. 30) *Oukka* Weekly group conferences concerning ongoing graduate students and postdoctoral research immunology. Students may register for more than one conference each quarter. Prerequisite: immunology graduate student and permission of instructor. Credit/no-credit only. Offered: AWSpS.

IMMUN 571 Research Conference in Development and Activation of B Cells (1, max. 30) *Rawlings* Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Credit/no-credit only.

IMMUN 572 Research Conference in Signal Transduction in B-Cells (1, max. 30) *Scharenberg* Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Credit/no-credit only.

IMMUN 573 Immunology Seminar Series (1, max. 30) Weekly discussion in which original research results are presented and discussed. Emphasis is on new and original contributions to field of immunology and related areas; occasional seminars are concerned with review of important topics. Prerequisite: graduate standing in immunology; other graduate students with firm background in immunology and permission of instructor. Credit/no-credit only.

IMMUN 574 Research Conference in Kaposi's Sarcoma-Associated Herpes Virus: Interactions with B-Cells and Endothelial Cells (1, max. 30) *Lagunoff* Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register

for more than one conference each quarter. Prerequisite: graduate standing in immunology. Credit/no-credit only.

IMMUN 575 Research Conference in Infection and Immunity (1, max. 30) *Bevan* Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Credit/no-credit only.

IMMUN 576 Research Conference in Innate Immune Mechanisms of Response and Regulation (1, max. 30) *A. LACY-HULBERT* Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than once conference each quarter. Prerequisite: graduate standing in immunology; permission of instructor. Credit/no-credit only. Offered: AWSpS.

IMMUN 577 Research Conference in Lymphocyte Homing and Function (1, max. 30) *Campbell* Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 578 Research Conference in Immunology and the Pathogenesis of Tuberculosis (1, max. 30) *Ramakrishnan* Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 579 Research Conference in Liver Immunology (1, max. 30) *Crispe* Weekly group conferences concerning ongoing graduate students and postdoctoral research immunology. Students may register for more than one conference each quarter. Prerequisite: immunology graduate student and permission of instructor. Credit/no-credit only. Offered: AWSpS.

IMMUN 599 Introduction to Immunology Research (1-10, max. 40) Current problems in immunological research. Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 600 Independent Study or Research (*-) Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 700 Master's Thesis (*-) Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 800 Doctoral Dissertation (*-) Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

Laboratory Medicine

NW 120, UW Medical Center

Medical laboratory science, offered by the Department of Laboratory Medicine, is a profession of highly knowledgeable and skilled individuals who perform clinical laboratory tests on patient samples. This is a critical part of health-care, as the results obtained by these laboratory tests are a vital tool for physicians in their diagnosis, treatment, and prevention of disease.

UNDERGRADUATE PROGRAM

Adviser

NW 120, UW Medical Center

(206) 598-6131

medtech@uw.edu

The Department of Laboratory Medicine offers the following program of study:

- Bachelor of Science in Medical Laboratory Science degree

Bachelor of Science

1. *Pre-professional Phase.* During the first two years, students enroll as pre-majors in the College of Arts and Sciences, satisfying general education requirements as well as completing prerequisite courses.
2. *Professional Phase.* The professional phase begins autumn quarter of the third year and continues for seven consecutive quarters at the UW School of Medicine. Courses in the first year of the professional phase provide students an appropriate theoretical background and basic technical skills that enable them to function effectively in the clinical laboratory.

The final year is offered in the clinical laboratories of the UW Medical Center and its principal affiliates. Students in the core clinical laboratories receive on-the-bench training in chemistry, hematology, immunohematology, and microbiology.

Suggested First- and Second-Year College Work: Completion of University writing, reasoning, and general education requirements. Electives, not required for admission or graduation, may include: CHEM 321, MICROM 301, GENOME 351, GENOME 371, B STR 301, PHIL 115, PHIL 241, CLAS 101, CLAS 205, PATH 410, UCONJ 420. Begin taking admission requirements, shown below.

Department Admission Requirements

1. BIOL 118, BIOL 180, BIOL 200, BIOL 220; CHEM 142, CHEM 152, CHEM 162; CHEM 223, CHEM 224 (or CHEM 237, CHEM 238, CHEM 239); one of STAT 220, STAT 221/SOC 221/CS&SS 221, STAT 311, or Q SCI 381.
2. Complete all general education requirements including 10 credits of Individuals & Societies, and 10 credits of Visual, Literary, & Performing Arts, as well as all required English and writing courses.
3. Students admitted to the medical laboratory science program must be exempt from or have successfully completed any required English as a Second Language (ESL) courses no later than August 31 of the application year or admission is cancelled.

Application Procedure: See program adviser for application form. Application deadline is February 15, to begin the following autumn quarter.

Major Requirements

152-155 credits as follows:

1. *Courses Required for Admission (48-51 credits):* See list above.
2. *Didactic Courses (59 credits):* IMMUN 441, MICROM 442, MICROM 443, MICROM 444, MICROM 445; LAB M 418, LAB M 419, LAB M 420, LAB M 421, LAB M 426, LAB M 428, LAB M 429, LAB M 430, LAB M 434, LAB M 435
3. *Clinical Rotations (50 credits):* LAB M 423, LAB M 424, LAB M 425, LAB M 431, LAB M 432, LAB M 433
4. Minimum 2.0 grade in all didactic and clinical rotation courses

- Minimum 2.00 GPA, both cumulative and in required courses

Student Outcomes and Opportunities

- Learning Objectives and Expected Outcomes:** Graduates of the medical laboratory science program are expected to have in-depth knowledge of the relationships between laboratory data and pathologic processes, and how laboratory data relate to clinical medicine. They have experience with the performance and quality control of routine and specialized medical laboratory testing procedures and an understanding of the theoretical basis of these procedures. In addition, they have experience trouble-shooting and resolving typical problems in the clinical laboratory and are familiar with laboratory quality assurance, safety, governmental regulations, information systems, management, research design and practice, educational methodology, continuing education, communication, ethics, professionalism, and concepts and principles of laboratory operations.

Successful medical laboratory scientists enjoy studying the biological, chemical, and physical sciences and find personal satisfaction and intellectual reward in applying scientific methods in the diagnosis and evaluation of disease. A medical laboratory scientist may practice as a generalist, using knowledge in several of the scientific areas, or may specialize in one scientific area in larger hospitals. Medical laboratory scientists may work in a variety of settings, including clinical laboratories in large medical centers, hospitals, and clinics. Others carry out research in industrial, public health, and medical laboratories, or teach in hospitals, colleges, and universities.

- Instructional and Research Facilities:** The major training sites are the University of Washington Medical Center and Harborview Medical Center. Affiliate hospitals include Seattle Children's hospital, Labcorp Dynacare, Group Health Cooperative, MultiCare Health System, Northwest Hospital, Providence Everett Medical Center, Providence St. Peter Hospital, Veterans' Affairs Puget Sound Health Care System, Virginia Mason Medical Center, Evergreen Hospital Medical Center, and High-line Medical Center. The Puget Sound Blood Center is also affiliated with the University of Washington. These laboratories support patient care, and provide training and research in the major clinical divisions of chemistry, hematology, immunohematology (blood banking), and microbiology, including multiple subspecialties in these divisions. In addition, students can either receive training in a variety of clinical laboratory rotations designed to enrich their core clinical experiences or participate in research in collaborative projects supervised by faculty members in the Department of Laboratory Medicine. Enrichment rotations include subspecialty sections in chemistry, hematology, and/or microbiology; molecular diagnostics laboratories; and laboratories where multi-tasking skills are utilized.
- Honors Options Available:** For Interdisciplinary Honors, see University Honors Program.
- Internship Opportunities:** One or two internships per year in Japan available to graduates of the medical technology program.
- Department Scholarships:** Several offered.
- Student Organizations/Associations:** None currently active.
- Of Special Note:** The medical laboratory science program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences, 5600 N. River Road, Suite 720, Rosemont, IL 60018-5119, (847) 939-3597, (773) 714-8880, (773) 714-8886 (fax), info@naacsls.org, www.naacls.org. Graduates are eligible for certification by the Board of Registry of the American Society

for Clinical Pathology and by the National Credentialing Agency for Laboratory Personnel, Inc.

GRADUATE PROGRAM

Graduate Program Coordinator

NW 120, Box 357110

(206) 598-2148

hschil@uw.edu

The Department of Laboratory Medicine offers a Master of Science in Laboratory Medicine and prepares the graduate for advanced technical and supervisory positions in the clinical and research laboratories as well as in pharmaceutical and diagnostic industries.

The curriculum is flexible, usually two years for full-time students, and up to six years for part-time students. Students select one of five pathways and work with a mentor on a thesis project. In addition to the 25 credits of required courses, they take courses related to their area of study. The target population is medical technology (MT/MLS) graduates with ASCP certification.

The Department of Laboratory Medicine also offers a combined undergraduate/graduate program (CUG). Students may enter this CUG either as undergraduates or college graduate/postbaccalaureate students. To be admitted to the CUG program, the student must first be accepted into the undergraduate program shown above. Undergraduates or college graduate/postbaccalaureate students may apply simultaneously to the CUG program, or delay application until graduation. Once accepted into the CUG, the student completes the undergraduate program, then immediately enrolls in the Graduate School. Students receive a BS in Medical Laboratory Science at the completion of their undergraduate studies and an MS in Laboratory Medicine at the completion of their graduate studies.

Admission Requirements

The program accepts mostly ASCP certified medical laboratory scientists (MLS/MT). For medical laboratory scientists (MLS/MT), MLT (medical laboratory technician), students from a four-year program, or laboratorians with significant experience in a clinical laboratory, admission requirements include:

- Minimum 3.00 GPA in the last 90 graded quarter credits or the last 60 graded semester credits
- Certification as a medical laboratory scientist (MLS/MT) or equivalent, or as a medical laboratory technician (MLT) or equivalent, or as a specialist in a clinical laboratory field
- Completion of the Graduate Record Examination (GRE) Aptitude Test within the last five years
- Foreign students must have a satisfactory command of the English language. Results of the TOEFL, MLT, or IELTS must be submitted to the Graduate School. These scores are good for only two years.
- A 200-300 word statement about educational and professional objectives and reasons for taking the master of science program
- Three letters of recommendation
- A personal interview

For students with an undergraduate degree in a scientific field such as chemistry, microbiology, or biology, without ASCP certification, the program is highly competitive. Admission requirements include:

- Outstanding academic achievements, including a minimum 3.20 GPA in the last 90 graded quarter credits or the last 60 graded semester credits.

- Completion of the Graduate Record Examination (GRE) Aptitude Test within the last five years, with excellent scores.
- Foreign students must have an excellent command of the English language. Results of the TOEFL or IELTS must be submitted to the Graduate School. Scores are good for only two years.
- A 200-300 word statement about educational and professional objectives and reasons for taking the master of science program
- Three letters of recommendation
- Personal interviews with department faculty

Application deadline is February 15 to begin the following autumn quarter. Application forms and procedures for admission to the Graduate School are available at www.grad.washington.edu/.

Degree Requirements

Minimum 36 credits, of which 9 are thesis credits. Full-time medical laboratory scientists typically complete the program in two years. Students select one of five pathways, as follows:

- Chemistry/Immunology**
 - Required:** BIOT 511, LAB M 502, LAB M 510, LAB M 520, LAB M 601, LAB M 700
 - Recommended:** MICRO 441
 - Electives Relevant to Thesis (chosen with advice from mentor):** BIOC 426, BIOC 440, BIOC 441, BIOC 442, BIOC 540, BIOC 541, BIOC 542, BIOT 512, BIOT 513, CHEM 428, CHEM 429, CHEM 436, CONJ 546, IMMUN 532, IMMUN 533 IMMUN 534, IMMUN 535, PATH 500, PATH 502, PATH 513, PATH 515, PATH 516, PATH 517, P BIO 505, P BIO 506, P BIO 507, PHCOL 401, PHCOL 402
- Hematology/Coagulation**
 - Required:** BIOC 440, BIOC 441, BIOC 442, BIOT 511, LAB M 502, LAB M 510, LAB M 520, LAB M 601, LAB M 700
 - Recommended:** PATH 516
 - Elective Relevant to Thesis (chosen with advice from mentor):** BIOT 512, BIOT 513, CHEM 428, CHEM 429, CONJ 546, GENOME 465, IMMUN 441, IMMUN 532, P BIO 506, PATH 500, PATH 512, PATH 514, PATH 515, PATH 516, PATH 522, PATH 560 (*, max. 10).
- Microbiology/Virology**
 - Required:** BIOT 511, LAB M 502, LAB M 510, LAB M 520, LAB M 601, LAB M 700
 - Recommended:** IMMUN 441, MICRO 442, MICRO 444, MICRO 445, MICRO 555 (2.5)
 - Electives Relevant to Thesis (chosen with advice from mentor):** BIOC 440, BIOC 441, BIOC 442, BIOC 541, BIOT 512, BIOT 513, CHEM 428, CHEM 429, CONJ 547, CONJ 550, EPI 503, EPI 507, EPI 510, EPI 511 (3-4), EPI 512, IMMUN 533, MICROM 411, MICROM 431, MICROM 450, MICROM 529, MICROM 530, MICROM 531, MICROM 553, P BIO 505, P BIO 506, PATH 512, PATH 513, PATH 515, PATH 516
- Molecular Diagnostics/Genetics**
 - Required:** BIOT 511, LAB M 502, LAB M 510, LAB M 520, LAB M 601, LAB M 700
 - Recommended:** BIOC 440 or equivalent, BIOC 441 or equivalent, BIOC 442 or equivalent, GENOME 465
 - Electives Relevant to Thesis (chosen with advice from mentor):** BIOT 512, BIOT 513, BIOT 516, CHEM 428, CHEM 429, CONJ 546, EPI 516, EPI 517, GENOME 411, GENOME 466, IMMUN 531, IMMUN 441, IMMUN 532, IMMUN 536, MICROM 450, MICROM 530, P BIO 505, P BIO 506

5. Management/Medical Informatics

- a. *Required:* BIOST 511, LAB M 502, LAB M 510, LAB M 520, LAB M 601, LAB M 700
- b. *Electives Relevant to Thesis) chosen with advice from mentor)*
 - i. *Business Administration:* B A 470, B A 472
 - ii. *Business Communications:* B CMU 510
 - iii. *Human Resource Management and Organizational Behavior (HRMOB):* HRMOB 410, HRMOB 450, HRMOB 470 MGMT 403, MGMT 404

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

LAB M 418 Introductory Clinical Chemistry (6) *Bankson* Introduces the fundamentals of instrumentation and methodology in the clinical chemistry laboratory. Limited to medical laboratory science students. Offered: Sp.

LAB M 419 Clinical Coagulation (4) *Hansen-Suchy* Lecture and laboratory coverage of the theory of the hemostatic system, to include tests used in the diagnosis/monitoring of patients with abnormal bleeding and/or thrombosis. Instrumentation as appropriate for testing included. Quality control and quality assurance discussed. Limited to medical laboratory science students. Offered: S.

LAB M 420 Laboratory Analysis of Urine and Body Fluids (3) *Schiller* Lecture and laboratory covering urinalysis testing procedures and associated disease entities. Analysis of other body fluids. Methods of microscopic examination by use of bright-field, phase, and polarizing microscopy. Limited to medical laboratory science students. Offered: S.

LAB M 421 Medical Microbiology (1/6, max. 6) *Abbott* Lecture and laboratory coverage of human infections and diagnostic procedures used for isolation, identification, and antimicrobial susceptibility testing of the microorganisms associated with disease. Limited to medical laboratory science students. Offered: S.

LAB M 423 Clinical Chemistry (*, max. 24) *Iamma* Clinical testing using automated and manual methods. Measurement of pancreatic function and intestinal absorption, renal and liver function, enzymes, electrolytes, blood gases, lipids, toxicology, urinalysis, endocrinology, and immunology. Limited to medical laboratory science students. Offered: AWSp.

LAB M 424 Clinical Microbiology (*, max. 24) *G. VAN KEKERIX* Techniques used in the diagnostic microbiology laboratory, including quality control, specimen evaluation, identification of pathogenic microorganisms, and antimicrobial susceptibility testing. Limited to medical laboratory science students. Offered: AWSp.

LAB M 425 Clinical Hematology (*, max. 24) *K. HANSEN-SUCHY* Clinical study of techniques used in the diagnostic evaluation of blood cells, including production, proliferation, survival, morphologic, and functional features. Assessment of proteins and cells important in hemostasis included. Quality control and quality assurance issues considered. Biomolecular techniques appropriate for evaluation of the hematologic and hemostatic systems discussed. Limited to medical laboratory science students. Offered: AWSp.

LAB M 426 Clinical Immunohematology ([1-7]-, max. 7) *D. SABATH* Lecture and laboratory covering theory of transfusion medicine and serological procedures used in the evaluation of cellular antigen systems. Principles of immunology and genetics included as appropriate for the techniques performed; screening of donor units to provide a safe product discussed. Quality control and quality assurance issues considered. Limited to medical laboratory science students. Offered: A.

LAB M 427 Selected Studies in Laboratory Medicine (*, max. 24) *H. EGGLESTON* Selected clinical study in the major scientific disciplines of laboratory medicine, to include molecular diagnostics, or pursuance of a clinical research study. Limited to medical laboratory science students. Credit/no-credit only. Offered: AWSp.

LAB M 428 Clinical Biochemistry for Medical Laboratory Scientists (4) *Bankson* Introduces medical applications and the clinically relevant aspects of biochemistry necessary for understanding biochemical diseases. Teaches the structures and human metabolism of proteins, carbohydrates, lipids, and nucleotides in health, along with their roles in disease processes. Stresses normal biochemical pathways and subsequent diseases when the pathways are disrupted or diverted. Limited to medical laboratory science students. Offered: A.

LAB M 429 Foundations of Medical Laboratory Science (5) *K. HANSEN-SUCHY* Lecture and laboratory cover the essential theories, concepts, and practices that define medical laboratory science as a distinctive profession within Laboratory Medicine and which circumscribe its scope of practice. Instructional areas comprise the pre-analytical, analytical, and post-analytical components of contemporary medical lab services. Limited to medical laboratory science students. Offered: A.

LAB M 430 Medical Laboratory Science: Introductory Clinical (6) *K. HANSEN-SUCHY* Lecture and laboratory coverage of theoretical and practical aspects important in the evaluation of blood cells, to include their production, morphology, function, and associated pathology. Instrumentation used in testing included, as well as quality control and quality assurance issues. Limited to medical laboratory science students. Prerequisite: LAB M 429. Offered: W.

LAB M 431 Clinical Immunohematology Rotation (7-) *R. LAMMA* Practicum emphasizing application of knowledge and skills to perform a wide variety of basic testing routinely performed in contemporary blood laboratory and further develop discipline-specific competencies. Limited to medical laboratory science students. Offered: AWSp.

LAB M 432 Phlebotomy Rotation (-2-) *G. VAN KEKERIX* Covers the theories, concepts, and practices underlying the safe and reliable collection of blood (phlebotomy) for analysis by medical laboratory techniques. Limited to medical laboratory science students. Offered: AWSp.

LAB M 433 Enrichment Rotation (-9) *Xu* Selected practical experience emphasizing application of knowledge and skills to perform a wide variety of testing in a clinical setting and further develop discipline-specific competency in the major scientific disciplines of laboratory medicine, including hematology, clinical chemistry, microbiology, and immunohematology or pursuance of a clinical research study. Limited to medical laboratory science students. Offered: AWSp.

LAB M 434 Virology Laboratory (1) *R. LAMMA* Laboratory coverage of testing procedures and techniques routinely performed in the contemporary virology lab to detect and identify viruses which cause disease in humans and to monitor therapies used to treat human viral infections. Limited to medical laboratory science students. Offered: Sp.

LAB M 435 Molecular Diagnostics for Medical Laboratory Science (2) *K. HANSEN-SUCHY, C. PRITCHARD* Provides a comprehensive overview of the fundamental principles of molecular diagnostics and explores its use in the diagnosis of disease. Topics include: nucleic acid structure and function, genetics, DNA chemistry, nucleic acid isolation, amplification techniques, components of a molecular laboratory, and evaluation of controls to validate results obtained. Limited to medical laboratory science students. Offered: W.

LAB M 499 Undergraduate Research (*, max. 35) Specific project in clinical laboratory investigation. Offered: AWSpS.

LAB M 502 Laboratory Medicine Grand Rounds (1, max. 6) *Shirts* Grand rounds are concerned with current topics in

the field of laboratory medicine. Credit/no-credit only. Offered: AWSp.

LAB M 510 Laboratory Medicine Research Conference (1, max. 6) *Hoffman* Presentation and discussion of ongoing research and development projects by faculty, residents, fellows, and graduate students. Open to graduate students in laboratory medicine and other medical sciences. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSp.

LAB M 520 Seminar in Organization and Management in Laboratory Medicine (3) *Schiller* Core course for the Master of Science degree in laboratory medicine. Prerequisite: graduate student standing in Laboratory Medicine or permission of instructor. Offered: Sp, odd years.

LAB M 521 Advanced Laboratory Hematology (1, max. 6) *Sabath* Lectures on diagnostic clinical hematology with emphasis on clinicopathological correlation. For laboratory medicine graduate students with special interest in diagnostic clinical hematology. Prerequisite: graduate standing and permission of instructor. Offered: AWSp.

LAB M 522 Hematopathology Seminar (2) *Wood* Identification of normal lymphocyte and bone marrow subpopulations, diagnosis of leukemias, lymphomas, and benign conditions that resemble them. Emphasis on histopathology, cytochemical, immunological, and molecular markers. Clinicopathologic correlation. Offered: jointly with PATH 522; W, even years.

LAB M 590 P-Research Projects in Laboratory Medicine (*) *Tait* Opportunity for laboratory experience on a research problem related to laboratory medicine. Students investigate areas of potential clinical importance. Projects selected from areas such as chemistry, coagulation, hematology, immunology, microbiology, virology, molecular diagnostics, and computer applications. Research goals established by instructor in discussion with student. Prerequisite: permission of instructor. Offered: AWSpS.

LAB M 600 Independent Study or Research (*-) Prerequisite: graduate standing in laboratory medicine. Credit/no-credit only. Offered: AWSpS.

LAB M 601 Internship (3-9, max. 9) *Schiller* Prerequisite: graduate standing in laboratory medicine. Credit/no-credit only. Offered: AWSpS.

LAB M 680 P-Clinical Laboratory Testing: Methods and Interpretation (*, max. 30) *Wener* Provides the third- and fourth-year medical student with the opportunity to evaluate clinical laboratory data in the clinical laboratory setting. One-on-one teaching using case material and actual clinical samples. Offered: AWSpS.

LAB M 685 P-Laboratory Case Studies for Clinical Diagnosis (4) *Nester* Clinical case presentations and discussions aimed at test selection, disease-induced alterations, efficient algorithms, factors confounding interpretation, testing economics. (Four weeks half-time). Prerequisite: completion of required clerkships. Offered: Sp.

LAB M 699 P-WWAMI Laboratory Medicine Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department.

LAB M 700 Master's Thesis (*-) Credit/no-credit only. Offered: AWSpS.

MEDEX

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

MEDEX 401 Introduction to Paramedicine (8) Introduces the history of paramedicine and role of the paramedic, as well as medical concepts and technical skills relevant to its practice. Prerequisite: Seattle/King County paramedic students only. Offered: A.

MEDEX 402 Airway Management (3) Teaches cognitive and psychomotor skills critical to basic and advanced airway management. Includes enhanced techniques of rapid sequence intubation. Prerequisite: MEDEX 401 which may be taken concurrently. Offered: A.

MEDEX 403 Patient Assessment (4) Teaches patient assessment and total patient care management. Provides didactic and laboratory exposure necessary to perform complete and thorough patient exams. Prerequisite: MEDEX 401 which may be taken concurrently. Offered: A.

MEDEX 404 Medical Emergencies I (5) Studies the pathophysiology and treatment of medical emergencies encountered in cardiopulmonary, neurovascular, endocrine, renal, and obstetric patients. Introduces the pharmacology of neurovascular and cardiopulmonary medications. Prerequisite: MEDEX 403. Offered: W.

MEDEX 405 Trauma Emergencies (5) Emphasizes advanced pre-hospital management of the critical trauma patient. Teaches the pathophysiology and treatment of burns and trauma to the head, chest, and abdomen. Includes advanced techniques in surgical airway. Prerequisite: MEDEX 403 which may be taken concurrently. Offered: W.

MEDEX 406 Medical Emergencies II (3) Studies the pathophysiology and treatment of alcoholism, environmental disorders, infections and communicable diseases, hematology, toxicology, and psychiatric emergencies. Prerequisite: MEDEX 405. Offered: Sp.

MEDEX 407 Special Considerations for Paramedicine (4) Emphasizes the care and treatment of pediatric, geriatric, and bariatric patients. Reviews special considerations encountered in scenarios such as multiple casualty, confined space, and extrication incidents. Prerequisite: MEDEX 406 which may be taken concurrently. Offered: Sp.

MEDEX 408 Advanced Certifications (5) Instruction in PEPP, PALS, ACLS, ATLS, and National Registry curricula and certifications. Prerequisite: MEDEX 407. Credit/no-credit only. Offered: S.

MEDEX 414 Paramedic Clinical Practicum I (3) Participation in all aspects of patient care in the HMC-ER and OR with a primary focus on patient assessment and examination, as well as proficiency in IV cannulation and airway management. Prerequisite: MEDEX 401 which may be taken concurrently; Seattle/King County paramedic students only. Credit/no-credit only. Offered: A.

MEDEX 415 Paramedic Field Practicum I (6) Consists of regularly scheduled ride time with Seattle Medic One in which the student is closely mentored and evaluated by Seattle Fire Department paramedics as the student begins actively participating in patient care. Emphasizes aspects of scene management and total patient care competence. Prerequisite: MEDEX 401 which may be taken concurrently. Credit/no-credit only. Offered: A.

MEDEX 424 Paramedic Clinical Practicum II (3) Participation in patient care in the HMC-ER with a focus on patient assessment, examination, IV cannulation, and airway management. Emphasizes the critical care of patients in the cardiovascular intensive care unit. Prerequisite: MEDEX 414. Credit/no-credit only. Offered: W.

MEDEX 425 Paramedic Field Practicum II (7) Consists of regularly scheduled ride time with Seattle Medic One in which the student is closely mentored and evaluated by Seattle Fire Department paramedics as the student begins actively participating in patient care. Emphasizes scene management and total patient care competence. Prerequisite: MEDEX 415. Credit/no-credit only. Offered: W.

MEDEX 434 Paramedic Clinical Practicum III (4) Participation in patient care in the CHRMC-ER and OR with a focus on pediatric patient assessment, examination, and proficiency in IV cannulation and airway management. Emphasizes the care of expectant mother and newborn through rotations in the UW Labor and Delivery department. Prerequisite: MEDEX 424. Credit/no-credit only. Offered: Sp.

MEDEX 435 Paramedic Field Practicum III (8) Consists of regularly scheduled ride time with Seattle Medic One. The student assumes graduated responsibility for patient care and scene management while being closely evaluated by Seattle Fire Department paramedics as the student begins actively participating in patient care. Emphasizes the field care of the pediatric patient and expectant mother. Prerequisite: MEDEX 425. Credit/no-credit only. Offered: Sp.

MEDEX 444 Paramedic Clinical Practicum IV (3) Participation in patient care in the HMC Emergency Department, Neurology Clinic, Pulmonary Clinic, and Cardiology Clinic. Focuses on trauma management, extrication, MCI, and search/rescue. Includes observation of a minimum of three autopsies with the medical examiner. Prerequisite: MEDEX 434. Credit/no-credit only. Offered: S.

MEDEX 445 Paramedic Field Practicum IV (11) Consists of regularly scheduled ride time with Seattle Medic One paramedics. The student assumes all responsibilities for scene management and patient care. Evaluations determine completion of the program. Prerequisite: MEDEX 435. Credit/no-credit only. Offered: S.

MEDEX 450 Basic Science in Clinical Medicine (6) Review of important basic science concepts that include relevant topics for a healthcare clinician. Prerequisite: permission of the MEDEX program. Offered: WS.

MEDEX 451 Anatomy and Physiology in Clinical Medicine (6) Uses an organ system approach to human anatomy and physiology relevant for a healthcare clinician. Offered: AS.

MEDEX 452 Pathophysiology for Primary Care (6) Basic pathological and pathophysiological concepts of diseases commonly encountered in primary-care practice. Pathophysiology studied per organ system. Offered: A.

MEDEX 453 Basic Clinical Skills (5) Provides the student with mastery of a screening history and physical examination and thoroughness in data-collection skills. Offered: Asp.

MEDEX 454 Adult Medicine I (7) Problem-oriented approach to the diagnosis and management of common primary care conditions. Introduction to relevant laboratory and radiological procedures. Organ system approach. Offered: W.

MEDEX 456 Maternal and Child Health for the MEDEX Practitioner I (3) Designed to acquaint students with principles of prenatal care and primary-care pediatrics. Offered: W.

MEDEX 457 Behavioral Medicine I (2) Develops and demonstrates skills needed for assessment, diagnosis, and management of common emotional problems in a clinical setting. Offered: A.

MEDEX 458 Behavioral Medicine (2) Develops and demonstrates skills needed for assessment, diagnosis, and management of common emotional problems in a clinical setting. Offered: W.

MEDEX 459 Behavioral Medicine (2) Develops and demonstrates skills needed for assessment, diagnosis, and management of common emotional problems in a clinical setting. Offered: Sp.

MEDEX 460 Principles of Patient Management (3) Provides systematic approach to pharmacological therapies including drug choice, risk factor identification and administration. Includes non-pharmacological therapies and emphasizes health education and health promotion strategies. Offered: W.

MEDEX 461 Principles of Patient Management (3) Provides systematic approach to pharmacological therapies including drug choice, risk factor identification and administration. Includes non-pharmacological therapies and emphasizes health education and health promotion strategies. Offered: Sp.

MEDEX 462 Maternal and Child Health for the MEDEX Practitioner II (3) Continuation of MEDEX 456. Emphasis on diagnosis and treatment of common pediatric problems. Offered: Sp.

MEDEX 463 Clinical Clerkships I (19) Full-time clinical clerkship spent in institution-based or specialty practice settings with the supervision of licensed health care providers. Credit/no-credit only. Offered: AWSpS.

MEDEX 465 Clinical Clerkships II (19) Continuation of clinical clerkships spent in institution-based or specialty practice settings with supervision of licensed healthcare providers. Credit/no-credit only. Offered: AWSpS.

MEDEX 466 Family Practice Clerkship for the MEDEX Practitioner I (19) *Ballweg* Family practice under the supervision of physicians throughout the Pacific Northwest. Common primary-care problems. Students and preceptors are educated in the utilization and management of the physician assistant in practice. Students keep computerized records of patient encounters and complete a variety of written assignments. Credit/no-credit only. Offered: AWSpS.

MEDEX 467 Family Practice Clerkship for the MEDEX Practitioner II (19) *Ballweg* Further experience in primary-care practice with emphasis on independent patient management by the student supervised by family practitioners. Credit/no-credit only. Offered: AWSpS.

MEDEX 468 Emergency Medicine I for the MEDEX Practitioner (2) Approach to the diagnosis and management of common emergency conditions for primary-care physician assistants. Organ system approach. Offered: W.

MEDEX 469 Emergency Medicine II for the MEDEX Practitioner (2) Continuation of MEDEX 468. Approach to diagnosis and management of common emergency conditions for primary-care physician assistant. Organ system approach. Offered: Sp.

MEDEX 470 Professional Role Development (1) Explores professional role development, health access issues, licensing issues, healthcare quality, interdisciplinary relationships, diverse populations, and the healthcare environment. Offered: A.

MEDEX 471 Professional Role Development (1) Explores professional role development, health access issues, licensing issues, healthcare quality, interdisciplinary relationships, diverse populations, and the healthcare environment. Offered: W.

MEDEX 472 Professional Role Development (1) Explores professional role development, health access issues, licensing issues, healthcare quality, interdisciplinary relationships, diverse populations, and the healthcare environment. Offered: Sp.

MEDEX 473 Technical Skills (1) Introduces clinical skills and procedures through hands-on experiences. Offered: A.

MEDEX 474 Technical Skills (1) Introduces clinical skills and procedures through hands-on experiences. Offered: W.

MEDEX 475 Technical Skills (1) Introduces clinical skills and procedures through hands-on experiences. Offered: Sp.

MEDEX 499 Special Field Projects/Independent Study (1-19, max. 19) Clinical clerkships and independent study activities. Credit/no-credit only. Offered: AWSpS.

MEDEX 510 Healthcare for Rural and Medically Underserved Populations (5) Overview of the nature and severity of disparities in healthcare access and delivery to rural and urban underserved populations for practicing clinicians. Prerequisite: EMCHS students only. Offered: S.

MEDEX 511 Healthcare Administration and Public Health (5) Applies the basic principles of healthcare administration and public health to specific communities and practices. Prerequisite: EMCHS students only. Offered: S.

MEDEX 512 Academic Medicine and Specialty Practice for Practicing Clinicians (5) Overview for practicing clinicians of primary care as well as medical and surgical specialty practice within the academic medicine environment. Prerequisite: admission to the program. Offered: S.

MEDEX 513 Global Health for Practicing Clinicians (5) Overview of global health concerns and solutions including disease processes, health systems, cultural competency, and the impacts of health policies on local populations. Prerequisite: admission to the program. Offered: S.

MEDEX 521 Capstone Project I (3) Includes capstone project introduction, literature review, critical reading, research design and proposals, ethics, IRB, research writing, and results presentation. (Two weeks on the Seattle campus, six weeks online). Prerequisite: EMCHS students only. Credit/no-credit only. Offered: S.

MEDEX 522 Capstone Project II (1) Details students' choice of capstone project and preparation of a detailed proposal including the timeline for completion. Prerequisite: MEDEX 521. Credit/no-credit only. Offered: A.

MEDEX 523 Capstone Project III (1) Students work on capstone projects. Prerequisite: MEDEX 522. Credit/no-credit only. Offered: W.

MEDEX 524 Capstone Project IV (1) Continuation of work on the capstone project. Prerequisite: MEDEX 523. Credit/no-credit only. Offered: Sp.

MEDEX 525 Capstone Project V (5) Completion of the capstone project, preparation of final drafts, submission of finished project to faculty mentors, and presentation of project. Prerequisite: MEDEX 524. Credit/no-credit only. Offered: S.

MEDEX 528 Investigative Skills for Practicing Clinicians (5) Overview of the principles, research methods, and biostatistical and epidemiological techniques necessary to understand and conduct academic and clinical research. Applications critically appraise the public health and biomedical literatures drawing examples from current scientific literature and existing data. Prerequisite: admission to EMCHS program. Offered: S.

MEDEX 531 Clinical Residencies I (3) Clinical residencies spent in community-based or institution-based practice settings with the supervision of licensed healthcare providers. Prerequisite: EMCHS students only. Credit/no-credit only. Offered: AWSpS.

MEDEX 532 Clinical Residencies II (3) Clinical residencies spent in community-based or institution-based practice settings with the supervision of licensed healthcare providers. Prerequisite: EMCHS students only. Credit/no-credit only. Offered: AWSpS.

MEDEX 533 Clinical Residencies III (3) Clinical residencies spent in community-based or institution-based practice settings with the supervision of licensed healthcare providers. Prerequisite: EMCHS students only. Credit/no-credit only. Offered: AWSpS.

MEDEX 536 Health Policy for Practicing Clinicians (4) Overview of United States health policy issues including payment structures, quality, disparities, workforce and legislative impact. Prerequisite: EMCHS students only. Offered: W.

MEDEX 537 Leadership for Practicing Clinicians (4) Leadership skills for clinical practice, community, the profession, and organizations. Prerequisite: EMCHS students only. Offered: A.

MEDEX 538 The Physician Assistant Profession (4) Overview of the physician assistant profession, focusing on the history of the profession, education, economics, legal, political, and professional aspects of the physician assistant profession, current and future physician assistant roles, and hot topics. Prerequisite: EMCHS students only. Offered: Sp.

MEDEX 540 Healthcare for Rural and Underserved Populations (5) Overview of the nature and severity of disparities in healthcare access and delivery to rural and urban underserved populations. Offered: S.

MEDEX 541 Healthcare Administration and Public Health (5) Application of the basic principles of healthcare administration and public health to specific communities and practices. Offered: S.

MEDEX 542 Academic Medicine and Specialty Practice (5) Overview of primary care as well as medical and surgical specialty practice within the academic medicine environment. Offered: S.

MEDEX 543 Global Health (5) Overview of global health concerns and solutions including disease processes, health systems, cultural competency, and the impacts of health policies on local populations. Offered: S.

MEDEX 550 Basic Science in Clinical Medicine (6) Intensive review of important basic scientific concepts relevant to clinical medicine. Prerequisite: MEDEX Northwest students only. Offered: S.

MEDEX 551 Anatomy and Physiology (6) Overview and review of human anatomy and physiology by organ system. Prerequisite: MEDEX students only. Offered: S.

MEDEX 552 Pathophysiology for Primary Care (6) Examines pathological and pathophysiological concepts of diseases commonly encountered in primary-care practice. Studies pathophysiology per organ system. Offered: A.

MEDEX 553 Basic Clinical Skills (5) Provides the student with mastery of history-taking and physical examination skills, thoroughness in data collection, medical record-keeping, and verbal presentation skills. Offered: A.

MEDEX 554 Adult Medicine I (7) Problem-oriented, organ-system approach to the diagnosis and management of common primary-care conditions. Offered: W.

MEDEX 555 Adults Medicine II (7) Problem-oriented, organ-system approach to the diagnosis and management of common primary-care conditions. Offered: Sp.

MEDEX 556 Maternal Child Health I (3) Examines the principles of prenatal care and primary-care pediatrics. Offered: W.

MEDEX 557 Behavioral Medicine I (2) Helps to develop and demonstrate skills needed for assessment, diagnosis, and management of common behavioral and emotional problems in a clinical setting. Offered: A.

MEDEX 558 Behavioral Medicine II (2) Helps to develop and demonstrate skills needed for assessment, diagnosis, and management of common behavioral and emotional problems in a clinical setting. Offered: W.

MEDEX 559 Behavioral Medicine III (2) Helps to develop and demonstrate skills needed for assessment, diagnosis, and management of common behavioral and emotional problems in a clinical setting. Offered: Sp.

MEDEX 560 Principles of Patient Management I (3) Provides systematic approach to pharmacological therapies including drug choice, risk factor identification, and administration. Includes non-pharmacological therapies and emphasizes health education and health promotion. Offered: W.

MEDEX 561 Principles of Patient Management II (3) Provides systematic approach to pharmacological therapies

including drug choice, risk factor identification, and administration. Includes non-pharmacological therapies and emphasizes health education and health promotion. Offered: Sp.

MEDEX 562 Maternal Child Health II (3) Emphasizes the diagnosis and treatment of common pediatric problems. Prerequisite: MEDEX 556. Offered: Sp.

MEDEX 563 Clinical Clerkships I (19) Full-time clerkships spent in institution-based or specialty practice setting with the supervision of licensed healthcare providers. Credit/no-credit only. Offered: AWSpS.

MEDEX 565 Clinical Clerkships II (19) Full-time clerkships spent in institution-based or specialty practice setting with the supervision of licensed healthcare providers. Prerequisite: MEDEX 563. Credit/no-credit only. Offered: AWSpS.

MEDEX 566 Family Practice Clerkship I (19) Family practice under the supervision of physicians throughout the Pacific Northwest. Common primary-care problems. Students and preceptors are educated in the utilization and management of the physician assistant in practice. Students keep computerized records of encounters and complete a variety of written assignments. Credit/no-credit only. Offered: AWSpS.

MEDEX 567 Family Practice Clerkship II (19) Further experience in primary-care practice with an emphasis on independent patient management by the student supervised by family practitioners. Prerequisite: MEDEX 566. Credit/no-credit only. Offered: AWSpS.

MEDEX 568 Emergency Medicine I (2) Diagnosis and management of common emergency conditions for primary-care practitioners. Organ system approach. Offered: W.

MEDEX 569 Emergency Medicine II (2) Diagnosis and management of common emergency conditions for primary-care practitioners. Organ system approach. Offered: Sp.

MEDEX 570 Professional Role Development I (1) Explores professional role development, health access issues, licensing issues, healthcare quality, interdisciplinary relationships, diverse populations, and the healthcare environment. Offered: A.

MEDEX 571 Professional Role Development II (1) Explores professional role development, health access issues, licensing issues, healthcare quality, interdisciplinary relationships, diverse populations, and the healthcare environment. Offered: W.

MEDEX 572 Professional Role Development III (1) Explores professional role development, health access issues, licensing issues, healthcare quality, interdisciplinary relationships, diverse populations, and the healthcare environment. Offered: Sp.

MEDEX 573 Technical Skills I (1) Introduces clinical skills and procedures through hands-on experiences. Offered: A.

MEDEX 574 Technical Skills II (1) Introduces clinical skills and procedures through hands-on experiences. Offered: W.

MEDEX 575 Technical Skills III (1) Introduces clinical skills and procedures through hands-on experiences. Offered: Sp.

MEDEX 588 Investigative Skills for Entry-Level Clinicians (5) Overview of the principles, research methods, and biostatistical and epidemiological techniques necessary to understand and conduct academic and clinical research. Application appraise the public health and biomedical literatures drawing on examples from current scientific literature and existing data. Offered: S.

MEDEX 599 Independent Study (1-19, max. 19) Supervised clinical clerkship or independent study activities to meet specific needs. Prerequisite: permission of the MEDEX program. Credit/no-credit only. Offered: AWSpS.

Medicine

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Active programs in teaching, research, and patient care are carried on at the University of Washington Medical Center, Veterans' Administration Puget Sound Health Care System (VAPSHCS), Harborview Medical Center, Pacific Medical Center, the Puget Sound Blood Center, the Northwest Kidney Center, and the Fred Hutchinson Cancer Research Center. Major affiliations for clinical teaching also exist with Providence Medical Center and Swedish Hospital Medical Center. There are many additional affiliations with community hospitals in Seattle, the state of Washington, and the WWAMI region. Medical students, interns, medical residents, and postdoctoral research fellows rotate through these various hospitals and participate in the learning experiences offered at each.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsctat/

MED 498 Undergraduate Thesis (*)

MED 499 Undergraduate Research (*) Case studies, with laboratory research. Available to undergraduates and medical students. Offered: AWSpS.

MED 505 P-Preceptorship in Medicine (1, max. 12) To provide opportunity for first- and second-year medical students to gain personal experience with medical practice situations by being stationed with carefully selected clinical faculty members in their offices. Prerequisite: permission of department. Credit/no-credit only. Offered: AWSpS.

MED 507 HIV in Latinos (1-, max. 12) Students shadow an attending physician, and participate in routine and acute visits for a primarily Spanish-speaking patient population. Includes Spanish-language health education and rapid HIV testing sessions, and encourages attendance at a community event targeting the Latino HIV community. Prerequisite: permission of instructor; conversational Spanish proficiency or FAMED 556. Credit/no-credit only.

MED 510 Health Issues of Sexual Minorities (1) Introduction to the special healthcare issues and barriers confronting persons identified as bisexual, gay, lesbian, or transgendered. Includes lectures, panels, and case presentations by faculty and community experts.

MED 515 Medicine as Culture (1) Examines the ways that medical practice, the medical profession, and ideas about sickness and health are embedded in society and culture, as a way of contextualizing biological phenomena and medical knowledge. Credit/no-credit only.

MED 525 Introduction to Gerontology and Geriatric Medicine (1) Introduces gerontology and geriatric medicine. Explores topics in geriatric medicine including: multidisciplinary care, dementia and delirium, falls, polypharmacy, urinary incontinence, fragility, and end-of-life care. Employs a combination of lectures, time spent interviewing and observing patients in hospital-based clinics, private homes, long term care and continuing retirement communities, and bedside teaching with a healthcare provider. Credit/no-credit only.

MED 530 AIDS: A Multidisciplinary Approach (2) C. FARQUHAR Comprehensive overview of the public health, clinical, and laboratory aspects of human immunodeficiency virus (HIV) infection and disease. Topics include the pathogenesis, natural history, and management of HIV infections; the impact of HIV/AIDS on community and global healthcare;

and prospects for prevention and control. Credit/no-credit only. Offered: jointly with EPI 530/G H 562; A.

MED 531 P-Human Genetics (*) Weekly seminar dealing with a variety of topics in medical genetics given by faculty of the Division of Medical Genetics and related departments and divisions. Open to medical students with a good foundation in genetics.

MED 533 P-Clinical Endocrinology (2) Includes brief lectures followed by instructor-led interviews with patients to illustrate the clinical presentation, diagnosis, and treatment of the major endocrinopathies. Students gain a greater appreciation of the impact these disorders have on patients' lives. Prerequisite: second year medical students.

MED 534 Wilderness Medicine (1) Provides training in medical emergencies and clinical situations unique to wilderness settings where access to medical care is limited. Students gain experience in patient assessment, extrication, and the management of common wilderness situations including altitude illness, burns, trauma, diving injuries, hypo- and hyperthermia, and toxin exposures. Offered: Sp.

MED 536 Introduction to Critical Care Medicine (1) Uses a combination of didactics, time spent observing rounds and physicians on-call in the ICU as well as dedicated bedside teaching by a critical care attending physician to teach about core topics in pediatric and adult critical care medicine including shock, respiratory failure, sepsis, mechanical ventilation, and palliative care. Offered: W.

MED 540 Preventing Healthcare Associated Infections (1) Multidisciplinary approach to understanding, measuring, and developing policy to prevent healthcare associated infections. Credit/no-credit only. Offered: jointly with EPI 505; W.

MED 546 Clinical Applications of Gene Therapy (2) Overview of the current status of gene therapy. Discusses its role in the future practice of medicine. Lecture and literature reviews.

MED 547 Quantitative Methods in Medical Genetics (2) Computational methods of use for medical genetics. Review of problem sets. Topics range from basic probability to linkage analysis. Prerequisite: genetics and permission of instructor.

MED 549 Clinical Medical Genetics (1) Review of current clinical advances in medical genetics. Includes lectures and discussion of cases from medical genetics clinic. Prerequisite: genetics or human genetics and permission of instructor.

MED 555 P-Mind, Body, and Pen: Writing and the Art of Becoming a Physician (1) Provides forum for medical students to write about issues in medicine and medical education. Focuses on writing as a process for giving voice to the conflicting demands and dilemmas of becoming a physician. Explores personal narratives, dreams and disappointments, chronic illness and death, empathy and revulsion, authenticity and power. Offered: W.

MED 556 Visual Thinking: How to Observe in Depth (1) Uses visual thinking strategies to look at art and enhance diagnostic acumen. Expands observational and critical thinking skills, and encourages open-ended discussion. Skills applied in assessing patients. Combination of slide sessions and observation of original objects at Seattle museums. Credit/no-credit only. Offered: A.

MED 557 Hispanic Health and Healthcare Disparities (1) Acosta Covers Hispanic culture and language, history of Hispanics in the United States, Hispanic health status issues, and effective strategies for working across cultures and linguistic barriers. Designed to help the learner understand and respond better to the healthcare needs of the Hispanic community.

MED 560 P-Advanced Global Health (2) Prepares health profession students for work in developing countries. Includes healthcare delivery systems, political, social, and

economic determinants of health, major global health issues, and personal well-being while abroad. Lecture and seminar format with guest speakers, student presentations, and discussion. Offered: jointly with G H 505.

MED 561 Tropical Medicine (1) F. BUCKNER, P. POTTINGER Intended for professional health science students interested in learning the pathophysiology, epidemiology, and clinical presentation of disease conditions that are more commonly seen in less-developed countries, resource-limited settings, or tropical climates, and how to diagnose, treat, and follow the resolution of these diseases with commonly limited resources. Credit/no-credit only. Offered: jointly with G H 561; Sp.

MED 565 P-The Healer's Art: Awakening the Heart of Medicine (1) Encourages cultivation of human dimensions in practice of medicine while strengthening personal commitment to medicine as a life's work. Facilitates student recognition of commonality of personal concerns among peers and student response to the dimension of mystery in the experience of illness as well as development of the capacity for awe. Credit/no-credit only. Offered: Sp.

MED 599 P-Transfusion Machine (3) Group discussions and didactic sessions cover broad category of transfusion medicine. Hands-on laboratory experience in red cell serology/compatibility, coagulation, and histocompatibility with emphasis on diagnosis and management of clinical problems. Based at Puget Sound Blood Center. Prerequisite: fourth-year medical student standing; third-year student standing with permission of instructor.

MED 600 Independent Study or Research (*) Prerequisite: permission of instructor. Offered: AWSpS.

Emergency Medicine

MED EM 501 P-Emergency Medicine Preceptorship (1, max. 12) Provides opportunities for first- and second-year medical students to gain experience working in an emergency setting. Students shadow faculty in emergency medicine during their shifts. Includes learning about common conditions seen in the emergency department and the opportunity to work on history taking and physical exam skills. Prerequisite: permission of instructor. Credit/no-credit only.

MED EM 550 P-Introduction to Emergency Medicine (1) Presentation of common medical and surgical emergencies and their urgent management, especially within the framework of rapid patient assessment and stabilization. Lecture topics include chest pain and myocardial infarction, basic arrhythmia management, and burn and wound care. Credit/no-credit only.

MED EM 600 Independent Study/Research (*) Provides medical students the opportunity to participate in research as part of their medical education. Must obtain permission through submission of a proposal to department and securing a faculty sponsor.

MED EM 605 P-Emergency Medicine - UWMC (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 606 P-Emergency Medicine - HMC/UWMC (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PBSCI, PEDS; and SURG required clerkships.

MED EM 607 P-Emergency Medicine - Madigan (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 608 P-Emergency Medicine - Swedish Cherry Hill (8) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients.

Prerequisite: MED; OB/GYN; PBSCI; PEDS; and SURG required clerkships.

MED EM 609 Emergency Medicine - Seattle Children's (8) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 617 P-Emergency Medicine - Olympia (8) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 624 P-Emergency Medicine - Shelton (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 625 P-Emergency Medicine - Spokane (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 626 P-Emergency Medicine - Spokane Deaconess (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 645 P-Emergency Medicine - Boise, St. Lukes (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 646 P-Emergency Medicine - Boise, Saint Alphonsus (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 656 P-Emergency Medicine - Juneau, AK (8) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 657 P-Emergency Medicine - Fairbanks (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 658 P-Emergency Medicine - Anchorage (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 662 P-Emergency Medicine - Bozeman, MT (8) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 663 P-Emergency Medicine - Billings, MT (8) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 668 P-Emergency Medicine - Casper (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 669 P-Emergency Medicine - Cheyenne, WY (8) Clerkship emphasized the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 680 P-Emergency Medicine Subinternship - Madigan (8) Elective clerkship emphasizing the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: All 3rd year required clerkships + required 4th year EM clerkship for UW students only; permission of department.

MED EM 681 P-Emergency Medicine Subinternship - HMC/UWCR (*, max. 16) Elective clerkship emphasizing the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: All 3rd year required clerkships + required 4th year EM clerkship for UW students only; permission of department.

MED EM 682 P-Emergency Medicine Subinternship - UWMC (*, max. 16) Elective clerkship emphasizing the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: All 3rd year required clerkships + required 4th year EM clerkship for UW students only; permission of department.

MED EM 697 P-Emergency Medicine Special Electives (*, max. 24) By specific arrangement, for qualified students, special clerkship, externship, or research opportunities at times made available at institutions other than University of Washington. Faculty advise students of opportunities. Students obtain from Dean's office a special assignment form at least one month before preregistration. (Two, four, six, or twelve weeks). Prerequisite: required EM clerkship; permission of instructor at away site and department. Offered: AWSpS.

MED EM 699 P-WWAMI Emergency Medicine Special Elective (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington, within the WWAMI region. Prerequisite: permission of department and away site.

Medicine Elective Clerkships

MEDECK 601 P-Ward Medicine Subinternship - Seattle (*, max. 24) Students act in the capacity of interns on the medical wards under supervision of house staff and visiting physicians. They attend all regular medicine rounds and conferences as their schedules permit. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 602 P-Primary Care - Seattle (8/12) Four-week, full-time ambulatory care block in primary care internal medicine. Students participate in several clinics at University of Washington Roosevelt Clinic following a panel of patients in medicine, rheumatology, and virology clinics. Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 603 P-Clinical Cardiology and Electrocardiography - Seattle (8) Clerkship in clinical cardiology-combined inpatient-outpatient assignments, ECG interpretation. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 604 P-Clinical Dermatology - Seattle (8) Participation in dermatology clinics and inpatient consultations. Journal club and clinical conferences each week with entire staff. A continuing series of teaching seminars and weekly dermatopathology conferences. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 605 P-Clinical Endocrinology and Metabolism - Seattle (*, max. 12) Clerkship in clinical endocrinology and metabolism combined inpatient and outpatient assignments at selected hospitals. Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 606 P-Clinical Gastroenterology - Seattle (8) Participation in consulting ward rounds, procedures, conferences, and selected clinics with full-time divisional staff, plus directed tutorial work. Students are scheduled at one of three sites: UWMC, Harborview Medical Center, and Veterans' Administration hospitals. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 607 P-Clinical Hematology/Oncology - Seattle (8) Outpatient and inpatient experience with hematologic/oncologic disorders. The elective includes teaching rounds, conferences, and evaluation of laboratory work. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 608 P-Clinical Infectious Diseases - Seattle (8) Students participate in the consulting service throughout the hospital, attend daily plate rounds, conferences, and seminars. Participate in consulting service throughout hospital to learn microbiological aspects of infectious diseases through the clinical laboratories. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 609 P-Nephrology and Fluid Balance - Seattle (8) Students see clinical nephrologic problems under close supervision, participate in nephrology and transplant rounds, see consults with renal fellow and attending, and work up patients in renal clinics, participate in seminars with clerks from all three hospitals. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 610 P-Clinical Respiratory Disease (8) Training in respiratory disease diagnosis and pulmonary therapy, with special emphasis on cardiopulmonary function testing and interpretation. Inpatient and outpatient teaching rounds, conferences, and basic science integration. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 612 P-Clinical HIV Care - Seattle (8) Full-time outpatient and inpatient elective in HIV care for senior medical students. Students see patients for routine care and acute medical problems that do not require hospitalization, as well as provide inpatient consults. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 613 P-Clinical Nutrition - Seattle (8) Instruction in nutritional assessment and care of both inpatients and outpatients. Students work with preceptors at a variety of hospital and clinic teaching sites, attend nutrition-related seminars, and practice interview skills on standardized patients. (Four weeks). Prerequisite: HUBIO 568; third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 614 P-Clinical Oncology - Seattle (8) Students participate in the oncology service in the inpatient oncology consult service at UWMC hospital, obtaining exposure to the management of patients with cancer, oncological complications and emergencies, oncological drug mechanisms of action, side effects, and interactions. Obtain basic understanding of principles of oncology care. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 615 P-Rheumatology - Seattle (8) Full-time inpatient-outpatient clerkship in rheumatology. Clinical experience provided in diagnosis and treatment of rheumatic diseases, utilizing outpatient clinics and hospitalized patients at the University of Washington Medical Center, Harborview Medical Center, or VAMC. Emphasis on concepts in pathophysiology, diagnosis, and treatment of these diseases. In addition to patient contact, reading, seminars, and preceptorial sessions are the methods of instruction. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 616 P-Advanced Dermatology Clinic - Seattle (8) Advanced clinical dermatology clerkship at various sites including HMC, UWMC, VA Seattle, and Children's Hospital. Students choose from four tracks within the rotation: dermatopathology, pediatric dermatology, dermatologic surgery, and advanced medical dermatology. (Four weeks). Prerequisite: third-year required Medicine clerkship; MEDECK 604. Offered: AWSpS.

MEDECK 617 P-Harborview Evening Clinic - Seattle (2) A longitudinal elective for senior medical students who assume primary responsibility for a panel of medical patients

in an outpatient clinic. Direct care of patients is supplemented by didactic sessions dealing with issues in ambulatory care. Students must apply to this program, and are expected to participate for the full academic year. Prerequisite: third-year required Medicine clerkship.

MEDECK 618 P-Medical Consultation - Seattle (8) Full-time outpatient and inpatient elective in peri-operative medical consultation for senior medical students. Students see patients in the medical consultation clinic, then follow them daily when they come in for surgery. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 619 P-Management of Sexually Transmitted Diseases - Seattle (2, max. 12) Instruction and clinical experience in diagnosis, treatment, management, and patient counseling of sexually transmitted diseases. Instruction in genitourinary physical examination skills; relevant laboratory techniques and management of patients with STDs. Prior to the elective, each student must review a packet of didactic materials. (Two weeks). Prerequisite: third-year required Medicine, OB/GYN, and Surgery clerkships. Offered: AWSpS.

MEDECK 620 P-Critical Care Medicine Subinternship - Seattle (8) Participating students function at the sub-intern level on the MICU service at either Harborview Medical Center, UWMC, or VAMC. Through direct patient care responsibilities, students learn about various forms of critical care illness and gain experience in the application of mechanical ventilation, arterial blood gas analysis, and palliative care medicine. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 622 P-Clinical Medical Genetics (8) Students see outpatients and attend a variety of outpatient clinics including subspecialty clinics in cancer genetics, connective tissue genetics, neurogenetics, Turner syndrome and dermatologic genetics, and pediatric general genetics clinics with an emphasis on dysmorphology, developmental delay, disorders of sexual differentiation, skeletal dysplasia, craniofacial anomalies, and neurogenetics. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 623 P-Clinical Wound Management (*) Opportunity for medical student to be exposed to and learn wound care management in clinical setting. At end of rotation students should be able to diagnose cause of chronic ulcer or wound, outline the approach to the management of diabetic foot ulcer, peripheral artery disease ulcer and VLU, and initiate treatments such as sharp debridement, VAC, dressing, and Unna Boot placement. (Two weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 624 Hospitalist Subinternship - Seattle, WA (8) Intensive experience in hospital medicine. The student works primarily with an attending hospitalist or nocturnist.

MEDECK 625 Cardiology Subinternship - Seattle, WA (8) Students serve as intern on the cardiology service under the supervision of senior resident and cardiology attending physicians.

MEDECK 626 P-Clinical Cardiology and Electrocardiography - Tacoma (8) Clerkship in clinical cardiology-combined inpatient-outpatient assignments, ECG interpretation. (Four weeks). Prerequisite: third-year required Medicine clerkship.

MEDECK 627 P-Clinical Endocrinology and Metabolism - Tacoma (*, max. 12) Clerkship in clinical endocrinology and metabolism. Combined inpatient and outpatient assignments at selected hospitals. (Four weeks). Prerequisite: third-year required Medicine clerkship.

MEDECK 628 P-Clinical Infectious Diseases - Tacoma (8) Students participate in the consulting service throughout the hospital, attend daily plate rounds, conferences, and seminars. Participate in consulting service throughout hospital to learn microbiological aspects of infectious diseases through the clinical laboratories. (Four weeks). Pre-

requisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 629 P-Clinical Respiratory Disease and Critical Care - Tacoma (8) Training in respiratory disease diagnosis and pulmonary therapy, with special emphasis on cardiopulmonary function testing and interpretation. Inpatient and outpatient teaching rounds, conferences, and basic science integration. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 630 P-Ward Medicine Subinternship - Tacoma (*, max. 24) Students act in the capacity of interns on the medical wards under supervision of house staff and visiting physicians. They attend all regular medicine rounds and conferences as their schedules permit. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 631 P-Ward Medicine Subinternship - Spokane (8) Students act in the capacity of interns on the medical wards under supervision of house staff and visiting physicians. They attend all regular medicine rounds and conferences as their schedules permit. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 633 P-Clinical Cardiology and Electrocardiography - Washington (8) Clerkship in clinical cardiology-combined inpatient-outpatient assignments, ECG interpretation. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 634 P-Clinical Dermatology - Washington (8) Participation in dermatology clinics and inpatient consultations. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 636 P-Clinical Gastroenterology - Washington (8) Participation in consulting ward rounds, procedures, conferences, and selected clinics at Sacred Heart Hospital in Spokane. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 637 Clinical Infectious Diseases - Yakima, WA (8) Students participate in the clinic and consulting service at area hospitals. Includes patients with a range of community acquired and hospital acquired infectious diseases. Students participate in antibiotic stewardship discussions and infection control meetings.

MEDECK 638 Clinical Infectious Diseases - Spokane (8) Students participate in the consulting service throughout the hospital, attend daily plate rounds, conferences, and seminars. Participate in consulting service throughout hospital to learn microbiological aspects of infectious diseases through the clinical laboratories. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 639 P-Nephrology and Fluid Balance - Washington (8) Students see clinical nephrologic problems under close supervision, participate in nephrology and transplant rounds, see consults, and work up patients in renal clinics. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 640 Critical Care Medicine Subinternship - Washington (8) Participating students function at the sub-intern level on the MICU. Through direct patient care responsibilities, students learn about various forms of critical care illness and gain experience in the application of mechanical ventilation, arterial blood gas analysis, and palliative care medicine. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 644 P-Clinical Dermatology - Wyoming (8) Participation in dermatology clinics and inpatient consultations. A continuing series of teaching seminars and weekly dermatopathology conferences. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 651 P-Ward Medicine Subinternship - Alaska (*, max. 24) Students act in the capacity of interns on the

medical wards under supervision of house staff and visiting physicians. They attend all regular medicine rounds and conferences as their schedules permit. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 653 P-Clinical Cardiology and Electrocardiography - Alaska (8) Clerkship in clinical cardiology. Combined inpatient-outpatient assignments, ECG interpretation. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 654 P-Clinical Dermatology - Alaska (8) Participation in dermatology clinics and inpatient consultations. A continuing series of teaching seminars and weekly dermatopathology conferences. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 658 P-Clinical Infectious Diseases Alaska (8) Students participate in clinic and in the consulting service throughout the hospital, attend ICU, antimicrobial stewardship rounds, and seminars. Participate in consulting service throughout hospital to learn microbiological aspects of infectious diseases through the clinical laboratories. (Four weeks). Prerequisite: third-year required Medicine clerkship; fourth-year standing. Offered: AWSpS.

MEDECK 664 P-Clinical Dermatology - Montana (8) Participation in dermatology clinics and inpatient consultations. A continuing series of teaching seminars and weekly dermatopathology conferences. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 669 P-Nephrology and Fluid Balance - Montana (8) Students see clinical nephrologic problems under close supervision, participate in nephrology and transplant rounds, see consults, and work up patients in renal clinics. (Four weeks). Prerequisite: third-year required Medicine clerkship. Credit/no-credit only. Offered: AWSpS.

MEDECK 670 P-Clinical Medicine Critical Care - Idaho Falls (8) Inpatient critical care rotation in a community hospital setting at Eastern Idaho Regional Medical Center in Idaho Falls, Idaho. Students assist in the diagnosis and management of common ICU problems, as well as major trauma resuscitation, under the supervision of critical care physicians. Students exposed to common ICU problems, which may include sepsis, respiratory failure, hypotension, organ failure, and gastrointestinal hemorrhage. Students work as part of a multidisciplinary team. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 671 P-Ward Medicine Subinternship - Idaho (*, max. 24) Students act in the capacity of interns on the medical wards under supervision of house staff and visiting physicians. They attend all regular medicine rounds and conferences as their schedules permit. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 672 P-Clinical Endocrinology and Metabolism - Idaho Falls, ID (8) Clerkship in clinical endocrinology and metabolism combined inpatient and outpatient assignments at selected hospitals. Prerequisite: medicine required clerkship. Offered: AWSpS.

MEDECK 673 P-Clinical Cardiology and Electrocardiography - Idaho (8) Clerkship in clinical cardiology-combined inpatient-outpatient assignments, ECG interpretation. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 674 P-Clinical Dermatology - Idaho (8) Participation in dermatology clinics and inpatient consultations. A continuing series of teaching seminars and weekly dermatopathology conferences. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 675 P-Clinical Allergy and Immunology - Boise, ID (4) Clinical experience seeing a combination of new and recheck patients with allergy, asthma and immunology disorders for example but not limited to, seasonal allergies, allergic rashes, asthma, chronic cough, chronic sinusitis,

contact dermatitis, bee sting allergy, and food allergy. Prerequisite: Medicine Clerkship and 4th year standing.

MEDECK 677 P-Clinical Hematology/Oncology - Idaho (8) Outpatient and inpatient experience with hematologic/oncologic disorders. The elective includes teaching rounds, conferences, and evaluation of laboratory work. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 678 P-Clinical Infectious Diseases - Idaho (8) Students participate in the consulting service throughout the hospital, attend daily plate rounds, conferences, and seminars. Participate in consulting service throughout hospital to learn microbiological aspects of infectious diseases through the clinical laboratories. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 679 P-Nephrology and Fluid Balance - Idaho (8) Students see clinical nephrologic problems under close supervision, participate in nephrology and transplant rounds, see consults, and work up patients in renal clinics. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 680 P-Clinical Respiratory Disease and Critical Care Medicine - Idaho (8) Training in respiratory disease diagnosis and pulmonary therapy, with special emphasis on cardiopulmonary function testing and interpretation. Inpatient and outpatient teaching rounds, conferences, and basic science integration. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 681 P-Clinical Aspects of Aging - Idaho (8) Work with elderly patients as subintern with senior care program. Inpatient and ambulatory setting in nursing homes and patients' homes. Interdisciplinary approach. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 682 P-Endocrinology and Metabolism - Idaho Falls (8)

MEDECK 686 P-Advanced Clinical Dermatology Clinic - Idaho (8) Advanced clinical dermatology clerkship. (Four weeks). Prerequisite: third-year required Medicine clerkship; either MEDECK 604, MEDECK 634, MEDECK 644, MEDECK 664, or MEDECK 674. Offered: AWSpS.

MEDECK 690 P-General Internal Medicine - Shiprock (8) Clerkship located at the Northern Navajo Medical Center in Shiprock, New Mexico. Students are involved in all aspects of patient care, including home visits, ambulatory care, and hospital stays. (Four weeks). Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 691 P-Medicine Special Electives - Seattle (*, max. 24) By special arrangement for qualified students, special clerkships or externships. Prerequisite: permission of department.

MEDECK 692 P-Medicine Special Electives - Washington (*, max. 24) By special arrangement for qualified students, special clerkships or externships. Prerequisite: permission of department.

MEDECK 693 P-Medicine Special Electives - Wyoming (*, max. 24) By special arrangement for qualified students, special clerkships or externships. Prerequisite: permission of department.

MEDECK 694 P-Medicine Special Electives - Alaska (*, max. 24) By special arrangement for qualified students, special clerkships or externships. Prerequisite: permission of department.

MEDECK 695 P-Medicine Special Electives - Montana (*, max. 24) By special arrangement for qualified students, special clerkships or externships. Prerequisite: permission of department.

MEDECK 696 P-Medicine Special Electives - Idaho (*, max. 24) By special arrangement for qualified students, special clerkships or externships. Prerequisite: permission of department.

MEDECK 697 P-Medicine Special Electives - Away (*, max. 24) Special clerkship, externship, or research opportunities at times made available at institutions other than University of Washington. Faculty advise students of opportunities. Students obtain from Dean's office a special assignment form at least three months before preregistration. (Two, four, six, or twelve weeks). Prerequisite: permission of department.

Medicine Required Clerkships

MEDRCK 601 P-Clinical Clerkship (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 610 P-Clinical Clerkship Seattle-Shelton, WA (24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experiences emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 612 P-Clinical Clerkship - Seattle-Madigan (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 614 P-Clinical Clerkship - Seattle-Montesano (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 616 P-Clinical Clerkship Seattle-Olympia (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 617 P-Clinical Clerkship Seattle-Port Townsend (*, max. 24) Paauw Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 618 P-LIC Clinical Clerkship (24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experiences emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (38-44 week integrated clerkship, full-time.) Offered: AWSpS.

MEDRCK 621 P-Clinical Clerkship - Spokane (*, max. 24) Third-year medical students assume increasing responsibility

for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. Some students can schedule outpatient time in Pullman, WA. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 624 P-Clinical Clerkship - Seattle-Wenatchee (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 630 P-Write Medicine Clinical Clerkship (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (18-22 week integrated clerkship, full-time.)

MEDRCK 632 P-Clinical Clerkship - Seattle-Jackson (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 634 P-Clinical Clerkship - Seattle-Sheridan (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 636 P-Clinical Clerkship - Seattle-Douglas (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 638 P-Clinical Clerkship - Seattle-Lander (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 652 P-Clinical Clerkship - Seattle-Anchorage (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 654 P-Clinical Clerkship - Seattle-Soldotna (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a

teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 672 P-Clinical Clerkship - Seattle-Billings (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 673 P-Clinical Clerkship Seattle-Great Falls (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 674 P-Clinical Clerkship - Seattle-Dillon (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 676 P-Clinical Clerkship - Seattle-Missoula (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 678 P-Clinical Clerkship - Seattle-Bozeman (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 691 P-Clinical Clerkship - Boise (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

Microbiology

K-335A Health Sciences

Microbiology is a natural science that deals with microorganisms such as bacteria, fungi, protozoa, algae, and viruses. It is concerned with the nature and properties of these organisms, their effects on humans and the environment, and how they can be exploited to provide useful products.

UNDERGRADUATE PROGRAM

For undergraduate program details, please see the Microbiology entry under the College of Arts and Sciences.

GRADUATE PROGRAM

Graduate Program Coordinator

K335A Health Sciences, Box 357242

(206) 543-2572

advmicro@uw.edu

The Department of Microbiology offers a graduate program leading to the doctor of philosophy degree. Students interested in graduate work should obtain the necessary application forms from the department.

Admission Requirements

Students can be admitted to the PhD program with a background in any biological science discipline. Selection is based on the evaluation of a student's undergraduate record for indications of the ability to excel in independent, creative research. The department strongly recommends that undergraduate preparation include courses in biochemistry, physics, general and organic chemistry, microbiology, molecular biology and cell biology. To be competitive with the applicant pool, prospective students are also strongly advised to seek opportunities to carry out undergraduate research.

Required Background Courses

Generally satisfied prior to entry into the graduate program

1. A one-year course in biochemistry (equivalent to BIOC 440, BIOC 441, and BIOC 442)
2. A course in classical and molecular genetics (equivalent to GENOME 371 or GENOME 372)
3. A course in general microbiology (equivalent to MICROM 410)
4. A course in medical microbiology and basic immunology is recommended for those considering research in the area of medical microbiology or virology

Degree Requirements

90 credits minimum, as follows:

1. *Conjoint Courses (6 credits)*: 6 credits from the following conjoint courses: CONJ 524, CONJ 531, CONJ 532, CONJ 533, CONJ 534, CONJ 535, CONJ 537, CONJ 538, CONJ 539, CONJ 541, CONJ 543, CONJ 544, CONJ 545, CONJ 546, CONJ 547, CONJ 548, CONJ 549 (1.5 credits each). It is recommended that students take additional conjoint courses or choose one or more of the genome sciences modules: GENOME 551, GENOME 552, GENOME 553, GENOME 554, GENOME 555, GENOME 556, GENOME 559 (1.5 credits each).
2. *Virology and Bacteriology Courses (6-7 credits)*: Three of the following courses; one virology and one bacteriology course must be among those selected: MCB 532, MCB 542, MICROM 441, MICROM 450, MICROM 510, MICROM 530, MICROM 553
3. *Faculty Research Presentations for First-Year Students*: MICROM 599
4. *Laboratory Rotation*: MICROM 500, minimum three quarters
5. *Journal Club*: MICROM 522, continuous enrollment
6. *Seminar*: MICROM 520 seminar series or attendance at Fred Hutchinson seminars. Students at Fred Hutchinson are also encouraged to attend the Microbiology seminars. To be taken every quarter unless a conflict with teaching exists.

7. *Research Discussion Groups*: Taken every quarter. Students register for the appropriate course number for credit.

8. *Additional Requirements*

- a. Be a teaching assistant in at least two laboratory courses for undergraduates (usually satisfied in the first and/or second year).
- b. Give at least two formal lectures in an undergraduate course (third or fourth year).
- c. Be first author on multiple papers related to thesis research which are published or accepted for publication in refereed journals. Under some circumstances, one first-author publication satisfies this requirement.

9. General examination, dissertation, final examination

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsclat/

MICROM 101 Microbes and Society (5) NW Intended for liberal arts majors and students not majoring in the biological sciences. Focuses on activities of bacteria, viruses, and other microorganisms, and their influence on humans. Microbe-related topics include disease, bioterrorism, food, biotechnology, and ecology. Examines the nature of scientific inquiry, along with major biological concepts.

MICROM 301 General Microbiology (3) NW Anderson, Mougous Acquaints students with microorganisms and their activities. Topics include microbial cell structure and function, metabolism, microbial genetics, and the role of microorganisms in disease, immunity, and other selected applied areas. Prerequisite: either CHEM 120, CHEM 140, CHEM 142, or CHEM 145. Offered: ASpS.

MICROM 302 General Microbiology Laboratory (2) NW Anderson, Beins, Chandler Laboratory course primarily for students taking MICROM 301. Covers a variety of microbiological techniques, with experiments designed to illustrate major concepts of bacteriology, virology, and immunology. No auditors. Offered: ASpS.

MICROM 402 Fundamentals of General Microbiology Laboratory (3) NW Gray Isolation of a broad range of non-pathogenic bacteria from natural sources, using selective and enrichment techniques, with microscopic, biochemical, and molecular identification. Related exercises include genetics, physiology, quantitation, and growth energetics. Prerequisite: BIOL 200. Offered: ASP.

MICROM 410 Fundamentals of General Microbiology I (3) NW Parsek, Traxler Survey of the microbial world, metabolism, biosynthesis, regulation, growth, structure, and function. Required for students majoring in microbiology; recommended for students majoring in biology. Prerequisite: minimum grade of 2.3 in BIOL 200; either CHEM 223, CHEM 237, or CHEM 335. Offered: A.

MICROM 411 Bacterial Genetics (5) NW Gray, Merrikkh, Traxler Molecular genetics: description of fundamental genetic processes such as mutation, repair, genetic exchange, recombination, and gene expression. Use of genetic strategies to analyze complex biological processes. Focuses on prokaryotic organisms. Prerequisite: BIOL 200; either CHEM 223, CHEM 237, or CHEM 335. Offered: W.

MICROM 412 Prokaryotic Diversity (3) NW Greenberg, Leigh Structure, biochemical properties, and genetics of the major groups of prokaryotes. Prerequisite: BIOL 200. Offered: Sp.

MICROM 413 Special Topics in Microbiology (1, max. 3) Examines current subjects in microbiology. Credit/no-credit only.

MICROM 431 Prokaryotic Recombinant DNA Techniques (3) NW Chandler Laboratory course emphasizing concepts

and techniques/methodologies in recombinant DNA research employing bacteria and their viruses. Topics and experiments/demonstrations include genomic and plasmid DNA isolation, restriction mapping, cloning, transposon mutagenesis, sequencing, and Western and Southern blotting. No auditors. Prerequisite: either BIOL 200 or MICROM 301. Offered: W.

MICROM 435 Microbial Ecology (3) NW Stahl Consideration of the various roles that microorganisms, particularly bacteria and cyanobacteria, play in environmental processes. The interrelationships among microorganisms and the effects of the physical, chemical, and biological properties of their environment are discussed and assessed. Prerequisite: BIOL 180.

MICROM 442 Medical Bacteriology (3) NW Cookson Medically important bacterial pathogens are discussed in terms of the clinical, therapeutic, and epidemiological aspects of diseases caused by them, molecular mechanisms of pathogenesis and their identification in the clinical laboratory. Laboratory course, MICROM 443 coordinates. Prerequisite: BIOL 200. Offered: W.

MICROM 443 Medical Bacteriology Laboratory (3) NW Anderson, Beins, Chandler Required for medical technology students, microbiology majors; elective for medical students. Procedures for isolation and identification of pathogenic bacteria, testing their susceptibility to antibiotics. No auditors. Prerequisite: BIOL 200. Offered: AW.

MICROM 444 Medical Mycology and Parasitology (4) NW Anderson, Hohl, Murphy Consideration of medically important fungi and parasites, with emphasis on their biology in relation to disease and its laboratory diagnosis. For medical technology students, microbiology majors, and medical students as an elective. Prerequisite: BIOL 200. Offered: Sp.

MICROM 445 Medical Virology (3) NW Lagunoff, Smith Introduces medical virology emphasizing basic understanding of the pathogenesis and replication of medically important viruses including the spread, diagnosis, epidemiology, treatment, and prevention of human viral diseases. Prerequisite: either BIOL 180 or BIOL 200; Sp.

MICROM 450 Molecular Biology of Viruses (3) NW Champoux Introduction to the molecular biology of viruses and virus-host relationships. Designed for advanced undergraduates and graduate students in the biological sciences. Coverage includes bacterial and animal viruses, with an emphasis on the molecular mechanisms of viral gene expression and regulation. Prerequisite: BIOL 200. Offered: W.

MICROM 482 Peer Teaching Assistants in Microbiology (1-5, max. 10) Direct experience in teaching a microbiology laboratory class. Peer TA's attend concurrent accompanying lecture course, meet weekly to coordinate, give introductory lab remarks, supervise the execution of lab exercises, and assist in preparing/grading of quizzes/exams. Training in teaching techniques, approaches. Student evaluation provided. Prerequisite: MICROM 402; MICROM 410. Credit/no-credit only. Offered: AWSpS.

MICROM 495 Honors Undergraduate Research (*-) Leigh Specific problems in microbiology or immunology. Offered: AWSpS.

MICROM 496 Undergraduate Library Research (2) An introduction to library research techniques and to microbiological literature. Staff assign a topic and supervise the project. Offered: AWSpS.

MICROM 499 Undergraduate Laboratory Research (*, max. 35) Leigh Specific problems in microbiology or immunology. Credit/no-credit only. Offered: AWSpS.

MICROM 500 Introduction to Research (*, max. 20) Introduction to research areas of the faculty and the techniques employed in their investigations. Prerequisite: graduate standing in microbiology or permission of instructor. Credit/no-credit only. Offered: AWSpS.

MICROM 520 Seminar (1, max. 30) Fang Credit/no-credit only. Offered: AWSp.

MICROM 522 Current Research in Microbiology (1, max. 30) Harwood, Merrikh, Parsek Weekly student and faculty seminar presentations based on the current literature. Prerequisite: graduate standing in microbiology. Credit/no-credit only. Offered: AWSp.

MICROM 526 Research of Cell Surface Problems (1, max. 30) Traxler Weekly research seminar and discussion of scientific literature pertaining to the process of membrane protein biogenesis. Prerequisite: permission of instructor. Credit/no-credit only.

MICROM 529 Mechanisms of Bacterial Pathogenesis (1, max. 30) Fang Student and faculty seminar presentations based on current research pertaining to mechanisms of bacterial pathogenesis at the molecular and cellular levels. Prerequisite: graduate standing in microbiology. Credit/no-credit only. Offered: AWSp.

MICROM 532 Methanogenesis Research Meeting (1, max. 30) Leigh Weekly seminar concerning research topics in the genetics and biochemistry of selected bacteria. Prerequisite: MICROM 410, permission of instructor. Credit/no-credit only. Offered: AWSpS.

MICROM 533 Herpesvirus Research Meeting (1, max. 30) Lagunoff Weekly research seminar and discussion of scientific literature pertaining to the study of molecular virology of Kaposi's Sarcoma-associated herpesvirus. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

MICROM 534 Research Seminar in Salmonella Pathogenesis (1, max. 30) Fang Provides a formal group setting for discussion and evaluation of a student's research progress. Credit/no-credit only. Offered: AWSpS.

MICROM 540 Virology (3) Katze Introduces new approaches and technologies being used in modern virology laboratories to provide a better understanding of the fields of virology and virus-host interactions. Covers topics in bio-defense, viral genomics and proteomics, and systems biology as it pertains to virus/host infection. Prerequisite: permission of instructor.

MICROM 553 Molecular Mechanisms of Bacterial Pathogenesis (3) Salama Mechanisms of bacterial pathogenesis explored at the molecular, genetic, and cellular levels through selected models as presented in the current scientific literature. Prerequisite: MICROM 411 or equivalent. Offered: A, odd years.

MICROM 554 Seminar in Molecular and Medical Microbiology (1, max. 15) Cookson Weekly one-hour seminar in which recent advances in molecular biology of microbial pathogenesis or the current research of the participants is presented and discussed critically. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSp.

MICROM 555 Advanced Clinical Microbiology (2.5) Butler-Wu, Fang Attendance at daily plate rounds of the Division of Clinical Microbiology. Designed to increase understanding of clinical microbiological work and its application to the care of the patient. Prerequisite: MICROM 443 and permission of instructor. Credit/no-credit only. Offered: AWSp.

MICROM 560 Research and Journal Club in Retrovirology (1, max. 30) Linial Weekly research seminar and discussion of literature in areas of retroviral replication and transformation. Prerequisite: graduate standing or permission of instructor. Offered: AWSpS.

MICROM 562 Oncogene and Retrovirus Research Seminar (1, max. 30) Linial, Overbaugh Weekly discussions of ongoing research related to retroviral replication, retroviral oncogenes and pathology. Prerequisite: graduate standing or permission of instructor. Offered: AWSpS.

MICROM 585 Research in Cell and Molecular Biology (1, max. 30) Champoux Weekly research seminar. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

MICROM 588 Research in Applied Microbiology (1, max. 30) Lidstrom Weekly research seminar and discussion of scientific literature pertaining to applied microbiology. Prerequisite: permission of instructor. Credit/no-credit only. Offered: jointly with CHEM E 588; AWSpS.

MICROM 599 Research Presentations (2) Current research review. Credit/no-credit only.

MICROM 600 Independent Study or Research (*-) Credit/no-credit only. Offered: AWSpS.

MICROM 700 Master's Thesis (*-) Credit/no-credit only.

MICROM 800 Doctoral Dissertation (*-) Credit/no-credit only. Offered: AWSpS.

Neurological Surgery

325 9th Avenue, Harborview Medical Center

askuwns@uw.edu

The Department of Neurological Surgery is dedicated to teaching and research in the entire spectrum of diseases of the central and peripheral nervous system. Instruction in this area is provided for medical students and postgraduate physicians.

The department's medical-student instruction includes participation in the human-biology curriculum as well as in elective basic-science and clinical experiences. These are available at Harborview Medical Center, University of Washington Medical Center, Veterans Affairs Puget Sound Health Care Center, and Seattle Children's hospital. The department also has several course offerings correlating research and clinical problems of the nervous system, including the research seminars in neuro-oncology, molecular imaging, stem cell biology, and clinical and basic-science correlates of the epilepsies.

Selected medical students also may elect research experience within the Department of Neurological Surgery. The department research facilities are housed in the Medical Research Tower of the University of Washington Medical Center, at Harborview Research and Training Building, and at Veterans Affairs Puget Sound Health Care System. Investigations are under way at these institutions in many areas of molecular biology, stem cell biology, neurophysiology, brain function and epilepsy research, neuroanatomy, nanotechnology, molecular imaging, behavioral research, outcomes research (cranial and spine), trauma research, and neuro-oncology.

In addition to undergraduate instruction, a fully certified residency program in neurological surgery is available for selected postgraduate physicians. The eight-year program emphasizes preparation for a career in academic neurosurgery.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsclat/

NEUR S 498 Undergraduate Thesis (*, max. 35) D' Ambrosio, Ellenbogen, Hevner, Horner, MacDonald, Mourad, Morrison, Ojemann, Ramirez Offered: AWSpS.

NEUR S 499 Undergraduate Research (*, max. 35) D' Ambrosio, Ellenbogen, Ferreira, Hevner, Horner, MacDonald, Mourad, Morrison, Ojemann, Ramirez, Rostomily, Silber Investigation of special problems as an intimate member of the research team in the neurological surgery laboratories. Research to lead to a thesis, if desired. List of projects available on request. Prerequisite: permission of instructor. Offered: AWSpS.

NEUR S 505 P-Preceptorship in Academic Neurosurgery (1, max. 12) *Chestnut, Ellenbogen, Ferreira, Hofstetter, Kim, Lee, Ojemann, Rostomily, Sekar, Silbergeld, Zhang* Opportunity for first- and second-year medical students to observe the research, teaching, and patient-care activities of academic neurosurgery. Prerequisite: permission of instructor. Offered: AWSpS.

NEUR S 665 P-Clinical Neurosurgery Clerkship (8) *Ellenbogen, Lee* Provides the medical student with exposure to common neurologic and neurosurgical problems such as trauma, hydrocephalus, stroke, back pain, bleeds in the head, and tumors. Satisfies the requirement of the Neurology clerkship requirement. For third- and fourth-year medical students.

NEUR S 680 P-Neurological Surgery Clerkship (*, max. 8) *Ellenbogen, Lee* Student serves clinical clerkship as an intimate member of the staff, participating in inpatient and outpatient care, both preoperative and postoperative, involving neurological surgery patients. University of Washington Medical Center or a University-affiliated hospital may be selected, subject to approval of the department. (Four weeks). Prerequisite: HUBIO 563. Offered: AWSpS.

NEUR S 697 P-Neurological Surgery Special Electives (*, max. 24) *Ellenbogen* By specific arrangement, for qualified students, special clerkship, externship, or research opportunities made available at institutions other than the University of Washington. Prospective students obtain from the dean's office a special assignment form at least one month before preregistration. Prerequisite: permission of instructor. Offered: AWSpS.

NEUR S 699 P-WWAMI Neurological Surgery Special Electives (*, max. 24) *Ellenbogen* By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department.

Neurology

RR650 University of Washington Medical Center
neurolog@uw.edu

Neurology, previously a division of the Department of Medicine, became an independent department at the University of Washington School of Medicine in autumn of 1995. The four-year residency program (including an internship) offers superb training in all facets of neurology in a setting of great institutional strength in fundamental neuroscience research. In addition, the Department of Neurology offers exceptional training programs in the Divisions of Neurogenetics and Pediatric Neurology and in the Epilepsy Center. A clinical-clerkship program provides basic training in neurology patient care. The Neurology Department is active in teaching, research, and patient care at the University of Washington Medical Center, Seattle Veterans Affairs Medical Center, Harborview Medical Center, Seattle Children's hospital, and the Fred Hutchinson Cancer Research Center. Medical students, interns, neurology residents, and postdoctoral research fellows rotate through these various hospitals and participate in the learning experiences offered at each.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsclat/

NEURL 495 Community Rehabilitation of the Neurologically Impaired: Internship (*, max. 5) *Fraser, Clemmons* Supervised work with a neurologically disabled vocational

rehabilitation population within a multidisciplinary vocational rehabilitation unit. Offered: AWSpS.

NEURL 499 Undergraduate Research (*, max. 25) Provides an opportunity to gain research experience and direct participation in clinical or basic science investigation in neurological topics. Offered: AWSpS.

NEURL 505 P-Preceptorship in Neurology (1, max. 12) *Kraus* Provides an opportunity for first and second-year medical students to gain personal experience with neurology practice situations by being stationed with carefully selected clinical faculty members in their offices. Prerequisite: permission of instructor. Offered: Sp.

NEURL 536 Topics in Clinical Neurology (1) *Spain* Lectures on epilepsy, stroke, coma, drug overdose, dementia, headache, myelopathies, infectious disease. Credit/no-credit only. Offered: S.

NEURL 555 Frontiers in Neuroimmunology (1) *Moeller* Current concepts and developments in neuroimmunology. Prerequisite: either NBIO 301 or IMMUN 441. Credit/no-credit only. Offered: AWSpS.

NEURL 559 Neurobiology of Disease (3) *Garden, Neumaier, Weinstein* Introduces medically important neurological and psychiatric diseases and experimental approaches to understanding the basis for diseases and their treatments. Covers stroke, epilepsy, autoimmune diseases of the CNS, neurodegenerative diseases, autism, psychosis, anxiety disorders, and mood disorders. Offered: jointly with NEURO 559/P BIO 559.

NEURL 632 P-Introduction to Neurology - Casper, WY (8) *Kraus* Provides the medical student with a general understanding of basic clinical neurology in Casper, WY. For third- or fourth-year students. Prerequisite: medicine, or family medicine, or surgery, or pediatrics. Offered: AWSpS.

NEURL 633 P-Introduction to Neurology - Anchorage - Alaska Neurology Clinic (8) *Kraus* Provides the medical student with a general understanding of basic clinical neurology. For third- or fourth-year students. Prerequisite: medicine, or family medicine, or surgery, or pediatrics. Offered: AWSpS.

NEURL 634 P-Introduction to Neurology - Anchorage - ANMC (8) Provides the medical student with a general understanding of basic clinical neurology at Alaska Native Medical Center in Anchorage, Alaska. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 637 P-Introduction to Neurology-Missoula (8) Provides the medical student with a general understanding of basic clinical neurology at Montana Neurobehavioral Specialist in Missoula, MT. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 638 P-Introduction to Neurology - Great Falls (8) Provides the medical student with a general understanding of basic clinical neurology at Advanced Neurology Specialists in Great Falls, Montana. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 639 P-Introduction to Neurology - Billings Regional Neuroscience Clinic (8) Provides the medical student with a general understanding of basic clinical neurology at Neurology Associates in Billings, Montana. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 640 P-Introduction to Neurology - Billings Clinic (8) Provides the medical student with a general understanding of basic clinical neurology at Billings Clinic in Billings, Montana. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 642 P-Introduction to Neurology- St. Lukes Boise (8) *Kraus* Provides the medical student with a general understanding of basic clinical neurology. For third- or fourth-

year students. Prerequisite: medicine, or family medicine, or surgery, or pediatrics. Offered: AWSpS.

NEURL 643 P-Introduction to Neurology - Dr. Lyons, Boise (8) Provides the medical student with a general understanding of basic clinical neurology at the office of Dr. George Lyons in Boise, Idaho. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 644 P-Introduction to Neurology - Idaho Falls EINA (8) Provides the medical student with a general understanding of basic clinical neurology at the office of Dr. Stephen Vincent in Idaho Falls, Idaho. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 645 P-Introduction to Neurology - Idaho Falls Neurology (8) Provides the medical student with a general understanding of basic clinical neurology at the office of Dr. Erich Garland in Idaho Falls, Idaho. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 647 P-Introduction to Neurology - Boise St. Alphonsus (8) Provides the medical student with a general understanding of basic clinical neurology at the office of Dr. Karin Lindholm in Boise, Idaho. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 648 P-Introduction to Neurology - Coeur D' Alene (8) Provides the medical student with a general understanding of basic clinical neurology at the office of Dr. Michael Coats in Coeur d' Alene, Idaho. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 649 P-Introduction to Neurology - Tacoma St. Joseph (8) Provides the medical student with a general understanding of basic clinical neurology in Tacoma, WA. For third- or fourth-year students. Prerequisite: medicine, or family medicine, or surgery, or pediatrics. Offered: AWSpS.

NEURL 650 P-Introduction to Neurology - Lacey, WA (8) Provides the medical student with a general understanding of basic clinical neurology in Lacey, WA. For third- or fourth-year students. Prerequisite: medicine, or family medicine, or surgery, or pediatrics. Offered: AWSpS.

NEURL 651 P-Introduction to Neurology - Kirkland, WA (8) Provides the medical student with a general understanding of basic clinical neurology in Kirkland, WA. For third- or fourth-year students. Prerequisite: either medicine, family medicine, surgery, or pediatrics. Offered: AWSpS.

NEURL 652 P-Introduction to Neurology - Spokane Rockwood Clinic (8) Provides the medical student with a general understanding of basic clinical neurology in Spokane, WA. For third- or fourth-year students. Prerequisite: medicine, or family medicine, or surgery, or pediatrics. Offered: AWSpS.

NEURL 653 P-Introduction to Neurology - Spokane CMA, WA (8) Provides the medical student with a general understanding of basic clinical neurology in Spokane, WA. For third- or fourth-year students. Prerequisite: either medicine, family medicine, surgery, or pediatrics.

NEURL 654 P-Introduction to Neurology - Dr. Greeley, Spokane (8) Provides the medical student with a general understanding of basic clinical neurology at the office of Dr. David Greeley in Spokane, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 655 P-Introduction to Neurology - Spokane (8) Provides the medical student with a general understanding of basic clinical neurology in Spokane, Washington. For third- or fourth-year students. Prerequisite: medicine, or family medicine, or surgery, or pediatrics. Offered: AWSpS.

NEURL 656 P-Introduction to Neurology - Wenatchee (8) Provides the medical student with a general understanding of basic clinical neurology at Wenatchee Valley Medical

Center in Wenatchee, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 657 P-Introduction to Neurology - Yakima (8) Provides the medical student with a general understanding of basic clinical neurology at the office of Dr. Richard Sloop in Yakima, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 658 P-Introduction to Neurology - Olympia Neurology (8) Provides the medical student with a general understanding of basic clinical neurology at Olympia Neurology in Olympia, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 659 P-Introduction to Neurology - NW Neurology, Lakewood (8) Provides the medical student with a general understanding of basic clinical neurology at Northwest Neurology, a Franciscan Medical Group clinic, in Lakewood, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 660 P-Introduction to Neurology - Madigan (8) Provides the medical student with a general understanding of basic clinical neurology at Madigan Army Medical Center in Tacoma, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 661 P-Introduction to Neurology - Tacoma/Puyallup Multicare (8) Provides the medical student with a general understanding of basic clinical neurology at Neurology and Neurosurgery Associates in Tacoma and Puyallup, Washington. Students spend time at both clinics. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 662 P-Introduction to Neurology - Group Health, Tacoma (8) Provides the medical student with a general understanding of basic clinical neurology at Group Health Tacoma Medical Center in Tacoma, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 663 P-Introduction to Neurology - Group Health, Eastside (8) Provides the medical student with a general understanding of basic clinical neurology at Group Health Eastside Specialty Center in Redmond, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 664 P-Introduction to Neurology - Burien (8) Provides the medical student with a general understanding of basic clinical neurology at South Seattle Neurology Associates in Burien. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 665 P-Introduction to Neurology - UWMC (8) Kraus Provides the medical student with a general understanding of basic clinical neurology, at UWMC. For third- or fourth-year students. Prerequisite: medicine, or family medicine, or surgery, or pediatrics. Offered: AWSpS.

NEURL 666 P-Introduction to Neurology - HMC (8) Provides the medical student with a general understanding of basic clinical neurology at Harborview Medical Center in Seattle, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 667 P-Introduction to Neurology - VA (8) Provides the medical student with a general understanding of basic clinical neurology at the VA Medical Center in Seattle, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 668 P-Introduction to Neurology - Northwest Hospital (8) Provides the medical student with a general understanding of basic clinical neurology at Northwest Hospi-

tal in Seattle, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 669 P-Introduction to Neurology - Virginia Mason (8) Provides the medical student with a general understanding of basic clinical neurology at Virginia Mason Medical Center in Seattle, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 670 P-Introduction to Neurology - Minor and James (8) Provides the medical student with a general understanding of basic clinical neurology at Minor and James Medical in Seattle, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 671 P-Introduction to Neurology - Swedish (8) Provides the medical student with a general understanding of basic clinical neurology at Swedish Medical Center I in Seattle, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 672 P-Introduction to Neurology - Group Health, Seattle (8) Provides the medical student with a general understanding of basic clinical neurology at Group Health Capitol Hill Campus in Seattle, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 673 P-Introduction to Neurology - Renton, Valley Medical Center (8) Provides the medical student with a general understanding of basic clinical neurology in Renton, WA. For third- or fourth-year students. Prerequisite: medicine, or family medicine, or surgery, or pediatrics.

NEURL 681 P-Seizure Clinic Clerkship (2.5) A. Wilensky Evaluation and follow-up of patients with seizure disorders. Limited contact with inpatients. Prerequisite: MED 665 and permission of instructor. Offered: AWSpS.

NEURL 685 Epilepsy and Clinical Electroencephalography (4/8, max. 8) Miller Introduction into epilepsy and the use and interpretation of the electroencephalogram and other clinical studies used to assess it, under the direct supervision of several of the faculty epileptologists and clinical neurophysiologists. Offered: AWSpS.

NEURL 686 P-Clinical Neurology (8) Swanson Clerkship including both inpatient and outpatient experiences and didactic sessions on neurological subjects. Student assigned to one of the affiliated hospitals and supervised by neurology residents and full-time staff. Offered: AWSpS.

NEURL 687 Advanced Clerkship in Child Neurology (4, max. 8) Gospe Advanced course in neurology dealing with neurological disease in children. Supervision by child neurology residents and attending. Prerequisite: NEURL 665, third- and fourth-year medical students. (Limit: one student.) Offered: AWSpS.

NEURL 697 Neurology Away Elective (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions outside the WWAMI region. Students obtain special assignment form from the dean's office at least one month prior to preregistration. Prerequisite: permission of department adviser. Offered: AWSpS.

NEURL 699 WWAMI Neurology Special Assignment Elective (4/8, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of adviser. Offered: AWSpS.

Obstetrics and Gynecology

BB667 Health Sciences Building

The Department of Obstetrics and Gynecology is involved with teaching, patient care, and research in the areas of normal and abnormal human reproduction: growth and development of the fetus, normal and complicated obstetrics, and surgical and medical diseases of the female reproductive system, including endocrinology, oncology, infectious disease, urogynecology, psychosocial problems, primary and preventive health care, and ethics.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

OB GYN 498 Undergraduate Thesis (*, max. 30) By arrangement.

OB GYN 499 Undergraduate Research (*, max. 30)

OB GYN 505 P-OB GYN Preceptorship (1, max. 12) Provides an opportunity for first- and second-year medical students to gain direct obstetrics and gynecology experience with a variety of clinical faculty members in diverse patient-care settings. Includes opportunities to observe labor and delivery, gynecologic surgery in the operating room, ambulatory obstetrics and gynecology in clinic, and family planning.

OB GYN 550 P-Voluntary Pregnancy Termination: An Overview of Medical and Social Issues (2) Prager A flexible curriculum which allows the medical student to observe in an abortion clinic, read articles and a textbook on abortion. Can be used by medical student as elective credit.

OB GYN 551 Perinatal Care Elective (1) Provide an introduction and overview of perinatal care for first- or second-year medical students with emphasis on late third trimester, labor and delivery, and postpartum. Opportunity to observe the patient-provider relationship. Optional labor and delivery observation. Offered: AWSpS.

OB GYN 579 P-Obstetric and Gynecologic Investigation (*) The investigation may cover any one of the following fields: normal and complicated pregnancy, hormone assays in obstetrics and endocrinology, obstetric and gynecologic oncology, genetics. By arrangement.

OB GYN 631 P-Introduction to Obstetrics and Gynecology, NWHMC (*, max. 12) See OB GYN 665. Offered at Northwest Hospital, Seattle, WA. (Six weeks, full-time). Prerequisite: HUBIO series, 3rd year medical students.

OB GYN 632 P-Introduction to Obstetrics and Gynecology - Bellingham (*, max. 12) See OB GYN 665.

OB GYN 639 P-Introduction to Obstetrics and Gynecology, St. Alphonsus (*, max. 12) See OB GYN 665. Offered at St. Alphonsus, Boise, ID. (Six weeks, full-time). Prerequisite: HUBIO series, 3rd year medical students.

OB GYN 644 P-Introduction to Obstetrics and Gynecology - Gillette, WY (12) General introductory obstetrics and gynecology clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office. Open to third- and fourth-year medical students. Prerequisite: HUBIO 565.

OB GYN 645 P-Introduction to Obstetrics and Gynecology - Sheridan, WY (12) General introductory obstetrics and gynecology clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office. Open to third- and fourth-year medical students. Prerequisite: HUBIO 565.

OB GYN 646 Introduction to Obstetrics and Gynecology - Rock Springs, WY (12) Clerkship equivalent to OB GYN 665 offered in Rock Springs, WY. (Six weeks, full-time).

OB GYN 650 P-Introduction to Obstetrics and Gynecology - Kalispell, MT (12) General introductory obstetrics and gynecology clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office. Open to third- and fourth-year medical students. Prerequisite: HUBIO 565.

OB GYN 651 P-Introduction to Obstetrics and Gynecology - Helena, MT (12) General introductory obstetrics and gynecology clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office. Open to third- and fourth-year medical students. Prerequisite: HUBIO 565.

OB GYN 652 P-Introduction to Obstetrics and Gynecology - Bozeman, MT - Deaconess Women's Specialists (12) See OB GYN 665 for description. Located at Deaconess Women's Specialists in Bozeman, MT. (six weeks. Limit: one student).

OB GYN 653 Introduction to Obstetrics and Gynecology - Ellensburg, WA (12) Clerkship equivalent to OB GYN 665 offered in Ellensburg, WA. (Six weeks, full-time). Prerequisite: HUBIO series; 3rd Year medical students.

OB GYN 656 P-Introduction to Obstetrics and Gynecology - Wasilla (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Wasilla, AK. Includes experience in several private physicians' offices. (Six weeks). Prerequisite: HUBIO series, third-year medical student status.

OB GYN 657 P-Introduction to Obstetrics and Gynecology - Lander (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Lander, WY. Includes experience in several private physicians' offices. (Six weeks). Prerequisite: HUBIO series, third-year medical student status.

OB GYN 659 P-Introduction to Obstetrics and Gynecology - Cody (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Cody, WY. Includes experience in several private physicians' offices. (Six weeks). Prerequisite: HUBIO series, third-year medical student status.

OB GYN 660 P-Introduction to Obstetrics and Gynecology - Billings, St. Vincent (*, max. 12) Introductory clerkship providing comprehensive medical care and counseling to female patients. Includes management and delivery of obstetrical patients, diagnosis and management of gynecologic diseases, hospital rounds, outpatient clinics, seminars, tutorial, and community healthcare agencies for women. (Six weeks. Limit: one student). Prerequisite: HUBIO 565.

OB GYN 662 P-Introduction to Obstetrics and Gynecology - Libby (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Libby, Montana. Includes experience in several private physicians' offices. Prerequisite: third-year medical student after completion of HUBIO series.

OB GYN 663 P-Introduction to Obstetrics and Gynecology - Wenatchee (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Wenatchee, WA. Includes experience in several private physicians' offices. (Six weeks). Prerequisite: HUBIO series, third-year medical student status.

OB GYN 664 P-Introduction to Obstetrics and Gynecology - GH Tacoma (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Tacoma, WA. Includes experience in several private physicians' offices. (six weeks, full time) Prerequisite: HUBIO series; third-year medical student status.

OB GYN 665 P-Introduction to Obstetrics and Gynecology - UH-HMC (*, max. 12) Introductory clerkship providing comprehensive medical care and counseling to female patients. Includes management and delivery of obstetrical patients, diagnosis and management of gynecologic diseases, hospital rounds, outpatient clinics, seminars, tutorial, and community healthcare agencies for women. Rotations occur at UWMC and Harborview Medical Center. (Six weeks. Limit: four students). Prerequisite: HUBIO 565.

OB GYN 666 P-Introduction to Obstetrics and Gynecology - Boise (*, max. 12) Clerkship equivalent to 665 offered in Boise, Idaho (WWAMI). Includes experience in several private physician offices. (Six weeks. Limit: one student. Not offered summer quarter). Prerequisite: HUBIO 565.

OB GYN 667 P-Introduction to Obstetrics and Gynecology - Madigan (*, max. 12) Clerkship equivalent to OB GYN 665 offered at Madigan Army Medical Center, Tacoma. (Six weeks. Limit: three students). Prerequisite: HUBIO 565.

OB GYN 668 P-Introduction to Obstetrics and Gynecology - Spokane (12) Clerkship equivalent to OB GYN 665 offered in Spokane (WWAMI). Includes experience in several private physicians' offices. (Six weeks. Limit: two students). Prerequisite: HUBIO 565.

OB GYN 669 P-Introduction to Obstetrics and Gynecology - Swedish (12) Clerkship equivalent to OB GYN 665 offered at Swedish Hospital Medical Center. (Six weeks. Limit: one student). Prerequisite: HUBIO 565.

OB GYN 670 P-Introduction to Obstetrics and Gynecology - GH-Central (12) Clerkship equivalent to OB GYN 665 offered at the Central facility of Group Health Cooperative of Puget Sound in Seattle. Students spend time in delivery room, surgery, and clinic, and have a specific preceptor assigned. (Six weeks. Limit: two students). Prerequisite: HUBIO 565.

OB GYN 671 P-Introduction to Obstetrics and Gynecology - Anchorage (12) Clerkship equivalent to OB GYN 665 offered at Anchorage, Alaska (WWAMI). Includes experience in several private physicians' offices as well as Providence Hospital. (Six weeks. Limit: four students). Prerequisite: HUBIO 565.

OB GYN 672 P-Introduction to Obstetrics and Gynecology - GH-East (12) Clerkship equivalent to OB GYN 665 offered at the Eastside facility of Group Health Cooperative of Puget Sound in Redmond. Students spend time in delivery room, surgery, and clinic, and have a specific preceptor assigned. (Six weeks. Limit: one student). Prerequisite: HUBIO 565.

OB GYN 676 P-Introduction to Obstetrics and Gynecology - Missoula (12) Clerkship equivalent to OB GYN 665 offered in Missoula, Montana. Students spend time in delivery room, surgery, and clinic, and have a specific preceptor assigned. (Six weeks. Limit: one student). Prerequisite: HUBIO 565.

OB GYN 677 P-Introduction to Obstetrics and Gynecology - Rock Springs (12) Equivalent of OB GYN 665, offered in Rock Springs, Wyoming. Student rotates among outpatient clinic, labor and delivery, operating suites, and medical/surgical inpatient areas. (Limit: two students.) Offered: AS.

OB GYN 678 P-Introduction to Obstetrics and Gynecology - Billings (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Spokane (WWAMI). Includes experience in several private physicians' offices. (Six weeks. Limit: one student). Prerequisite: HUBIO 565.

OB GYN 679 P-Introduction to Obstetrics and Gynecology - Cheyenne (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Cheyenne, WY. Includes experience in several private physicians' offices. (Six weeks. Limit: one student). Prerequisite: HUBIO 565.

OB GYN 681 P-Gynecological Oncology Subspecialty (8) Experience in reproductive tract malignancy, chemotherapy, and radiation therapy. Student follows selected patients through primary surgery, recovery, and initial adjuvant treatment, as well as continuing treatment in both clinic and inpatient settings. (Limit: two students each four weeks). Prerequisite: basic OB GYN clerkship.

OB GYN 682 P-Antenatal High-Risk Obstetrics (8) Four weeks on high-risk antenatal obstetrics ward and clinic. Students responsible for initial workups, daily laboratory evaluations, continuing care of high-risk antepartum patients. Weekly conference with obstetrics attending; presentation of one or more topics per rotation. Excellent

coordination with resident and attending staff required to maintain patient-care continuity. (Limit: two students each four weeks).

OB GYN 683 P-Gynecological Oncology Subspecialty - Boise (8) Experience in reproductive tract malignancy, chemotherapy, and radiation therapy. Student follows selected patients through primary surgery, recovery, and initial adjuvant treatment, as well as continuing treatment in both clinic and inpatient settings. (Four weeks). Prerequisite: basic OB GYN clerkship.

OB GYN 685 P-Subspecialty Gynecology - UWMC (8) Explores specialty areas in gynecology including: urogynecology, family planning, adolescent gynecology, and reproductive endocrinology and infertility. Students see and evaluate patients in both the outpatient and inpatient setting, follow patients to the operating room and fully participate in their hospital care, and consult on inpatients and emergency room visits. Exposes interested students to the breadth and depth of benign gynecologic subspecialty areas, the faculty and resident of the University of Washington, and the OB GYN resident program (Limit: one student every four weeks).

OB GYN 686 P-Introduction to Obstetrics and Gynecology - Yakima (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Yakima (WWAMI). Includes experience in several private physicians' offices. (Six weeks. Limit: one student). Prerequisite: HUBIO 565.

OB GYN 687 P-Introduction to Obstetrics and Gynecology - Fairbanks (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Fairbanks, AK. Includes experience in several private physicians' offices. (Six weeks. Limit: one student). Prerequisite: HUBIO 565.

OB GYN 689 P-Introduction to Obstetrics and Gynecology - Havre (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Havre, MT. Includes experience in several private physicians' offices. (Six weeks. Limit: one student). Prerequisite: HUBIO 565.

OB GYN 690 P-Introduction to Obstetrics and Gynecology - Sandpoint (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Sandpoint, ID. Includes experience in several private physicians' offices. (Six weeks. Limit: one student). Prerequisite: HUBIO 565.

OB GYN 691 P-Introduction to Obstetrics and Gynecology - Tacoma (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Tacoma. Includes experience in several private physicians' offices. (Six weeks. Limit: one student). Prerequisite: HUBIO 565.

OB GYN 692 P-Introduction to Obstetrics and Gynecology - Bozeman, MT - Bozeman OB/GYN (*, max. 12) Clerkship equivalent to OB GYN 665 offered Bozeman, MT. Includes experience in several private physician offices. (Six weeks. Limit: one student). Prerequisite: HUBIO 565.

OB GYN 693 P-Introduction to Obstetrics and Gynecology - Valley Medical Center (*, max. 12) Clerkship equivalent to OB GYN 665 offered at Valley Medical Center. Includes experience in several private physicians' offices. (Six weeks. Limit one student). Prerequisite: HUBIO 565.

OB GYN 695 P-Introduction to Obstetrics and Gynecology - Tri Cities (*, max. 12) Clerkship equivalent to OB GYN 665 offered in the Tri Cities. Includes experience in several private physicians' offices. (Six weeks. Limit one student). Prerequisite: HUBIO 565.

OB GYN 697 P-Obstetrics and Gynecology Special Electives (*, max. 24) By arrangement, for qualified students, special clerkship or research opportunities are sometimes made available at other institutions. Prospective students obtain special assignment form one month before preregistration. Department evaluates student performance. Prerequisite: permission of department.

OB GYN 699 P-WWAMI Obstetrics and Gynecology Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be avail-

able at institutions other than the University of Washington located inside the WWAMI region. A special assignment form must be obtained one month in advance of preregistration. Prerequisite: permission of department.

Ophthalmology

RR801 University of Washington Medical Center

The Department of Ophthalmology is responsible for the instructional and research programs in diseases of the eye and visual system and its adnexae.

Medical-student instruction is provided, including multiple electives in the clinical years. Graduate physicians are provided with three years of residency training at the affiliated hospitals. An optional internship is available in ophthalmology. A two-year ophthalmic plastics and orbit fellowship, and a two-year surgical retina fellowship, are offered. Patient care is provided under the supervision of full- and part-time faculty physicians at the University of Washington Medical Center, Harborview Medical Center, Veterans Affairs Medical Center, and Seattle Children's hospital.

Clinical research programs relate to eye diseases. Laboratory research encompasses neurophysiology of vision, morphology of the retina and visual system, corneal wound healing, biochemistry of ocular tissues, and anatomy/physiology of the orbit. Postdoctoral training is offered in all these disciplines.

For more information on residencies and fellowships, contact Ingrid Noe at ingrid@uw.edu. For more information on medical student clerkships, contact Dorrie Quirante at dorieq@uw.edu.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

OPHTH 498 Undergraduate Thesis (*, max. 25) *Francis* Thesis-based research in vision and ophthalmology. Elective. Offered: AWSpS.

OPHTH 499 Undergraduate Research (*, max. 25) *Francis* Laboratory or clinical research in morphology, biochemistry, immunology, experimental pathology, or clinical studies of the eye and visual system. Offered: AWSpS.

OPHTH 501 P-Ophthalmology Preceptorship (1, max. 12) *Francis* Individualized experiences with one or more of the full-time faculty members of the department covering research, teaching, and patient care. Student observes activities in the clinic, hospital ward, operating room, and research laboratories. Prerequisite: first- and second-year medical student standing and permission of instructor. Offered: AWSpS.

OPHTH 681 P-Ophthalmology Clerkship - HMC/Eye Institute (4/8, max. 12) Students gain experience in the diagnosis and treatment of common ocular disorders. Basic examination techniques, including tonometry, ophthalmoscopy, and biomicroscopy. Prerequisite: completion of human biology series. Offered: AWSpS.

OPHTH 683 P-Pediatric Ophthalmology Clerkship - Seattle Children's (4) Student examines and observes treatment of children with ocular diseases and learns to differentiate trivial from potentially blinding disorders. Furnishes programmed text in general ophthalmology. Prerequisite: completion of human biology series. Offered: WS.

OPHTH 685 P-Ophthalmology Clerkship - VAPSHCS (4) Participation in diagnosis and treatment of medical and surgical ocular disease. Outpatient examinations, inpatient surgery, as well as neuro-ophthalmologic, retinal, and glau-

coma consultations. Basic techniques involved in tonometry, ophthalmoscopy, and biomicroscopy of eye. Prerequisite: completion of human biology series. Offered: AWSpS.

OPHTH 686 P-Ophthalmology Clerkship - GHC Puget Sound (4) Diagnosis and treatment of ocular disease in outpatients. Weekly assignments to Group Health ophthalmologist responsible for the care of walk-in and urgent patients, demonstrating findings pertinent to the future practice of primary-care physicians. Examination techniques, including tonometry, ophthalmoscopy, and biomicroscopy of eye. Prerequisite: completion of human biology series. Offered: AWSpS.

OPHTH 688 P-Ophthalmology Clerkship - Anchorage (8) Four-week externship at Alaska Native Medical Center in Anchorage. Opportunity to learn and practice common eye examination techniques, including slit-lamp biomicroscopy, tonometry, and funduscopy. Patients seen three days a week; two days spent in the operating room. Prerequisite: completion of human biology series, MED 665, and SURG 665; fourth-year medical students only. Offered: AWSpS.

OPHTH 689 P-Ophthalmology Clerkship - Spokane (4) Diagnosis and management of commonly seen eye diseases. Subspecialty clinics include cornea, retina, glaucoma, contact lenses, and strabismus. Prerequisite: completion of human biology series. Offered: AWSpS.

OPHTH 690 P-Ophthalmology Clerkship - Missoula (4) Diagnosis and management of commonly seen eye diseases. Subspecialty clinics include cornea, retina, glaucoma, contact lenses, and strabismus. Prerequisite: completion of human biology series. Offered: AWSpS.

OPHTH 691 P-Ophthalmology Clerkship - Nampa (4) Diagnosis and management of commonly seen eye diseases. Subspecialty clinics include cornea, retina, neuro-ophthalmology, glaucoma, contact lenses, and strabismus. Prerequisite: completion of human biology series. Offered: AWSpS.

OPHTH 697 P-Ophthalmology Special Electives (*, max. 24) *Francis* By specific arrangement, for qualified students, special clerkship, externship, or research opportunities are at times made available at institutions or clinics other than the UW. Prospective students obtain from the dean's office a special assignment form at least one month before preregistration. Prerequisite: permission of instructor. Offered: AWSpS.

OPHTH 699 P-WWAMI Ophthalmology Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department. Offered: AWSpS.

Orthopaedics

BB1043 University of Washington Medical Center

The Department of Orthopaedics is actively involved in quality patient care, teaching, and research concerning bone and joint problems. Special areas of expertise include foot and ankle, hand and microvascular, hip and knee, arthritis, sports medicine, pediatric orthopaedics, shoulder and elbow, spine, trauma, and tumors.

In addition to providing instruction for medical students, the department provides education at the graduate, residency, and post-residency levels. Selected medical students may elect research experience in the department. A fully approved residency offers opportunities to carry out fundamental and clinical research. Residents may work toward the Master of Science degree by meeting the requirements of the Graduate School and the academic unit offering the degree program.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

ORTHP 498 Undergraduate Thesis (*, max. 30) *Eyre* Student works directly with a preceptor in selecting a suitable area for laboratory or clinical research in the area of orthopaedics, and develops a thesis for recognition. Offered: AWSpS.

ORTHP 499 Undergraduate Research (*, max. 90) *Eyre* Investigation of pertinent musculoskeletal problems in the orthopaedic laboratories as part of the research group. Offered: AWSpS.

ORTHP 505 P-Preceptorship in Orthopaedic Surgery (1, max. 12) Opportunity for first- and second-year medical students to gain experience with clinical faculty members in the community. Students observe general aspects of private practice from a longitudinal perspective. Prerequisite: permission of department. Offered: AWSpS.

ORTHP 585 P-Sports Medicine (2) *O' Kane* Lectures, patient problem presentations, and seminar discussions to explore impact of exercise and sport participation on various body systems. Includes nutritional concerns, biomechanics of certain sports injuries, and cardiovascular, pulmonary, and musculoskeletal concerns. Prerequisite: second-year medical student standing. Offered: Sp.

ORTHP 643 P-General Orthopedic Clerkship - Cody, WY (8) Provides a basic education in the fundamentals of musculoskeletal system. Heavy emphasis placed on the reconstructive alternatives in the treatment of degenerative joint diseases. Prerequisite: HUBIO series; third- and fourth-year medical students.

ORTHP 644 P-General Orthopaedic Clerkship - Jackson (*, max. 8) *Khoury* Provides a basic education in the fundamentals of the musculoskeletal system. Heavy emphasis is placed on the reconstructive alternatives in the treatment of degenerative joint diseases. Prerequisite: completion of HUBIO series; third- and fourth-year students. Enrollment limited to three a year. Offered: AWSpS.

ORTHP 650 P-General Orthopaedic Clerkship - Billings (*, max. 8) *Shenton* Provides a basic education in the fundamentals of the musculoskeletal system. Emphasizes reconstructive alternatives in the treatment of degenerative joint diseases. Prerequisite: completion of HUBIO series; third- and fourth-year students. Enrollment limited to three a year. Offered: AWSpS.

ORTHP 655 P-General Orthopaedic Clerkship - Boise (*, max. 8) *Scheffel* Provides a basic education in the fundamentals of the musculoskeletal system. Emphasizes reconstructive alternative in the treatment of degenerative joint diseases. Prerequisite: completion of HUBIO series; third- and fourth-year students.

ORTHP 668 P-Pediatric Orthopaedics - Spokane (*, max. 8) *Caskey* Acquaints students with all aspects of musculoskeletal problems in childhood. Includes didactic conferences and seminars, and opportunities for active participation in both inpatient and outpatient care at Shriners Hospital for Children in Spokane. (Four weeks, full-time). Prerequisite: SURG 665 or HUBIO 553. Offered: AWSpS.

ORTHP 669 P-General Orthopaedic Clerkship - Spokane (*, max. 8) *Scott* Provides a basic education in the fundamentals of musculoskeletal system. Heavy emphasis placed on the reconstructive alternatives in the treatment of degenerative joint diseases. Prerequisite: HUBIO series; third- and fourth-year medical students. Offered: AWSpS.

ORTHP 675 P-Preceptorship in Orthopaedics (*, max. 4) Student spends full time with the preceptor during all his or her working day in order to gain a better understanding of the diagnosis and the management of problems of the musculoskeletal system as seen in the private ortho-

paediatric practice. (Two weeks, full-time). Prerequisite: SURG 665 or HUBIO 553 and permission of department. Offered: AWSpS.

ORTHP 676 P-Pediatric Orthopaedics - Seattle Children's (*, max. 8) *Burton, Dales, Jingui, Kregel, Lindberg, Mosca, Schmale, Steinman, White* Acquaints students with all aspects of musculoskeletal problems in childhood. Didactic conferences and seminars, and opportunities for active participation in both inpatient and outpatient care at Seattle Children's Hospital, and correlative anatomy and pathology. (Four weeks, full-time). Prerequisite: SURG 665 or HUBIO 553. Offered: AWSpS.

ORTHP 677 P-Musculoskeletal Trauma (*, max. 8) *Barei, Beingessner, Bellabarba, Bransford, Dunbar, Firoozabadi, Henley, Kleweno, Nork, Taitsman* Harborview Medical Center. Emergency room, wards, operating room, and outpatient clinics. Instruction in general and special clinics, including hand, hip, foot, and fracture, with emphasis placed on physical examination of the patient. Students take correlative anatomy and pathology. (Four weeks, full-time). Prerequisite: SURG 665, HUBIO 553. Offered: AWSpS.

ORTHP 678 P-Musculoskeletal Oncology (8/12) *Conrad, Davidson* In-depth experience on musculoskeletal oncology service with primary involvement in initial evaluation, staging, treatment, and postoperative follow-up of patients with various musculoskeletal malignancies. Elective involves experience in surgical, oncologic, radiologic, and pathologic principles of managing sarcomas. Prerequisite: basic orthopaedic elective or permission of instructor. Offered: AWSpS.

ORTHP 680 P-General Orthopaedic Clerkship - VAMC (*, max. 8) *Chansky* Veterans' Administration Hospital: structured to provide a basic education in the fundamentals of the musculoskeletal system. Heavy emphasis is placed on the reconstructive alternatives in the treatment of degenerative joint diseases. Prerequisite: completion of HUBIO series; third- and fourth-year students. Enrollment limited to three. Offered: AWSpS.

ORTHP 681 P-Sports Medicine Orthopaedic Clerkship (8) *Green, Larson, O' Kane, Twaddle* Orthopaedic subspecialty clerkship at University of Washington Medical Center. Preceptor-based outpatient, inpatient, emergency, or operative orthopaedic care. Students work primarily in one subspecialty area and in one general orthopaedic clinic. For students who plan careers in orthopaedic surgery. Prerequisite: completion of HUBIO series, third- and fourth-year medical students. Offered: AWSpS.

ORTHP 682 P-Outpatient Orthopaedics (8) *Conrad, Davidson, Manner, Matsen, Wagner, Warme* Outpatient orthopaedic experience at University of Washington Medical Center. Emphasis on physical exam, diagnosis, radiographic evaluation, and non-operative treatment. Rotation through general orthopaedics as well as all subspecialty areas. For students who plan careers in primary care. Prerequisite: completion of HUBIO series. Offered: AWSpS.

ORTHP 684 P-Disorders of the Spine (8) *Wagner* Evaluation and assessment strategies of spinal disorders for patients of all ages and a wide variety of clinical conditions including trauma, deformity, degenerative disorders, metabolic, and inflammatory diagnoses. Opportunities exist to participate in outpatient, surgical, and conference based teaching sessions aimed at all experience levels and individualized for practitioners with interest in medical specialties, emergent care, radiology, physiatry, intervention pain management, and surgical specialties. Offered: AWSpS.

ORTHP 685 P-Adult Reconstruction: Total Joint Service (8) *Manner* Preceptor-based outpatient, inpatient, emergency, and operative orthopaedic care. Students work with faculty in the Total Joint Service which specializes in lower extremity adult reconstructive surgery, including: complex primary hip/knee arthroplasty; less invasive approaches to hip/knee arthroplasty; revision hip/knee arthroplasty; periacetabular and proximal femoral osteotomy; osteotomy about the knee; and hip arthroscope. Offered: AWSpS.

ORTHP 687 P-Shoulder and Elbow (8) *Matsen, Warme* Preceptor-based outpatient, inpatient, emergency, and operative orthopaedic care. Work with the faculty in the Shoulder and Elbow Service, which provides comprehensive evaluation and management for a wide range of shoulder and elbow problems, including: arthritis, dislocation or instability, fractures, rotator cuff/tendon tears, joint stiffness, and unsuccessful previous surgery. Offered: AWSpS.

ORTHP 697 P-Orthopaedic External Elective (*, max. 24) Special arrangements can be made for students desiring to take orthopaedic electives at other institutions. Programs generally approved include orthopaedic clerkships at other universities or at large orthopaedic institutes. Prerequisite: HUBIO 553 and permission of department. Offered: AWSpS.

ORTHP 699 P-WWAMI Orthopedics Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department.

Otolaryngology — Head and Neck Surgery

BB1165 University of Washington Medical Center

The Department of Otolaryngology - Head and Neck Surgery provides clinical care for patients with a broad spectrum of disorders affecting the head and neck region, including the ears, nose, and throat. A major portion of departmental effort is directed toward basic research in the areas of sensorineural hearing disorders, physiology of the larynx, and cancer treatment and rehabilitation. The department supports a number of research fellows and advanced degree candidates, and is responsible for a four-year residency program and for the training of medical students in subjects relevant to the specialty.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsat/

OTOHN 498 Undergraduate Thesis (*, max. 35) *Rubel, Futran* Student works directly with department faculty in selecting a suitable area for laboratory or clinical research in the area of otolaryngology, and develops a thesis for recognition. Offered: AWSpS.

OTOHN 499 Undergraduate Research (*, max. 35) *Rubel, Futran* Research opportunities offered under direction in the area of otolaryngology. (Twelve weeks.) Offered: AWSpS.

OTOHN 501 P-Preceptorship in Otolaryngology - Head and Neck Surgery (1, max. 12) *Hillel* One morning a week for a total of 30 hours per quarter spent observing patient care in either inpatient or outpatient settings at the University of Washington Medical Center; associated readings. Prerequisite: first- or second-year medical student standing. Coordinator: OTOHNS office. Offered: AWSpS.

OTOHN 678 P-Otolaryngology - Head and Neck Surgery Clerkship - Cheyenne (4/8, max. 24) *Futran* Introduction to surgical subspecialty of otolaryngology-head and neck surgery. Structured to allow broad introduction to breadth of specialty. Students see patients in clinic, join inpatient rounds, have an opportunity to go to operating room. Prerequisite: human biology series. Offered: AWSpS.

OTOHN 679 P-Otolaryngology - Head and Neck Surgery Clerkship - Missoula (4/8, max. 24) *Futran, Hillel, Man-*

ning, Whipple Introduction to surgical subspecialty of otolaryngology-head and neck surgery. Students see patients in clinic, join inpatient rounds, have an opportunity to go to operating room. Prerequisite: human biology series. Offered: AWSpS.

OTOHN 680 P-Otolaryngology - Head and Neck Surgery Clerkship - UWMC (4/8, max. 24) *Futran* Introduction to surgical subspecialty of otolaryngology-head and neck surgery. Structured to allow broad introduction to breadth of specialty. Students see patients in clinic, join inpatient rounds, have an opportunity to go to operating room. Rotation at UWMC. Prerequisite: human biology series. Offered: AWSpS.

OTOHN 681 P-Otolaryngology - Head and Neck Surgery Clerkship - HMC (4/8, max. 24) *Whipple* Introduction to surgical subspecialty of otolaryngology-head and neck surgery. Structured to allow broad introduction to breadth of specialty. Students see patients in clinic, join inpatient rounds, and have an opportunity to go to the operating room. Prerequisite: human biology series. Offered: AWSpS.

OTOHN 682 P-Otolaryngology - Head and Neck Surgery Clerkship - VA (4/8, max. 24) *Coltrera* Introduction to surgical subspecialty of otolaryngology-head and neck surgery. Structured to allow broad introduction to breadth of specialty. Students see patients in clinic, join inpatient rounds, and have an opportunity to go to the operating room. Prerequisite: human biology series. Offered: AWSpS.

OTOHN 683 P-Otolaryngology - Head and Neck Surgery Clerkship - Madigan (*, max. 8) Individual externship training at an outpatient clinic, where visits average twelve hundred per month, supplemented by inpatient assignments. Students may reside at the hospital during externship, using facilities of bachelor officer quarters and hospital mess. (Two or four weeks, full-time). Prerequisite: completion of human biology series. Offered: AWSpS.

OTOHN 684 P-Otolaryngology - Head and Neck Surgery Clerkship - Seattle Children's (4/8, max. 24) *Manning* Introduction to surgical subspecialty of otolaryngology-head and neck surgery. Structured to allow broad introduction to breadth of specialty. Students see patients in clinic, join inpatient rounds, and have an opportunity to go to the operating room. Prerequisite: human biology series. Offered: AWSpS.

OTOHN 685 P-Otolaryngology - Head and Neck Surgery Clerkship - Boise (4/8, max. 24) Introduction to surgical subspecialty of otolaryngology-head and neck surgery. Structured to allow broad introduction to breadth of specialty. Students see patients in clinic, join inpatient rounds, have an opportunity to go to operating room. Prerequisite: human biology series. Offered: AWSpS.

OTOHN 686 P-Otolaryngology - Head and Neck Surgery Clerkship - Greater Seattle Private Practice (4) *Hillel* Provides exposure to all aspects of patient care through a private practice setting. The student is exposed to the outpatient clinic and operating room procedures with daily directed contact with one attending faculty member. Contact administrator to arrange rotation. Prerequisite: permission of course director. Offered: AWSpS.

OTOHN 687 P-Otolaryngology - Head and Neck Surgery Clerkship - Spokane (4/8, max. 24) Introduction to surgical subspecialty of otolaryngology-head and neck surgery. Structured to allow broad introduction to breadth of specialty. Students see patients in clinic, join inpatient rounds, and have an opportunity to go to the operating room. Prerequisite: human biology series. Offered: AWSpS.

OTOHN 688 P-Otolaryngology - Head and Neck Surgery Clerkship - Anchorage (4/8, max. 24) Introduction to surgical subspecialty of otolaryngology-head and neck surgery. Structured to allow broad introduction to breadth of specialty. Students see patients in clinic, join inpatient rounds, and have an opportunity to go to the operating room. Prerequisite: human biology series. Offered: AWSpS.

OTOHN 697 P-Otolaryngology - Head and Neck Surgery - Away Externship (*, max. 8) Fultran By specific arrangement. Special clerkship, externship, or research opportunities are at times made available at institutions other than the University of Washington. Prospective students obtain a special assignment form from the dean's office at least one month before preregistration. Prerequisite: permission of clerkship director. Offered: AWSpS.

OTOHN 699 P-Otolaryngology - Head and Neck Surgery Clerkship - WWAMI (4/8, max. 8) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department. Offered: AWSpS.

Pathology

C516 Health Sciences

Pathology is the study of disease; its causes, mechanisms, and effects on the body. Pathology is both a basic biological science and a specialty of medicine. As a medical specialty, practiced by MDs, it includes the laboratory evaluation of organs, tissues, and fluids to assist other physicians in reaching a diagnosis. As a basic science, practiced by PhDs, pathology focuses on the experimental investigation of the molecular processes of disease, using techniques of cell and organ culture, biochemistry, molecular biology, and genetics.

The Department of Pathology offers graduate training in experimental pathology, with an emphasis on the cellular and molecular biological basis of disease, leading to the Doctor of Philosophy degree in cellular and molecular pathology. The primary goal of the graduate program is to train individuals for careers as practicing scientists in biomedical research, investigating basic disease mechanisms. Emphasis is on development of skills in hypothesis generation and testing, including the design, accomplishment, and critical interpretation of experiments. Experimental pathology uses the full range of biomedical research techniques (including biochemistry, molecular biology, cell biology, animal modeling) to attempt to elucidate the mechanisms underlying human disease. Graduates of the program usually continue research careers at biotechnology companies or universities/research institutes.

GRADUATE PROGRAM

Graduate Program Adviser

C516 Health Sciences, Box 357470

(206) 616-7551

Doctor of Philosophy

Admission Requirements

1. Copy of the Graduate School Application
2. Official transcripts
3. Official GRE scores. The department also recommends that applicants take the Subject Test in Biology or related area.
4. Statement of purpose and research interests
5. Three or more letters of recommendation
6. Personal statement that addresses the relationship between personal background and aspirations

Special Requirements

Prospective candidates should have taken undergraduate courses in the sciences, and have acceptable scores on the Graduate Record Examination, including advanced biology or chemistry. Some experience in a research laboratory

is strongly recommended. Those wishing to matriculate toward both the MD and PhD degrees must gain admission to both the Graduate School and the School of Medicine.

Degree Requirements

90 credits, to include:

1. *Required Coursework*: PATH 500, PATH 501, PATH 507, PATH 512, PATH 513, PATH 515, PATH 516, PATH 551; BIOST 511; CONJ 538, CONJ 539
2. *Research before the General Examination*: PATH 600
3. *Research after the General Examination*: PATH 800
4. *Recommended Courses*: CONJ 531, CONJ 532
5. General examination
6. Dissertation
7. Final examination

Financial Aid

Funding for students is provided from departmental and University funds, training grants, a variety of institutional fellowships, and research grants of individual faculty members.

Research Facilities

The department emphasizes the cellular and molecular approach to the investigation of the pathogenesis of disease in mammalian species. Special facilities exist for training in electron microscopy; cell, tissue, and organ culture; recombinant DNA techniques; histochemistry and cytochemistry; analytical biochemistry; immunology; and molecular and cell biology.

Residency Training Program

The department supervises a residency-training program in anatomic pathology and, jointly with the Department of Laboratory Medicine, in clinical pathology for qualified medical doctors. Subspecialty training is also available through clinical fellowships. Persons who complete the residency program are eligible for certification by the American Board of Pathology. For additional information, contact the Resident Program Director, Department of Pathology, Box 356100, or visit the residency program website.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

PATH 498 Undergraduate Thesis (*, max. 35) Elective.

PATH 499 Undergraduate Research (*, max. 35) Elective.

PATH 501 Pathology Proseminars (1, max. 9) Small group discussions and presentations by students based on critical reading of original papers, or on concurrent seminars, in many areas of experimental pathology and medicine. Topic varies by quarter. Prerequisite: permission of instructor. Offered: AWSpS.

PATH 502 Inflammation and Repair (2) Lecture-seminar; a seminar course dealing with an in-depth examination of the processes involved in inflammation and repair. Prerequisite: permission of instructor. Credit/no-credit only. Offered: even years.

PATH 507 Introduction to Pathology Research (2) Current developments and approaches to investigation of the molecular and cellular basis of disease. Members of the Pathology faculty present and discuss their own research projects. Prerequisite: permission of instructor. Credit/no-credit only. Offered: A.

PATH 510 Introduction to Pathology Methods (3) Laboratory course designed to introduce graduate students to the fundamentals of image analysis, histology, histopathol-

ogy, post mortem evaluation, surgical pathology, and other methods used to investigate disease etiology, progression, and manifestation in humans and in animal models. Prerequisite: permission of instructor. Credit/no-credit only. Offered: A.

PATH 511 Topics in Experimental Pathology (1-2, max. 10) Focus on areas of research relevant to experimental pathology. Prerequisite: permission of instructor. Offered: AWSpS.

PATH 512 Molecular Basis of Disease: Death and Repair (1.5) First in a series designed to introduce students to medically important diseases and physiologic processes and experimental approaches to elucidating the cellular processes underlying these diseases. Covers basic cell/tissue processes that underlie normal homeostasis and most disease and, including apoptosis, necrosis, stem cells, inflammation, granulation tissue, tissue regeneration, repair and fibrosis.

PATH 513 Mechanisms of Neurodegeneration (1.5) Introduction to the cellular and molecular mechanisms that underlie neurodegenerative diseases, including introduction to the normal development and anatomy of the central nervous system, a review of epidemiologic, genetic, and clinical research tools used in the investigation of these diseases, and a systematic review of the major neurodegenerative diseases.

PATH 516 Molecular Basis of Human Genetic Disease (3) Introduces the underlying mechanisms in human genetic disorders, ranging from the single nucleotide, through genomic instability, and chromosomal rearrangements. Includes tissue and organ specific examples of the manner in which these disorders provide insights into human biology. Offered: Sp.

PATH 517 The Biology and Pathology of Aging (3/4) M. KAEBERLEIN Surveys the biology and pathologies of the aging phenomena in multiple species and at multiple organismal levels from whole animals to molecules. Prerequisite: coursework in biology, biochemistry, molecular biology, and genetics. Offered: Sp.

PATH 520 Experimental Pathology Seminar (1) Review of current research in various areas of experimental pathology by members of the department and visiting scientists. Credit/no-credit only. Offered: AWSp.

PATH 521 Anatomy and Autopsy (1) Fligner Students view an autopsy, and learn how autopsy can diagnose disease, determine cause of death, and improve patient care. Requirements include orientation session, autopsy, and a clinical-autopsy conference. Participants must be free at least one morning per week to attend an autopsy at UWMC. Prerequisite: UW medical students only. Offered: WSp.

PATH 522 Hematopathology Seminar (2) Wood Identification of normal lymphocyte and bone marrow subpopulations, diagnosis of leukemias, lymphomas, and benign conditions that resemble them. Emphasis on histopathology, cytochemical, immunological, and molecular markers. Clinicopathologic correlation. Offered: jointly with LAB M 522; W, even years.

PATH 530 Human Cytogenetics (*, max. 4) Disteche Sources and methods of preparation and identification of human chromosomes. Molecular structure and mapping of chromosomes. Human cytogenetic pathology: karyotype-phenotype interactions, chromosome breakage, and cancer cytogenetics. Prerequisite: permission of instructor. Offered: Sp.

PATH 535 Innate Immunity and Immunopathology (1.5) I. CRISPE, K. SMITH Explores the relationship between the innate immune system and disease processes, using a student-led seminar format. Students analyze, present, and critique primary research literature, and use the knowledge gained to develop a sophisticated insight into the mechanisms of immunopathology. Offered: Sp.

PATH 540 Translational Research Topics (1) Horwitz First and second year students in the M.D./Ph.D. program pres-

ent and discuss current papers from the biomedical literature in journal club format, and describe their own research in seminar format. Credit/no-credit only. Offered: AWSp.

PATH 544 General and Systemic Pathology ([2-3]-, max. 5) W. MAHONEY Basic pathologic processes that underlie disease, including cell alterations, genetic and developmental pathology, environmental pathology, neoplasia, immunopathology, inflammation, infection, and systemic diseases. Correlates gross, functional, and biochemical alterations. For first-year dental students and graduate students. Requires reasonable grounding in biological and chemical sciences. Prerequisite for nondental students: permission of instructor.

PATH 550 Mechanisms of Disease (3) Conrad-Liles, Rendi Examines the mechanisms of inflammation, cell injury, death, repair, immunity, and neoplasia as well as diseases of various organ systems. Systems covered include the cardiovascular, pulmonary, gastrointestinal, neurologic, endocrine, and genitourinary/renal systems. Topics presented through lecture, primary literature, and small-group discussion. Offered: A.

PATH 551 Experimental and Molecular Pathology (2-5, max. 20) Introduction to experimental pathology. A tutorial course designed to introduce a graduate student (medical, dental) or senior undergraduate to selected methods and problems through literature surveys and/or laboratory experience. Exploration of causes at the cellular and molecular levels in the study of disease is emphasized. Prerequisite: Pathology PhD student; permission of instructor. Credit/no-credit only. Offered: AWSp.

PATH 555 Environmental Pathology (3) Monnat Modern morphologic, cell biological, and molecular approaches to environmental disease associated with exposure/predisposition. Lectures, seminar discussion, and student presentations. Prerequisite: PATH 410 or PATH 444 or HUBIO 520. Offered: Sp, even years.

PATH 560 Molecular Analysis of Human Disease (*, max. 10) Review and discussion of contemporary research on molecular basis of human disease. Focus on mutational mechanisms, genetic instability, AIDS, and cancer. Students participate in weekly group discussion and work with faculty to select, develop, and present discussion topic. Prerequisite: medical, graduate, or professional standing and permission of instructor. Credit/no-credit only. Offered: AWSp.

PATH 580 Mitochondria and Metabolism in the Pathogenesis of Human Disease (1.5) Hawkins, Tian Explores the fundamentals of mitochondrial biology, bioenergetics, and cellular metabolism. Includes topical lectures and literature reviews introducing students to advanced metabolic concepts within the context of human disease. Offered: A.

PATH 590 Patient-Centered Translational Research (1) Horwitz MSTP students preparing to return to clerkships are partnered with a senior MD/PhD medical student or house officer, preview the medical or surgical ward team environment, select a patient-focused translation research topic based on their clinical experience, and prepare a plan for refreshing introductory clinical skills. Offered: WSp.

PATH 600 Independent Study or Research (*-) Prerequisite: Pathology PhD student. Credit/no-credit only. Offered: AWSp.

PATH 667 P-Renal Pathology Laboratory (*, max. 6) Laboratory elective for third- and fourth-year medical students. Read current literature, review various renal biopsies and urine sediments, and read standard texts prior to a weekly topic-oriented conference. All students earn 1 credit for one-hour seminar per week. May be taken concurrently with MED 693. Prerequisite: permission of instructor.

PATH 676 P-Diagnostic Pathology Clerkship - Spokane (8, max. 24) Medical student participation in dissection and study of autopsy and surgical pathology cases at Sacred Heart Medical Center in Spokane. Can be taken for either two or four weeks.

PATH 677 P-Neuropathology Clerkship - HMC (*, max. 16) Includes participation in dissection and study of neuropathology cases. Students work up cases under senior staff including dissection, microscopic examination, and literature review.

PATH 678 P-Diagnostic Pathology Clerkship - Medical Examiner's Office, Alaska (*, max. 24) Medical student participation in dissection and study of autopsy and forensic pathology cases at the Anchorage Medical Examiner's Office.

PATH 680 P-Diagnostic Pathology Clerkship - University of Washington Medical Center (*, max. 24) Swanson Medical student participation in dissection and study of autopsy and surgical pathology cases. Cases worked up under senior staff, including dissection, microscopic examination, and literature review. Attendance at pathology conferences and seminars expected. Prerequisite: third- or fourth-year medical student standing.

PATH 681 P-Diagnostic Pathology Clerkship - Harborview Medical Center (*, max. 24)

PATH 682 P-Diagnostic Pathology Clerkship - Veterans' Administration Hospital (*, max. 24)

PATH 683 P-Diagnostic Pathology Clerkship - Medical Examiner's Office (*, max. 24) Raven

PATH 687 P-Diagnostic Pathology Clerkship - Seattle Children's Hospital (*, max. 24)

PATH 688 P-Diagnostic Pathology Clerkship - Madigan Army Medical Center (*, max. 24)

PATH 690 P-Diagnostic Pathology Clerkship - Northwest Medical Center (*, max. 24)

PATH 691 P-Diagnostic Pathology Clerkship - General Hospital of Everett (*, max. 24)

PATH 697 P-Pathology Special Electives (*, max. 24) By specific arrangement, students have clerkships, externships, or research opportunities at institutions other than the University of Washington. Prospective students obtain special assignment forms from the dean's office at least one month before advance registration. Prerequisite: permission of instructor.

PATH 699 P-WWAMI Pathology Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions, other than the University of Washington, located within the WWAMI region. Prerequisite: permission of department.

PATH 700 Master's Thesis (*-)

PATH 800 Doctoral Dissertation (*-) Prerequisite: Pathology PhD student. Offered: AWSp.

Pediatrics

RR314 Health Sciences

Pediatrics involves the study of physical and behavioral development of humans, in health and disease, from conception to adulthood.

Instruction is provided through conjoint courses, lectures, conferences, clerkships, and electives. Faculty members participate in teaching the basic curriculum and offer 20 electives, in addition to the general pediatrics clerkship at multiple WWAMI sites. A residency program is offered with a wide variety of electives as well as the traditional hospital-inpatient and clinic experience. Postdoctoral fellowship training is available in many subspecialty areas of pediatrics. The major teaching hospitals in Seattle are Seattle Children's hospital, University of Washington Medical Center, and Harborview Medical Center.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsclat/

PEDS 498 Undergraduate Thesis (*, max. 35) For medical students. Offered: AWSp.

PEDS 499 Undergraduate Research (*, max. 35) Participation in various clinical or basic research programs in progress, specifically: child development, developmental biology, human embryology and teratology, medical genetics, infectious diseases, neonatology, neuroembryology, cardiology, endocrinology and metabolism, immunology, respiratory disease. Offered: AWSp.

PEDS 505 P-Preceptorship in Pediatrics (1, max. 12) To provide opportunity for first- and second-year medical students to gain personal experience with medical practice situations for pediatricians by being stationed with carefully selected clinical faculty members in their offices. Enrollment limited. Coordinator: Department of Pediatrics. Credit/no-credit only. Offered: AWSp.

PEDS 530 P-Homeless Youth and Their Medical Care (1) Seminar and interview practice; students learn how to deal with special health problems and other related problems of "street kids" through interviews and observations. Credit/no-credit only. Offered: W.

PEDS 611 P-Country Doctor Free Teen Clinic (*, max. 24) Participation in a free clinic for out-of-home youth, either Monday or Tuesday evenings. Clinical services include general medical care, with a focus on reproductive health, STD evaluations/treatment, and the impact of a homeless lifestyle on general health. (Limit per rotation: two students.) Offered: AWSp.

PEDS 622 P-Pediatric Child Abuse and Neglect - Boise (4/8, max. 24) Exposes future clinicians to the most common issues relating to child abuse and neglect. Prerequisite: fourth-year medical students; core pediatrics rotation. (Limit: one student; by departmental permission). Offered: AWSp.

PEDS 623 P-Pediatrics Child Abuse - Spokane, WA (4-8, max. 8) Exposes future clinicians to the most common issues relating to child abuse and neglect. (Limit: one student). Prerequisite: fourth-year medical students who have completed their core pediatrics rotation; permission of department. Offered: AWSp.

PEDS 624 Pediatric Emergency Medicine - Spokane (8) Students manage patients with the supervision of a Pediatric Emergency Medicine attending or fellow. Includes the opportunity to manage patients with a wide spectrum of disease processes as well as learn key emergency medicine procedural skills. Prerequisite: PEDS core clerkship; by departmental permission. Offered: AWSp.

PEDS 625 Pediatric Emergency Medicine (8) Elective in Pediatric Emergency Department at Seattle Children's Hospital. Students manage patients with the supervision of a Pediatric Emergency Medicine attending or fellow. Includes the opportunity to manage patients with a wide spectrum of disease processes as well as learn key emergency medicine procedural skills. Prerequisite: fourth- year medical students. Offered: AWSp.

PEDS 630 P-WRITE Pediatrics Clinical Clerkship (*, max. 24) Basic clinical clerkship for students enrolled in the WRITE Program. Prerequisite: PEDS 665, inpatient only; acceptance in the WRITE program.

PEDS 631 P-LIC Pediatrics Clinical Clerkship (12) Basic clinical clerkship for students enrolled in the LIC program. Prerequisite: acceptance into LIC program.

PEDS 635 P-Pediatric Cardiology - Boise, ID (*, max. 24) Emphasis on physical diagnosis and electrocardiography and on clinical knowledge of diagnostic techniques and surgical possibilities for inpatients and outpatients with

cardiovascular problems. Opportunity to observe catheterizations and cardiovascular operations. Weekly clinics and twice-daily inpatient rounds. (Limit per rotation: one student; by departmental permission). Offered: AWSpS.

PEDS 636 P-Pediatric Cardiology - Spokane (*, max. 24) Elective rotation with an emphasis on physical diagnosis, electrocardiography, clinical knowledge of diagnostic techniques and surgical possibilities for inpatients and outpatients with cardiovascular problems. Opportunity to observe catheterizations and cardiovascular operations. Weekly clinics and twice-daily inpatient rounds. (Limit per rotation: one student.) Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 637 P-Pediatric Cardiology - Anchorage (*, max. 24) Elective rotation with an emphasis on physical diagnosis, electrocardiography, clinical knowledge of diagnostic techniques and surgical possibilities for inpatients and outpatients with cardiovascular problems. Opportunity to observe catheterizations and cardiovascular operations. Weekly clinics and twice-daily inpatient rounds. (Limit per rotation: one student.) Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 640 P-Pediatric Gastroenterology - Boise (4/8, max. 24) Elective rotation where students see clinical pediatric gastrointestinal problems, participate in inpatient gastroenterology consultations, outpatient clinic evaluations for new and follow-up patients, and (observe) endoscopic and therapeutic gastrointestinal procedures. (Limit: one student). Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 648 Pediatric General Clerkship - Everett, WA (12) General introductory pediatric clerkship. One half in hospital setting; one half in outpatient department, clinic, or private office. Open to all third- and fourth-year students. (Six weeks, full-time. Limit per rotation: one student). Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 649 P-Pediatric General Clerkship - Centralia/Olympia, WA (12) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department or clinic. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: two students). Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 650 P-Pediatric General Clerkship - Moses Lake, WA (12) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department or clinic. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: two students). Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 651 P-Pediatric General Clerkship - Bozeman, MT (12, max. 24) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department or clinic. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: two students). Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 652 P-Pediatric General Clerkship - Idaho Falls, ID (*, max. 24) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department or clinic. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: two students). Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 653 P-Pediatric General Clerkship - Helena, MT (*, max. 24) General introductory inpatient and outpatient pediatric clerkship. Provides exposure to diverse settings where children receive health services. The six-week experience takes place in Helena, MT.

PEDS 655 P-Pediatric General Clerkship - Jackson, WY (*, max. 24) General introductory inpatient and outpatient pediatric clerkship. Takes place primarily in an active pediatric group practice with appropriate outpatient and inpatient opportunities, including access to a community hospital with nursery, pediatric beds, and physician-staffed emergency room. (Six weeks, full time. Limit per rotation: one student). Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 656 P-Pediatric General Clerkship - Wenatchee (*, max. 24) General introductory inpatient and outpatient pediatric clerkship. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: one student). Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 657 P-Pediatric General Clerkship - Missoula (*, max. 24) General introductory inpatient and outpatient pediatric clerkship. Provides exposure to diverse settings where children receive health services. The six-week experience takes place in three active pediatric practices with appropriate outpatient and inpatient opportunities and at Community Medical Center. (Six weeks, full time. Limit per rotation: one or two students.) Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 658 P-Pediatric General Clerkship - Boise (*, max. 24) General introductory inpatient and outpatient pediatric clerkship. Provides exposure to diverse settings where children receive health services. The six-week experience takes place in three active pediatric practices with appropriate outpatient and inpatient opportunities and at St. Luke's Medical Center. (Six weeks, full time. Limit per rotation: one or two students). Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 659 Pediatric General Clerkship - Billings, MT (*, max. 24) General introductory inpatient and outpatient pediatric clerkship. Exposes students to diverse settings where children receive health services. The six-week experience takes place primarily in two active pediatric group practices with appropriate outpatient and inpatient opportunities. (Six weeks, full time. Limit: per rotation: one student.) Offered: AWSpS.

PEDS 660 Pediatric General Clerkship - Cheyenne, WY (*, max. 24) Introductory inpatient and outpatient pediatric clerkship that exposes students to environments in settings where children receive medical and health services. The six-week experience takes place primarily in an active pediatric group practice with appropriate outpatient and inpatient opportunities. (Six weeks, full time. Limit per rotation: one student). Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 661 P-Pediatric General Clerkship - Anchorage (*, max. 24) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: three students). Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 663 P-Pediatric General Clerkship - Mary Bridge (*, max. 24) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office. Location preferences are considered. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: three or four students). Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 664 P-Pediatric General Clerkship - Pocatello, ID (*, max. 24) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: one student). Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 665 P-Pediatric General Clerkship - Seattle (*, max. 24) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department or clinic. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: ten students). Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 666 P-Pediatric General Clerkship - Great Falls, MT (*, max. 24) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: two students). Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 667 P-Pediatric General Clerkship - Madigan (*, max. 24) General introductory pediatric clerkship. One-

half in hospital setting; one-half in outpatient department, clinic, or private office. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: two students). Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 668 P-Pediatric General Clerkship - Spokane (*, max. 24) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: two or three students). Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 669 P-Neonatal Pediatrics - Clerkship (*, max. 24) Participation in the activities in the newborn and premature divisions; ward rounds, seminars, conferences, and familiarization with certain laboratory techniques, particularly those relating to acid-base balance. (Limit per rotation: one or two students). Prerequisite: PEDS and OB GYN core clerkships. Offered: AWSpS.

PEDS 670 P-Pediatric Infectious Diseases (*, max. 24) Students see and work up clinic consultations and present in detail to attending physician. Daily rounds include problem-solving discussions and didactic presentations in broad category of infectious diseases. Opportunity for experience in clinical research and laboratory techniques. (Limit per rotation: one student). Prerequisite: PEDS and MED core clerkships; fourth-year medical student standing. Offered: AWSpS.

PEDS 671 Pediatric Endocrinology (*, max. 24) Focuses on the evaluation of the normal progression of hormone mediated processes in children and the recognition, diagnosis, and management of a variety of endocrine problems. Includes participation in clinics, inpatient endocrine rounds, and a variety of conferences at Seattle Children's Hospital. (Limit per rotation: one student.) Prerequisite: PEDS core clerkship. Offered: AWSpS.

PEDS 672 P-Office Practice - Spokane (*, max. 12) Opportunity to observe and function in the private office settings of a number of clinical pediatric faculty and to accompany pediatricians as they pursue their daily activities in the community. (Limit per rotation: one student). Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 673 P-Office Practice (*, max. 12) Opportunity to observe and function in the private office settings of a number of clinical pediatric faculty and to accompany pediatricians as they pursue their daily activities in the community. (Limit per rotation: one student). Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 674 P-Pediatric Genetics - Spokane (*, max. 24) Clinical focus on evaluation and management of children with genetic disorders. Exposure to genetic counseling, the evaluation of children with hereditary structural defects, and diagnosis and management of children with inborn errors of metabolism. Emphasis on genetic mechanisms that cause human disease. (Two or four weeks. Limit per rotation: one student). Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 675 P-Clinical Elective in Complementary and Alternative Medicine (4/8, max. 8) Clinical elective for students interested in a better understanding of CAM. Students arrange different clinical placements with selected CAM providers in the community: naturopathic physician, chiropractor, acupuncturist, and massage therapist. Students are expected to arrange their own schedule and must be prepared to do so at least four weeks in advance of the start of the rotation. (Limit per rotation: one or two students). Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 677 P-Pediatric Intensive Care (8) Students manage patients with the supervision of the Pediatric Critical Care attending or fellow at Seattle Children's Hospital. Includes the opportunity to manage patients with complex multisystem disease and learn key elements of acute resuscitation in the intensive-care setting. (Limit per rotation: one

student). Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 678 P-Pediatric Infectious Diseases - Boise (*, max. 24) Students see and work up clinic consultations and present in detail to attending physician. Daily rounds include problem-solving discussions and didactic presentations in broad category of infectious diseases. Opportunity for experience in clinical research and laboratory techniques. (Limit per rotation: one student). Prerequisite: PEDS and MED core clerkships; third- or fourth-year medical student standing; departmental permission. Offered: AWSpS.

PEDS 679 P-Clinical Problems in Developmental Disabilities (*, max. 12) Experience in multidisciplinary evaluation and management of the handicapped child. Student performs pediatric evaluations, obtains appropriate consultations, observes additional professional assessments (e.g., psychological testing), and plans rehabilitation program. Opportunity to provide parent counseling. (Limit per rotation: one student). Prerequisite: PEDS core clerkship. Offered: AWSpS.

PEDS 681 P-Medical Genetics (*, max. 24) Clinical focus on evaluation and management of children with genetic disorders. Exposure to genetic counseling, the evaluation of children with hereditary structural defects, and diagnosis and management of children with inborn errors of metabolism. Emphasis on genetic mechanisms that cause human disease. (Limit per rotation: one student). Prerequisite: PEDS core clerkship. Offered: AWSpS.

PEDS 683 P-Pediatric Nephrology (8) Four-week elective clerkship at Seattle Children's Hospital. Students participate in nephrology and transplant rounds, consult with renal fellows and attendings, and work up patients in renal clinics. Participation in seminars; special course in fluid balance. (Limit per rotation: one student). Prerequisite: third- or fourth-year medical student; PEDS and MED core clerkships; departmental permission. Offered: AWSpS.

PEDS 684 P-Pediatric Pulmonary Medicine (8) Respiratory disorders, diagnostic techniques, and treatments unique to children in the inpatient, intensive care, and outpatient settings. Application of principles of pulmonary physiology to clinical problems. Students conduct consultations under the supervision of the attending and present a topic of choice. Inpatient rounds and clinics. (Limit per rotation: one student). Prerequisite: PEDS core clerkship, fourth-year medical student standing. Offered: AWSpS.

PEDS 685 P-Pediatric Hematology and Oncology (*, max. 24) One-on-one teaching plus four weekly didactic sessions. Specific training in techniques and interpretation of bone marrow aspirations, intravenous chemotherapy, transfusions, and laboratory techniques of hematologic evaluation. Self-learning programs available. (Two or four weeks, full-time. Limit per rotation: one student). Prerequisite: PEDS core clerkship. Offered: AWSpS.

PEDS 686 P-Pediatric Cardiology (*, max. 24) Emphasis on physical diagnosis and electrocardiography and on clinical knowledge of diagnostic techniques and surgical possibilities for inpatients and outpatients with cardiovascular problems. Opportunity to observe catheterizations and cardiovascular operations. Weekly clinics and twice-daily inpatient rounds. (Limit per rotation: one student). Prerequisite: PEDS core clerkship. Offered: AWSpS.

PEDS 689 P-Advanced Rural Pediatrics - Ft. Washakie, WY (8) Student functions at the sub-intern level to care for patients with acute pediatric illness, proved well child care, and provide follow up care to patients seen in the newborn nursery, Level II Neonatal ICU, hospitalizations, and previous clinic visits. Students interested should make arrangements well in advance of registration. Prerequisite: required clerkship in Pediatrics, Obstetrics and Gynecology, Internal Medicine, and Surgery.

PEDS 690 P-Advanced Pediatric Clerkship - Boise (*, max. 24) Inpatient and/or outpatient experience with responsibilities comparable to intern for patient workup, diagnosis,

and care at St. Lukes Hospital. (Limit per rotation: one student). Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 691 P-Advanced Pediatric Clerkship - Seattle (*, max. 24) Inpatient and/or outpatient experience with responsibilities comparable to intern for patient workup, diagnosis, and care as Seattle Children's. (Limit per rotation: three students). Prerequisite: PEDS core clerkship. Offered: AWSpS.

PEDS 692 P-Advanced Pediatric Clerkship - Spokane (*, max. 24) Inpatient and outpatient experience with responsibilities comparable to intern for patient workup, diagnosis, and care at Sacred Heart Children's Hospital. (Limit per rotation: one student). Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 693 P-Advanced Pediatric Subinternship - Mary Bridge (*, max. 24) Inpatient and outpatient experience with responsibilities comparable to intern for patient workup, diagnosis, and care. (Limit per rotation: one student). Prerequisite: Core Clerkship in PEDS, OB/GYN, I-Med, Surgery; departmental permission.

PEDS 694 P-Pediatric Adolescent Medicine (8) Elective in Adolescent Medicine at Seattle Children's Hospital. Open to 4th year medical students who have completed their Core pediatrics Rotation. Students will be expected to manage patients with the supervision of attending physicians. Students will have the opportunity to manage adolescent patients in the outpatient setting and learn key elements of subspecialty care of adolescents.

PEDS 697 P-Pediatric Special Electives (*, max. 24) By specific arrangement, for qualified students, special clerkship externship or research opportunities at institutions other than University of Washington. The faculty can advise of possible opportunities. Obtain special assignment form from the Department of Pediatrics at least one month before preregistration. Prerequisite: permission of department and the away site. Offered: AWSpS.

PEDS 698 Pediatric Advanced Therapeutics/Pediatric Boot Camp (4) Focuses on what is needed on day one of internship to care for children through hands-on experience, simulation, group problem solving, role-playing, didactics, and supplemental reading material. Emphasizes the acquisition and practice of core skills. Themes include communication, procedural competency, and medical decision making pertinent to both inpatient and outpatient pediatrics. (Two weeks.) Prerequisite: Prerequisite: fourth-year standing; departmental approval. Offered: Sp.

PEDS 699 P-WWAMI Pediatrics Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be within the WWAMI region. Prerequisite: permission of department and the away site. Offered: AWSpS.

Pharmacology

E401 Health Sciences

Pharmacology is the science that deals with the nature of interactions between drugs and biological systems, and with the applications of such interactions to the treatment of disease. Courses in this field are given for medical, dental, pharmacy, nursing, and graduate students.

GRADUATE PROGRAM

Graduate Program Coordinator

E-417 Health Sciences, Box 357280

(206) 685-9252

phcoladm@uw.edu

The Department of Pharmacology offers the Doctor of Philosophy degree.

Doctor of Philosophy

Admission Requirement

A baccalaureate degree with a major in any of the sciences, such as biochemistry, chemistry, pharmacy, physics, physiology, psychology, or zoology. Students are selected from the applicant pool based on several criteria, including academic records, recommendations, and previous research experience.

Graduation Requirements

Minimum 90 credits, to include:

1. PHCOL 510, PHCOL 511, PHCOL 512, and PHCOL 513 with a minimum 2.7 grade for each class. Enrollment in PHCOL 507 throughout graduate school; PHCOL 514 in the first, second, and third years of graduate study.
2. PHCOL 519 (laboratory rotations) for autumn, winter, and spring quarters of the first year acquainting the student with various areas of pharmacology and research under investigation within the department. During each quarter, the student carries out a research project in the laboratory of a faculty member. At the end of the quarter, the student gives a presentation on the rotation research project that is evaluated by the faculty, using the criteria of scientific content, delivery, knowledge of the subject, and organization of material. The student receives a grade and academic credit for PHCOL 519. Students entering the PhD program with an MS degree or equivalent may petition to enroll in only one quarter of PHCOL 519 before selecting a laboratory. Rotations may occur outside the department by special permission only.
3. Four advanced 2-3 credit graded elective courses in pharmacology in addition to the PHCOL 510 through PHCOL 513 series. Nine graded credits (non-seminar) in graduate-level courses in physiology, biochemistry, molecular biology, immunology, cell biology, or other relevant areas. The courses should strengthen the foundation of the student's thesis proposal.
4. Creditable passage of the general examination consisting of a comprehensive take-home written examination on general pharmacology, taken during summer quarter of the second year, followed by preparation of a grant proposal on the thesis project, and an oral examination, given by the Supervisory Committee during the first quarter of the third year of study. The student is evaluated on the proposed dissertation research and on his or her knowledge of the major disciplines important to the research. Based on the student's performance, the committee recommends approval and candidacy for the PhD degree, further work and subsequent reexamination, or termination.
5. After successful completion of the general examination, the student devotes most of his or her time to thesis research in the third and subsequent years of study. Students are expected to finish all degree requirements and complete their thesis research within a six-year time period from matriculation.
6. The research project for the Ph.D. dissertation is chosen by the candidate and faculty sponsor and approved by the candidate's Supervisory Committee. Research must

represent a worthy and fundamental contribution showing originality in concept and implementation.

When the candidate has concluded the research project and prepared a complete copy of the dissertation, the sponsor obtains approval of the Graduate School and sets a date for the final examination. The final examination is concerned principally with the subject matter of the dissertation, but may include the background and origins of the dissertation problem as well as its practical applications and extrapolations.

Financial Aid

Financial support is offered to students who maintain satisfactory academic progress. Tuition and stipends are provided by National Institutes of Health training grants, University of Washington teaching assistantships, individual research grants, and fellowships from private sources.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

PHCOL 401 General Pharmacology I (2-4, max. 4) *Wang* Principles governing drug-receptor interactions, dose-response relationships, desensitization, and tolerance. Drug toxicity, allergy, mutagenesis, and carcinogenesis. Pharmacogenomics and DNA/RNA therapies. General pharmacology of drugs acting on the endocrine and vascular systems. For pharmacy students and other undergraduates. Offered: A.

PHCOL 402 General Pharmacology II (3/4) *Storm* General pharmacology of drugs acting on the autonomic, cardiovascular, and central nervous systems. For Pharmacy students and other undergraduates. Prerequisite: PHCOL 401. Offered: W.

PHCOL 434 General Pharmacology (2) *Grubbs* Lectures concerning the action of drugs on physiological and pathological processes with special emphasis on agents of special importance in the practice of dentistry. For dental students. Offered: A.

PHCOL 435 General Pharmacology (2) *Grubbs* Lectures concerning the action of drugs on physiological and pathological processes with special emphasis on agents of special importance in the practice of dentistry. For dental students. Offered: W.

PHCOL 498 Undergraduate Thesis (*, max. 35) Offered: A.

PHCOL 499 Undergraduate Research (*, max. 35) Participation in departmental research projects. Offered: AWSpS.

PHCOL 507 Pharmacology Seminar (1, max. 30) Presentation of comprehensive reports on recent medical and scientific literature in fields of current importance. Research progress reports, and reports on results of completed research. Prerequisite: permission of instructor. Offered: AWSp.

PHCOL 510 Drug Discovery and Emerging Therapeutics (2) *Zheng* Consideration of the general principles and current approaches involved in modern drug discovery and development, with an emphasis on basic concepts in drug action, delivery, and metabolism. Discussion of novel drug discovery techniques and emerging non-standard therapeutics. Prerequisite: organic chemistry, biochemistry, and introductory anatomy and physiology. Offered: W.

PHCOL 511 Autonomic/Cardiovascular Pharmacology (2.5) *Nathanson* Consideration of the pharmacology of the cardiovascular and autonomic nervous systems. Emphasizes the mechanisms of neurotransmitter, hormone, drug action at autonomic synapses, and the molecular basis for physiology and pathophysiology of the cardiovascular system. Lectures, group discussion, and analysis of recent re-

search. Prerequisite: organic chemistry, biochemistry, and introductory anatomy and physiology. Offered: W.

PHCOL 512 Neuropharmacology (2) *Bajjalieh* Consideration of the neurobiological basis of drug action on the central nervous system, including mechanism of action and therapeutic use in psychiatric disorders; neurodegeneration/neuroinflammation; control of neuronal excitability and pain; and drug abuse and addiction. Lecture, group discussion, and analysis of recent research. Offered: Sp.

PHCOL 513 Endocrine Pharmacology and Chemotherapeutics (2) *McKnight* Consideration of the pharmacology of endocrine systems including the hypothalamic/pituitary regulatory peptides, glycoprotein hormones/growth factors, peptide and steroid hormones. Basic principles of chemotherapy of endocrine and other cancers, as well as viral and microbial diseases. Lecture, group discussion, and analysis of recent research. Prerequisite: organic chemistry, biochemistry, and introductory anatomy and physiology. Offered: Sp.

PHCOL 514 Current Topics in Pharmacology (1, max. 30) *Gardner* Current research related to the mechanisms of drug action presented in a seminar format. Presentations include relevant background material as well as detailed experimental results taken from current research articles. Prerequisite: permission of instructor. Offered: AWSp.

PHCOL 515 General Pharmacology Laboratory (*, max. 9) Laboratory course for professional and graduate students who wish to do independent laboratory research under the direction of a specific faculty member. Prerequisite: permission of instructor. Offered: AWSp.

PHCOL 519 Introduction to Laboratory Research in Pharmacology (4) *Storm* On a rotation basis students carry out individual research projects in the laboratories of different faculty members. At the end of each quarter students make formal presentations of their work. For first-year graduate students in pharmacology. Offered: AWSpS.

PHCOL 527 Drug Metabolism (4) *A. RETTIE, K. THUM-MEL* Considerations of the biochemical mechanisms for the biotransformation of drugs and foreign compounds. Includes reaction mechanisms, ultrastructural considerations, induction mechanisms, methodology, kinetics of inhibition and activation, steroid and amine metabolism. Offered: jointly with MEDCH 527; W, odd years.

PHCOL 529 Ion Channel Pharmacology (2) *Catterall, Tempel* Current topics in ion channel structure, function, genetics, and pharmacology, including consideration of role in electrical signaling in cell membranes and information transfer and processing in nervous system, inherited diseases of ion channels, and sites and mechanisms of action of drugs and toxins. Prerequisite: CONJ 532 and CONJ 536 or permission of instructor. Offered: A, odd years.

PHCOL 530 Neuronal Signaling Pathways (2) *Beavo, Hague, Storm, Xia* Advanced consideration of the molecular events between drug or hormone binding to receptors and the resulting responses. Emphasizes roles played by signal transduction pathways in regulation of synaptic plasticity, memory formation, neuronal apoptosis, and developmental neurobiology. Prerequisite: UCONJ 532 or permission of instructor. Offered: W, even years.

PHCOL 531 Genetic Analysis of Signaling Systems (3) *McKnight, Moon* Current topics involving signal transduction are discussed with an emphasis on genetic analysis of multicellular systems and creative experimental design. Prerequisite: 9 credits of graduate-level courses in molecular and cellular biology, biochemistry, or genetics, or permission of instructor. Offered: Sp, odd years.

PHCOL 534 Molecular Basis of Addictive Drug Action (2) *Chavkin, Phillips, Stella* Advanced consideration and discussion of current literature addressing the basis of opiate, psychostimulant, and cannabinoid effects on signal transduction events, electrical activity of neurons, and drip-motivated behaviors in animal models of human drug

abuse. Prerequisite: PHCOL 512 or permission of instructor. Offered: A, even years.

PHCOL 535 Transcriptional Control in Human Disease (3) *Bomsztyk, Wang* Advanced consideration and discussion of the mechanisms regulating transcription/gene expression and of aberrant transcription factors which disrupt this process found in cancer and other human diseases. Prerequisite: PHCOL 512 or permission of instructor. Offered: Sp, even years.

PHCOL 550 An Overview of Faculty Research (1) *Wang* Reviews research topics currently being studied in pharmacology. Student reads articles published on each topic. Prerequisite: first-year student standing in pharmacology. Credit/no-credit only. Offered: A.

PHCOL 560 Regulation of Cell Function by Cyclic Nucleotide Phosphodiesterases (1) *Beavo* Discussion of research strategies, methodologies, and literature relating to regulation of cyclic nucleotide levels in the cell. Emphasis on practical problem solving, data analysis, and presentation of methods important to understanding published data and designing new experiments in this area of research. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

PHCOL 561 Molecular Properties of Ion Channels (1) *Catterall* Discussion of research strategies, methodologies, and literature concerning the structure, function, and regulation of sodium and calcium channels and the mechanism of action of drugs on them. Emphasis on experimental problem solving, data analysis, and presentation. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

PHCOL 562 Molecular Basis for Motivated Behavior (1) *Chavkin* Discussion of research strategies and methodologies involved in the regulation of motivated behavior by understanding signal transduction and synaptic physiology. Emphasis on practical problem solving, data analysis, and presentation methods important to modern scientific work. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

PHCOL 563 Signal Transduction Mechanisms in Neuroplasticity and Neuron Growth (1) *Storm* Discussion of research strategies, methodologies, and literature relating to signal transduction mechanisms important for neuroplasticity and regulation of neuron growth in the central nervous system. Emphasis on practical problem solving, data analysis, and presentation methods important to modern scientific work. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

PHCOL 564 Cellular Regulation by Protein Kinases (1) *McKnight* Analysis of research problems, techniques, and emerging concepts in the study of the function of protein kinases. Emphasis on critical evaluation of research and development of presentation skills. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

PHCOL 565 Intercellular Signaling in Development (1) *Moon* Molecular genetic approaches to dissecting the roles and mechanisms of intracellular signaling during development. Emphasis on vertebrate genes related to *Drosophila* segment polarity genes. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

PHCOL 566 Molecular Pharmacology of Neurotransmitter and Neurokinin Receptors (1) *Nathanson* Discussion of research strategies and methodologies in the areas of molecular neurobiology and signal transduction of muscarinic receptors, G-proteins, and neurokinin receptors. Emphasis on practical problem solving, data analysis, and presentation methods important to modern scientific work. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

PHCOL 567 Mechanisms of Carcinogenesis (2) Lectures/presentations of biochemical and molecular basis of carcinogenesis induced by environmental agents, including approaches to identification of carcinogens. Role of cell

proliferation and cell death (apoptosis) in cancer formation and cancer treatment. Molecular mechanisms that regulate proliferation and apoptosis. Prerequisite: ENV H 516, ENV H 405, or permission of instructor. Offered: jointly with ENV H 567; A, even years.

PHCOL 569 Molecular Genetics of Potassium Channel Function (1) *Tempele* Discussion of research strategies, methodologies, and literature concerning the structure, function, and regulation of potassium channel genes and their role in behavior as studied in mutant mice. Emphasis on experimental problem solving, data analysis, and presentation. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

PHCOL 571 Molecular Mechanisms of Neurosecretion (1) *Bajjalieh* Discussion of research strategies, methodologies, and literature relating to regulation of cyclic nucleotide levels in the cell. Emphasis on experimental problem solving, data analysis, and presentation. Prerequisite: permission of instructor. Credit/no-credit only.

PHCOL 572 Transcriptional Regulation of Growth Control Genes (1) *Wang* Discussion of research strategies, methodologies, and literature relating to proliferative growth control, cellular differentiation, and gene expression. Emphasis on practical problem solving, data analysis, and presentation. Prerequisite: permission of instructor. Credit/no-credit only.

PHCOL 573 Signaling Systems Linked to Neuroinflammation (1) *Stella* Discussion of research strategies, methodologies, and literature related to neuroinflammation, microglial cell activation, and the cannabinoid signaling pathway. Emphasis on solving practical problem, data analysis, and presentation. Prerequisite: permission of instructor. Offered: AWSpS.

PHCOL 575 Structural Biology of Ubiquitination (1) *Zheng* Discussion of research strategies, methodologies and literature concerning the structure, function, and regulation of ubiquitin-protein ligases and the mechanism underlying ubiquitination and ubiquitin-dependent proteolysis. Emphasis on experimental problem solving, data analysis, and presentation. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

PHCOL 576 Pharmacological, Molecular, and Functional Characterization of G-protein Coupled Receptors (1) *Hague* Discusses research strategies, methodologies, and literature relating to the pharmacological characterization, molecular biology, and functional coupling of GPCRs. Emphasizes practical problem solving, data analysis, and presentation. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

PHCOL 577 Regulatory Roles of Ubiquitin in the Nucleus (1) *Gardner* Focuses on the design and implementation of research aimed at understanding the nuclear functions of the small protein modifier ubiquitin. Strongly emphasizes the understanding of current literature, experimental design and troubleshooting, data analysis, and presentation of experimental results. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

PHCOL 578 A-Kinase Anchoring Proteins in Cell Signaling Research (1) *Scott* Focuses on the design and implementation of research A-Kinase anchoring proteins in cell signaling. Emphasizes understanding experimental design and troubleshooting, data analysis, and presentation of experimental results. Credit/no-credit only. Offered: AWSpS.

PHCOL 579 Genetic Regulation of Emotional Behavior (1) *Zweifel* Provides background in the materials and methods used in the study of the genetic basis of learning and memory and neural circuit function achieved through discussion of current literature, data acquisition and analysis, and experimental design. Offered: AWSpS.

PHCOL 580 Proteomics for Cellular Systems (1) *Ong* Discusses and reviews literature for proteomics and other genome-wide approaches to study cellular systems. Trains students to integrate knowledge from existing literature

with ongoing laboratory research to enhance data analysis and experimental design. Offered: AWSpS.

PHCOL 600 Independent Study or Research (*) Pharmacology graduate students only. Credit/no-credit only. Offered: AWSpS.

PHCOL 700 Master's Thesis (*) Pharmacology graduate students only. Credit/no-credit only. Offered: AWSpS.

PHCOL 800 Doctoral Dissertation (*) Pharmacology graduate students only. Credit/no-credit only. Offered: AWSpS.

Physiology and Biophysics

G424 Health Sciences

Physiology deals with the processes, activities, and phenomena incidental to, and characteristic of, life and living organisms. Based upon physics, chemistry, and mathematics, physiology interlocks closely with the other basic medical sciences anatomy, molecular biology, immunology, biochemistry, pharmacology, pathology, and with psychology. Research in physiology is accomplished by analyzing the molecular, cellular, and integrative properties of the system under study. For this reason, physiology appeals to students with diverse backgrounds and goals. Courses in this field are given for medical, dental, pharmacy, nursing, and graduate students.

GRADUATE PROGRAM

Graduate Program Coordinator

G424 Health Sciences, Box 357290

(206) 685-0519

pbio@uw.edu

The Department of Physiology and Biophysics offers advanced instruction and training leading to both the Master of Science and Doctor of Philosophy degrees. Students aspiring only to the M.S. degree are rarely accepted. Students pursuing a PhD degree in physiology and biophysics may emphasize molecular and cellular physiology, biophysics, neurobiology, respiratory physiology, or endocrinology. Studies leading to the doctoral degree require five to six years to complete. The first year is spent acquiring a broad knowledge of physiology via a sequence of courses and laboratory rotations. After selection of a special area of study, the second year is spent taking advanced seminars in the area of specialization and developing a thesis proposal. After admission to candidacy, the latter years are spent pursuing the area in depth and completing an original research project.

Individuals with graduate degrees in physiology and biophysics often pursue careers in teaching and research in colleges and universities and in biotech industries. The department participates in interdisciplinary PhD degree programs in neurobiology and behavior and in molecular and cellular biology. The department also participates in the medical scientist training program, and the biological physics structure and design program.

Master of Science

The Master of Science degree is normally granted as part of the path of study leading to the Doctor of Philosophy degree. Students are normally admitted only to the Doctor of Philosophy degree.

Doctor of Philosophy

Admission Requirements

To apply for admission, a student must provide academic transcripts, Graduate Record Examination (GRE) scores, four letters of recommendation, and a statement of purpose. Because of the broad scope and interdisciplinary nature of the graduate program, there are no specific prerequisites for admission. However, most students have backgrounds in the physical and/or biological sciences. These include majors in biology, physics, mathematics, engineering, computer science, chemistry, and psychology. The most important requirement is a strong motivation and excitement about doing science.

Degree Requirements

90 credits minimum, as follows:

Due to the broad nature of research interests in the department and the diversity of graduate-student backgrounds, formal course requirements are kept to a minimum and are completed in the first year. Students are encouraged to shape their own graduate education, as they choose the majority of their coursework and the scientific direction for their research. Courses available include those offered by other departments, both in the Medical School and elsewhere on campus. Electives may be chosen from a list of mini-courses whose topics reflect the current interests of faculty and students. Students are required to take at least six mini courses.

Required Courses

1. CONJ 531, CONJ 532, P BIO 532, NEUBEH 501, NEUBEH 502, P BIO 508, must be taken three times; P BIO 513, P BIO 519
2. Six departmental mini-courses, to be completed prior to the general examination, from the following: P BIO 509, P BIO 545, P BIO 550, P BIO 551, P BIO 552, P BIO 553, P BIO 554, P BIO 555, P BIO 556, P BIO 557, P BIO 559.
3. P BIO 600 (before general examination)
4. P BIO 800 (after general examination)

Note: P BIO 503 is highly recommended, but not required

General Examination

The general examination must be taken by the last day of autumn quarter of the third year. After passing the general examination the student is advanced to candidacy for the doctoral degree. The student then registers for P BIO 800 and continues working on thesis research.

Final Examination

The culmination of the program is the submission of a written doctoral thesis and the presentation of this work in a public lecture attended by members of the department and the University.

Research Facilities

The department is well equipped to provide instruction and research training in cellular and molecular physiology, neurobiology, membrane biophysics, respiratory physiology, muscle biophysics, endocrinology, reproduction, and physiological psychology. The facilities of the Regional Primate Research Center, adjacent to the department, are available to qualified trainees who need to use primates in their research.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

P BIO 498 Undergraduate Thesis (*, max. 35) Offered: AWSpS.

P BIO 499 Undergraduate Research (*, max. 35) Offered: AWSpS.

P BIO 504 Biophysics of Nerve, Muscle, and Synapse (3) *Sullivan* Introduces biophysical properties of nerve and muscle cells. Topics include intrinsic electrical properties of neurons, ion channels, receptor signaling, calcium signaling, contraction of muscles, and synaptic function. Offered: jointly with NEURO 504.

P BIO 505 Human Physiology (4-) *Binder* Provides an introduction to the study of human physiology. Covers the physiology of excitable cells, muscle physiology, renal physiology, gastrointestinal physiology, and the physiology of the central nervous system. Offered: A.

P BIO 506 Human Physiology (-4) *Wordeman* Provides an introduction to the study of human physiology. Covers cardiovascular physiology, respiratory physiology, acid base balance, neuroendocrinology, and reproductive physiology. Prerequisite: P BIO 505, or equivalent with permission of instructor. Offered: W.

P BIO 508 Introduction to Laboratory Research in Physiology (1-5, max. 15) Students participate in the performance of ongoing projects in designated research laboratories. Emphasis is on experimental design, methodology, and techniques. For first- and second-year graduate students in physiology and biophysics to provide a basis for future independent research. Offered: AWSpS.

P BIO 509 Neuroendocrinology (3) *Steiner* Emphasizes the cellular and molecular aspects of several topics in neuroendocrinology, including neuropeptide genes, reproduction, steroid hormone regulation of gene expression, mechanisms of hormone action, endocrine rhythms, and neural oscillations. Prerequisite: either BIOL 201, BIOL 202, and BIOL 203, or BIOL 180, BIOL 200, and BIOL 220; BIOC 440, BIOC 441, BIOC 442 or permission of instructor. Offered: jointly with NEURO 541; W, even years.

P BIO 513 Practicum in Teaching Physiology and Biophysics (4) Students undertake instructional material development, presentation of materials, and develop problem-solving techniques. Credit/no-credit only. Offered: AW.

P BIO 519 Membrane and Muscle Biophysics Seminar (1) *Hille* Lectures on current research topics in cell membrane function and muscle contraction. Prerequisite: permission of instructor. Credit/no-credit only. Offered: Sp.

P BIO 520 Physiology Seminar (*) Selected topics in physiology. Prerequisite: permission of instructor.

P BIO 521 Biophysics Seminar (*) Selected topics in biophysics. Prerequisite: permission of instructor.

P BIO 522 Selected Topics in Respiratory Physiology (1-3, max. 3) *Hildebrandt* Advanced seminar on selected topics, including pulmonary mechanics, gas exchange, lung fluid balance, regulation of breathing, pulmonary circulation, respiration in the neonate, liquid breathing, airway dynamics, lung structure and development, cardiopulmonary interactions, exercise physiology. Prerequisite: permission of instructor. Offered: AWSpS.

P BIO 523 Heat Transfer and Temperature Regulation (2-5, max. 5) *Brengelmann* Thermal exchange between the body surface and the environment. Heat production and distribution within the body. Properties of cutaneous and deep temperature receptors. Neural integration and homeothermy. Prerequisite: permission of instructor. Credit/no-credit only.

P BIO 525 Readings in Advanced Physiology and Biophysics (*) Guided study of the experimental literature of physiology and biophysics. Essays are written and discussed with the staff. Emphasis is placed on critical analysis, accuracy of expression, bibliographical technique, and other factors of good scholarship. Prerequisite: permission of instructor. Offered: A.

P BIO 526 Readings in Advanced Physiology and Biophysics (*) Guided study of the experimental literature of physiology and biophysics. Essays are written and discussed

with the staff. Emphasis is placed on critical analysis, accuracy of expression, bibliographical technique, and other factors of good scholarship. Prerequisite: permission of instructor. Offered: W.

P BIO 527 Readings in Advanced Physiology and Biophysics (*) Guided study of the experimental literature of physiology and biophysics. Essays are written and discussed with the staff. Emphasis is placed on critical analysis, accuracy of expression, bibliographical technique, and other factors of good scholarship. Prerequisite: permission of instructor. Offered: SpS.

P BIO 545 Quantitative Methods in Neuroscience (3) *Rieke* Discusses quantitative methods applicable to the study of the nervous system. Revolves around computer exercises/discussion of journal papers. May include linear systems theory, Fourier analysis, ordinary differential equations, stochastic processes, signal detection, and information theory. Prerequisite: NEUBEH 501, NEUBEH 502, NEUBEH 503, or permission of instructor. Offered: jointly with NEURO 545.

P BIO 548 Molecular Mechanisms of Synaptic Plasticity (2) *Barria* Discusses recent primary literature on the molecular mechanisms underlying structural and functional changes of dendritic spines and synapses in the mammalian brain as result of synaptic activity and experience. Offered: jointly with NEURO 548; Sp, even years.

P BIO 550 Biophysics of Calcium Signaling (1) *Hille, Santana* Introduction to cellular calcium signaling including theoretical and technical issues of calcium signal detection and biological conclusions. Prerequisite: CONJ 531. Offered: jointly with NEURO 550; Sp, odd years.

P BIO 554 Motor Learning: Cellular and Network Mechanisms (1) *Fetz, Perlmutter* Five-week mini-course reviews the current state of research on cellular and network mechanisms of motor learning. After an introductory overview of behavioral and physiological examples of motor learning in various species and systems, students choose specific topics for discussion, using the primary literature as a source. Offered: jointly with NEURO 554.

P BIO 555 Sensory Receptors (1) *Detwiler, Rieke* Five-lecture mini-course examines how different kinds of sensory receptors detect and respond to different modalities of sensory stimuli. Discussion focuses on the cellular and molecular mechanisms of the underlying transduction processes and the experimental evidence that they are based on. Offered: jointly with NEURO 555.

P BIO 556 Axon Pathfinding Mechanisms (1) *Bothwell* Examines mechanisms governing axon growth cone behavior during embryonic development and during regeneration in the injured adult. Discusses approaches employing both invertebrate and vertebrate model systems. Offered: jointly with NEURO 556.

P BIO 557 Ion Channel Gating (1) *Zagotta* Compares and contrasts mechanisms of gating in ligand-gated and voltage-gated ion channels. Covers basics of ligand gating and voltage gating, kinetic schemes, inactivation and desensitization, gating currents and partial agonists, and ion channel structure. Offered: jointly with NEURO 557.

P BIO 558 Concepts and Mechanisms in Mitosis (2) *Asbury, Wordeman* Examines how the mitotic spindle organizes and separates duplicated chromosomes during cell division. Overview of spindle components and key mechanistic concepts. Discusses recent or classic papers from the primary literature.

P BIO 559 Neurobiology of Disease (3) *Garden, Neumaier, Weinstein* Introduces medically important neurological and psychiatric diseases and experimental approaches to understanding the basis for diseases and their treatments. Covers stroke, epilepsy, autoimmune diseases of the CNS, neurodegenerative diseases, autism, psychosis, anxiety disorders, and mood disorders. Offered: jointly with NEURL 559/NEURO 559.

P BIO 561 From Biophysics to Neural Computation (2) Introduces the mathematics and methods of neuronal modeling. Develops, compares, and relates dynamical systems approaches and empirical characterizations of neuronal function. Includes lectures, student-led journal paper discussions, biweekly computational workshops on neuronal modeling packages, and a computations project. Offered: jointly with NEURO 561; Sp.

P BIO 600 Independent Study or Research (*) Offered: AWSpS.

P BIO 700 Master's Thesis (*) Offered: AWSpS.

P BIO 800 Doctoral Dissertation (*) Offered: AWSpS.

Psychiatry and Behavioral Sciences

BB1644 Health Sciences

pbsci@uw.edu

The department offers coursework, clinical training, and research opportunities for undergraduate students, medical students, graduate physicians, and graduate students in allied health programs such as psychology, social work, and psychiatric nursing.

A biobehavioral approach is emphasized, which incorporates intrapersonal, interpersonal, and sociocultural factors. Intrapersonal factors include emotion, perception, cognition, psychodynamics, neurochemistry, neuroanatomy, neurophysiology, genetics, and the developmental and aging processes. Interpersonal factors focus upon dyadic, familial, and group interactions. Sociocultural factors include the cultural, social, institutional, and community systems as well as the environment and epidemiology of health and disease.

GRADUATE PROGRAM

The Medical School curriculum is divided into a core (basic) curriculum and an elective curriculum. Within its core curriculum the Department of Psychiatry and Behavioral Sciences offers material covering learning theory, cognition, memory, perception, neuropharmacology, social growth and development, epidemiology of health and disease, psychopathology, psychotherapy, and neuropsychiatry and behavioral medicine, as well as training in interviewing skills and assessment techniques. Its elective program includes a variety of clinical experiences and advanced didactics and seminars designed to further the knowledge and skills developed within the basic curriculum. In addition, the department encourages research and other scholarly pursuits by students in areas of interest to them. Stipends are available for research studies.

Residency Training in Psychiatry

A four-year residency for medical school graduates and a three-year post-internship residency prepares physicians for Specialty Board Certification in Psychiatry. Clinical rotations on inpatient, outpatient, emergency, and consultation/liaison services are augmented by individual supervision and didactic lectures. With the program's integrative orientation, residents become proficient in psychotherapy, psychopharmacology, and community liaison with patients of all ages. Fellowships in child, geriatric, addiction, community, forensic and consultation-liaison psychiatry, and psychiatric neuroscience are available.

Clinical Psychology Internship Program

The one-year internship in clinical psychology, accredited by the American Psychological Association, offers advanced clinical training to candidates for the doctorate

in clinical psychology from graduate programs accredited by the American Psychological Association. Training tracks with the internship in general adult, general child, rehabilitation and health psychology, and public behavioral health and justice policy (adult and child). Advanced research skills training is also available as part of an INH-funded training grant for selected internship participants.

Postdoctoral Fellowship Training

Postdoctoral fellowships for advanced clinical and research training in behavioral medicine, broadly construed, are also offered.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

PBSCI 498 Undergraduate Thesis (*, max. 15) Opportunity to complete work on psychiatric research projects or to pursue a specific psychiatric topic in depth, for instance, through library research. Offered: AWSpS.

PBSCI 499 Undergraduate Research (*, max. 15) Opportunities are available for participation in a wide variety of ongoing research in the behavioral sciences and clinical psychiatry, or for the development of an individual investigative project under the supervision of a faculty sponsor. Offered: AWSpS.

PBSCI 505 P-Psychiatry Preceptorship (1, max. 12) *Combs* Opportunity for first- and second-year medical students to gain direct experience with clinical faculty members in psychiatry. Includes opportunities to observe different areas of psychiatry including addiction, child, geriatrics, community, crisis, and consultation. Prerequisite: permission of department. Offered: AWSp.

PBSCI 525 P-Psychiatry and the Law (3) *E. GOLDENBERG, J. PIEL* Explores issues at the interface of law and psychiatry through didactic curriculum and research. Trainees develop an individualized research project with the assistance of their faculty mentors. Covers topics in civil and criminal forensic psychiatry, research ethics, research design, grantsmanship, and mental health law. Offered: Sp.

PBSCI 546 Psychiatric Epidemiology (3) *Vander Stoep* Using epidemiological methods to study mental illness. Topics include contributions of mental illness to global disease burden; major population-based studies of mental illness; measurement of psychopathology; culture and mental illness; role of neurodevelopment, genetics, social and physical environment in etiology of mental disorders; mental health services research. Prerequisite: either EPI 511, EPI 512, HSERV 591, or permission of instructor. Credit/no-credit only. Offered: jointly with EPI 546; Sp.

PBSCI 580 Applied Research in Behavioral Health and Justice Policy (2) Direct experience working with community agencies to build research capacity. Emphasized child welfare, children's mental/behavioral health, and juvenile justice. Seminars cover translational research, community-based research, and communicating research to program and policy audiences. For graduate students, psychiatric residents, and graduate psychology, psychosocial nursing, social work, and public health students. Offered: AW.

PBSCI 600 Research in Psychiatry ([1-15]-) Independent laboratory research under the guidance and supervision of research scientists in the Psychiatry Department. Faculty permission required.

PBSCI 630 P-WRITE Psychiatry Clinical Clerkship (*, max. 24) Basic clinical clerkship for students enrolled in the WRITE Program. Prerequisite: completion of basic curriculum; third- and fourth-year students; acceptance in the WRITE program.

PBSCI 631 P-Basic Psychiatry Clerkship - Juneau, AK (12) Basic psychiatry clerkship in Juneau, Alaska. Fulfills graduation requirements for clerkship in psychiatry.

PBSCI 632 P-LIC Psychiatry Clinical Clerkship (12) Basic clinical clerkship for students enrolled in the LIC program. Prerequisite: acceptance into LIC program.

PBSCI 637 P-Basic Psychiatry Clerkship - Fairfax - Kirkland, WA (12) Basic psychiatry clerkship in Kirkland, Washington. Fulfills graduation requirements for clerkship in psychiatry.

PBSCI 639 P-Basic Psychiatry Clerkship - Olympia (12) Basic psychiatry clerkship at Olympia, WA. Fulfills graduation requirement for clerkship in psychiatry.

PBSCI 640 P-Basic Psychiatry Clerkship - Pocatello (12) Basic psychiatry clerkship at Pocatello, ID. Fulfills graduation requirement for clerkship in psychiatry.

PBSCI 655 P-Basic Psychiatry Clerkship - Cheyenne (12) Basic psychiatry clerkship in Cheyenne, WY. Fulfills graduation requirement for clerkship in psychiatry.

PBSCI 661 P-Basic Psychiatry Clerkship - Helena (12) Basic psychiatry clerkship in Helena, MT. Fulfills graduation requirement for clerkship in psychiatry.

PBSCI 662 P-Basic Psychiatry Clerkship - Missoula (12) Students work at St. Patrick Hospital with adult and adolescent inpatients and in the emergency room for emergent-care exposure. Students have outpatient experience through the adult intensive outpatient program, Pain Treatment Center, and in faculty outpatient practices. Didactics include psychopharmacology, addiction, psychosis, mood disorders, child and geriatric psychiatry. Prerequisite: completion of the HUBIO series; third and fourth year students.

PBSCI 663 P-Basic Psychiatry Clerkship - Billings (12) Students work at South Center Regional Mental Health Center and Behavioral Sciences Clinic with adult and adolescent inpatients, in the emergency room for emergent care exposure. Outpatient experience including consultations at the community mental health center, Indian reservation, and prison. Didactics include psychopharmacology, addiction, psychosis, mood disorders, child and geriatric psychiatry. A vehicle is needed by students at this site. Prerequisite: completion of the HUBIO series; third and fourth year students.

PBSCI 665 P-Basic Clinical Clerkship (*, max. 24) Inpatient clerkship in psychiatry. Students have primary responsibility under the direction of attending psychiatrists and residents for diagnosis and care of patients at University of Washington Medical Center, Harborview Medical Center, or Veterans Administration Hospital. Emergency room, crisis intervention, consultation to patients with psychiatric dysfunction. Familiarity with psychopharmacology and short-term hospitalization emphasized. (Six weeks, full-time.)

PBSCI 666 P-WWAMI Psychiatry and Behavioral Sciences Clerkship (12) Rotation aims to increase student's skills in basic psychiatry, social psychiatry, transcultural psychiatry, and community psychiatry. Orientation is around the diagnosis, treatment, and clinical management of white, Aleut, Indian, and Eskimo children and adults in outpatient, inpatient, and community settings. Third-, fourth-year medical students. (Limit: Two or three students). Prerequisite: HUBIO 563.

PBSCI 667 P-Basic Psychiatry Clerkship - Boise (12) Basic psychiatry clerkship at Veterans' Administration Medical Center in Boise, Idaho. Fulfills graduation requirement for clerkship in psychiatry.

PBSCI 668 P-Psychiatry Clerkship - Spokane (12) Students work on adult, geriatric, and adolescent inpatient psychiatric units of Sacred Heart Medical Center, following patients after transfer to partial hospitalization or outpatient clinic. Didactics include basic psychiatric diagnosis, treatment, and pharmacotherapy. (Limit: two or three students). Prerequisite: completion of HUBIO series; third and fourth-year medical students.

PBSCI 669 P-Basic Psychiatry Clerkship - Casper, Wyoming (12) Students work in the Wyoming Behavioral Institute with adult, adolescent, and child inpatients. Students have some outpatient experience and emergent care assessment experience at the Wyoming Medical Center. Didactics and discussion include topics such as psychopharmacology, emergent care and assessment, diagnosis, and substance abuse issues.

PBSCI 670 P-Clerkship in Consultation/Liaison Psychiatry - UWMC (*, max. 24) Assessment of patients with major psychosocial problems associated with physical disease, including: problems stemming from the way the illness is perceived and experienced, liaison with other clinical disciplines on complex diagnosis and treatment of problems. (Limit: one student; two or four weeks.) Prerequisite: satisfactory completion of required psychiatry clerkship.

PBSCI 671 P-Clerkship in Consultation/Liaison Psychiatry - HMC (*, max. 24) Students receive organized instruction and supervised clinical experience in the evaluation of psychiatric and/or behavioral problems in patients on medical and surgical services, and in effectively consulting with their health care providers regarding their clinical management. Includes evaluation of (non-financial) decisional competency. (Limit: two students). Prerequisite: satisfactory completion of required psychiatry clerkship.

PBSCI 672 P-Selective Clerkship in Primary Care Psychiatry - Boise, VAMC (8/12) Assessment and treatment of patients with acute psychiatric problems in a primary care/rural setting. Consultation work on general medicine and surgery; assessment and dealing with outpatient psychiatric problems as they initially present. Evaluations, crisis intervention strategies, and brief therapies stressed. Prerequisite: satisfactory completion of required psychiatry clerkship (Four weeks; visiting students interested in the Boise Psych Residency Track allowed.)

PBSCI 673 P-Outpatient Psychiatry Elective (*, max. 24) Offered at Harborview Outpatient Center. Students function as subinterns, conducting diagnostic interviews, initiating and managing pharmacotherapeutic treatment regimens, and providing crisis intervention, under the supervision of the full-time attending at Psychopharmacology Clinic. (Four to six weeks, full-time). Prerequisite: satisfactory completion of required psychiatry clerkship.

PBSCI 676 P-Inpatient Clerkship in Psychiatry - American Lake VA (8/12) *Johnston* For medical students with a defined interest in psychiatry who wish to develop their knowledge and skills in the evaluation, management, and treatment of a wide range of acute and chronic psychiatric conditions requiring inpatient hospital treatment. (Four or six weeks, full-time). Prerequisite: satisfactory completion of required psychiatry clerkship.

PBSCI 677 P-Alcohol and Drug Treatment Clerkship - American Lake VA (8/12) *Lim* Student assists in every phase of the substance-abuse treatment, including admission interviews, patient evaluation, problem identification, group and individual psychotherapy, assertiveness training, anger control, human sexuality, medical evaluation and treatment, couples therapy, discharge and aftercare planning. Experience primarily clinical. Prerequisite: satisfactory completion of required psychiatry clerkship. (Four or six weeks, full-time).

PBSCI 678 P-Clerkship in Psychiatric Long-Term Care and Rehabilitation (*, max. 12) *Johnston* Two- to six-week clerkship provides learning experiences in rehabilitation of long-term psychiatric patients with medical illness. Multidisciplinary team approach, working with homeless mentally ill. Diagnostic skills emphasized. Spectrum of diseases (cardiovascular, Huntington's, organic brain syndrome) is such that physical rehabilitation is not an emphasis. Prerequisite: HUBIO 563; satisfactory completion of required psychiatry clerkship.

PBSCI 680 P-Clerkship in Emergency Psychiatry (*, max. 24) *Pasio* Emphasis on clinical evaluation, acute management, and treatment planning for individual patients.

Experience in coordinating these activities with other emergency room personnel, and various hospital and community resources. Emphasis on skills useful to physicians in any specialty. Third- and fourth-year medical students only. (Four or six weeks, full-time). Prerequisite: satisfactory completion of required psychiatry clerkship.

PBSCI 685 P-Geriatric Psychiatry Clerkship (*, max. 12) Two- to six-week elective (four weeks highly recommended). Participation in the evaluation and care of older persons with psychopathology, such as intellectual impairment and depression, in a variety of settings. Emphasis on improving clinical skills regarding diagnosis and treatment of common behavioral problems in the elderly. Prerequisite: satisfactory completion of required psychiatry clerkship, vehicle required for this rotation.

PBSCI 688 P-Subinternship in General Psychiatry (*, max. 16) Students function as interns under the supervision of house staff and attending psychiatrists. Further development of their diagnostic and therapeutic skills emphasized. Special areas of interest, such as family intervention, substance abuse, psychoses, neuropsychiatry, community psychiatry, administration, research pursued. (Four or six weeks, full-time). Prerequisite: satisfactory completion of required psychiatry clerkship; permission of instructor.

PBSCI 695 P-Advanced Clerkship in Child Psychiatry - CSTC (*, max. 24) Provides an opportunity to participate in evaluation and treatment of children and adolescents in Lakewood, WA. Prerequisite: satisfactory completion of required psychiatry clerkship; fourth year medical student status. 2/4/6 weeks.

PBSCI 696 P-Advanced Clerkship in Child Psychiatry (*, max. 24) Provides students an opportunity to participate in evaluation and treatment. Experiences in specialized clinics are also available. (Four or six weeks, full-time. Limit: one student). Prerequisite: satisfactory completion of required psychiatry clerkship.

PBSCI 697 P-Psychiatry Special Electives (*, max. 24) By special arrangement, clerkships, externships, and research opportunities can be taken at other institutions. Students obtain permission from Dr. Combs before contacting the dean's office one month before advance registration. Students contact affiliating institutions. Does not fulfill the requirement for a basic clerkship in psychiatry.

PBSCI 699 P-WWAMI Psychiatry and Behavioral Sciences Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department.

Radiation Oncology

NN106 University of Washington Medical Center

Radiation oncology is the branch of clinical medicine that utilizes high-energy radiation to treat disease, usually cancer. The department consists of three divisions: clinical radiation oncology, medical radiation physics, and experimental cancer biology. Training programs are offered in all three divisions. Research programs in the Department of Radiation Oncology are aimed at the physical and biological mechanisms of interactions between ionizing radiations, and normal and malignant tissues, with particular emphasis on high linear energy transfer (LET) radiation effects. The department is actively involved in radiation treatment planning work, particularly in regard to intensity modulated radiation therapy (IMRT). Other programs involve the application of positron emission tomography (PET) to elucidate differences between cancers and normal tissues, and the development of specialized radiopharmaceuticals.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

R ONC 499 Undergraduate Research (*, max. 24) Phillips, Schwartz, Wilbur Opportunities in clinical or laboratory investigation in radiation oncology, radiation physics, or computer-related research. Student participation in ongoing or new projects. Open to students in the biological or physical sciences.

R ONC 505 P-Radiation Oncology Preceptorship (1, max. 12) Kane, Kelly, Kim, Koh, Laramore, Liao, Patel, Rockhill, Russell Students choose either to follow an attending physician through all aspects of radiation oncology including consults, follow-up, and treatment planning; or to follow a small cohort of patients throughout their treatment course to learn about the experience of a cancer patient undergoing treatment for life-threatening disease. Credit/no-credit only.

R ONC 600 Independent Study or Research (*) Prerequisite: permission of department and faculty sponsor. Offered: AWPSP.

R ONC 694 P-Clinical Cancer Management - SCCA (*, max. 8) Participation in the clinical management of patients with cancer, emphasizing a multi-modality approach. Includes clinical assessment, planning of radiation treatment, and follow-up evaluation of patients. Special procedures include three-dimensional treatment planning, implant brachytherapy, and intraoperative radiation. Daily teaching conferences with faculty and residents. Prerequisite: medicine core clerkship or permission of instructor.

R ONC 695 P-Clinical Cancer Management - UWMC (*, max. 8) Kane Participation in the clinical management of patients with cancer, emphasizing a multi-modality approach. Includes clinical assessment, planning of radiation treatment, and follow-up evaluation of patients. Special procedures include three-dimensional treatment planning, implant brachytherapy, and intraoperative radiation. Daily teaching conferences with faculty and residents. Prerequisite: medicine core clerkship or permission of instructor.

R ONC 697 P-Radiation Oncology Special Elective (*, max. 24) Kane By specific arrangement for qualified students, special clerkship, externship, or research opportunities are made available at institutions other than the University of Washington. Students obtain a "special assignment" form from the dean's office at least one month before advance registration. Prerequisite: permission of instructor.

R ONC 699 P-WWAMI Radiation Oncology Special Electives (*, max. 24) Kane By special arrangement for qualified students, special clerkships or externships may be available at institutions located within the WWAMI region, other than the University of Washington. Prerequisite: permission of department.

Radiology

RR215 University of Washington Medical Center

Diagnostic radiology is that branch of clinical medicine that specializes in the interpretation of various imaging modalities in order to detect, to characterize, and (with increasing frequency) to treat a wide variety of diseases. Historically, x-rays were the first energy source utilized for these purposes, and they continue to be a mainstay of this discipline. More recently, the armamentarium has grown to include ultrasound, computed tomography, magnetic resonance, and positron-emission tomography. In nuclear medicine, one of radiology's major subspecialties, radionuclides are employed for both diagnostic and therapeutic

purposes. Another subspecialty is interventional radiology, wherein aspirations and biopsies, as well as therapeutic procedures such as abscess drainage, tumor embolization, and vascular stents are performed percutaneously.

The Department of Radiology consists of two clinical divisions: diagnostic radiology and nuclear medicine. Both divisions are ably supported by technologists and faculty members in the field of radiation physics. Instruction in radiology is provided for medical students, residents, and fellows as well as for other physicians. The faculty and its teaching and research activities are represented in each of the hospitals affiliated with the University.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

RADGY 498 Undergraduate Thesis (*, max. 30) Supervised clinical and/or laboratory research in the broad field of medical imaging, culminating in a thesis. Offered: AWPSP.

RADGY 499 Undergraduate Research (*, max. 35) Opportunity to gain research experience and direct participation in either clinical or basic sciences investigation in diagnostic and/or nuclear medicine. Offered: AWPSP.

RADGY 505 P-Preceptorship in Radiology (1-, max. 24) Opportunity for medical students to gain experience with faculty in clinical and academic environments. Students observe general aspects of diagnostic radiology, interventional radiology, or nuclear medicine, including clinical problems, the different relationships in clinic between physician and patient, and research aspects of the department. Prerequisite: permission of instructor. Offered: AWPSP.

RADGY 508 Physical Aspects of Medical Imaging (4) Quantitative physical principles of medical imaging are presented for electromagnetic and sonic radiation. Methods of image formation and analysis are discussed for conventional film radiography, CT, DSA, PET, B-mode ultrasound, and Doppler ultrasound.

RADGY 580 P-Nuclear Medicine Technique, Physics, and Instrumentation (2.5) Provides familiarization with basic nuclear phenomena and with the instrumentation used in the practice of nuclear medicine. Discussions and laboratory exercises. Practical experience in instrument operation and sample counting are provided. Prerequisite: permission of instructor. Offered: S.

RADGY 600 Independent Study or Research (*) Prerequisite: permission faculty sponsor. Offered: AWPSP.

RADGY 686 P-Introduction to Diagnostic Radiology - Idaho Falls (4) Overview of the subspecialty areas of diagnostic radiology and nuclear medicine. Emphasizes utilization and selection of imaging tests, radiologic anatomy, and interpretation of commonly encountered studies.

RADGY 687 P-Introduction to Diagnostic Radiology - Casper (4) Overview of the subspecialty areas of diagnostic radiology and nuclear medicine. Emphasizes utilization and selection of imaging tests, radiologic anatomy, and interpretation of commonly encountered studies. Offered: AWPSP.

RADGY 688 P-Introduction to Diagnostic Radiology - Boise (4)

RADGY 689 P-Introduction to Diagnostic Radiology - Billings (4) Lectures, case discussions, film reading, and independent study provide an overview of the subspecialty areas of diagnostic radiology and nuclear medicine. Emphasis on utilization and selection of imaging tests, radiologic anatomy, and interpretation of commonly encountered studies. Offered: AWPSP.

RADGY 690 P-Introduction to Diagnostic Radiology - Nampa (4) Half-time clerkship in the field of medical imaging.

Lectures, case discussions, film reading, and independent study provide an overview of the subspecialty areas of diagnostic radiology and nuclear medicine. Emphasis on utilization and selection of imaging tests, radiologic anatomy, and interpretation of commonly encountered studies. Offered: AWPSP.

RADGY 691 P-Introduction to Diagnostic Radiology - Alaska (4) Half-time clerkship in the field of medical imaging. Lectures, case discussions, film reading, and independent study provide an overview of the subspecialty areas of diagnostic radiology and nuclear medicine. Emphasis on utilization and selection of imaging tests, radiologic anatomy, and interpretation of commonly encountered studies. Offered: AWPSP.

RADGY 692 P-Introduction to Diagnostic Radiology - Spokane (4) Half-time clerkship in the field of medical imaging. Lectures, case discussions, film reading, and independent study provide an overview of the subspecialty areas of diagnostic radiology and nuclear medicine. Emphasis on utilization and selection of imaging tests, radiologic anatomy, and interpretation of commonly encountered studies. Offered: AWPSP.

RADGY 694 P-Advanced Clinical Clerkship (8) Full-time clerkship provides a more in depth experience in diagnostic radiology and nuclear medicine. Required rotations in the subspecialty areas of radiology augment the basic lecture series and case discussions of RADGY 693. For those with a special interest in diagnostic radiology. Prerequisite: permission of instructor and departmental education coordinator. Offered: AWPSP.

RADGY 695 P-Radiology Sub-specialty Elective (*, max. 8) Clinical rotation in one of the sub-specialty areas of radiology at the University of Washington and affiliated hospitals. Requires special arrangements and permission from a preceptor and the education coordinator in Radiology. Two or four weeks. Offered: AWPSP.

RADGY 696 P-Nuclear Medicine Clerkship (*, max. 12) Daily participation at University of Washington Medical Center nuclear medicine clinic emphasizing technical performance, diagnostic interpretation, and clinical relevance of nuclear imaging. Daily clinical teaching conferences of the division. Four- and six-week clerkships can be pre-planned in areas such as pulmonary, cardiovascular, renal, bone, computer analysis. Prerequisite: permission of instructor. Offered: AWPSP.

RADGY 697 P-Radiology Special Electives (*, max. 24) Radiologic training in a nonaffiliated institution. Permission and arrangements must be made at the time of registration through direct communication between the student and the education coordinator in Radiology. A written outline from a preceptor at the intended site required. Prerequisite: permission of radiology education coordinator. Offered: AWPSP.

RADGY 699 P-WWAMI Radiology Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department.

Rehabilitation Medicine

BB928 Health Sciences

The Department of Rehabilitation Medicine provides education for medical students, interns, residents, and allied health students in occupational therapy, physical therapy, and prosthetics and orthotics in a comprehensive approach to rehabilitation problems. This includes special diagnostic and evaluative procedures; methods and rationale in the application of principles of occupational

therapy, physical therapy, prosthetics and orthotics, and other health professions; and advanced investigation of special problems encountered in the field. In addition, the department conducts a residency training program for the specialty of physical medicine and rehabilitation.

The department offers curricula leading to the following degrees: Master of Occupational Therapy, Doctor of Physical Therapy, Master of Prosthetics and Orthotics, and a PhD in rehabilitation science.

OCCUPATIONAL THERAPY

Head

Janet M. Powell

The profession of occupational therapy appeals to people who enjoy thinking creatively and flexibly to solve problems, and who want to help people with disabilities perform activities important in their daily lives. Occupational therapists provide services related to occupational performance (activities) in everyday life in the areas of self-care, work, education, or play and leisure. They work with people who have physical illness or injury, social or emotional difficulties, congenital or developmental problems, or who are in need of preventive strategies to enhance health and well-being; and with people in all age groups from diverse cultural and ethnic groups and socioeconomic levels.

Occupational therapists help people with impairments or limitations live as productive and as high quality of life as life as possible. Services focus on increasing independence, enhancing development, providing compensatory strategies, and minimizing or preventing disability. Therapists adapt activities and environments, select therapy activities meaningful to clients, and provide client, family, and caregiver education. For example, an occupational therapist may teach adaptive dressing techniques to a client who has lost use of a hand following a stroke, help a child with autism interact with peers, or modify a computer for a young adult with a spinal cord injury returning to work.

Today's occupational therapists practice in rehabilitation centers, outpatient rehabilitation clinics, schools, hospitals, mental health facilities, private practice, skilled nursing facilities, home healthcare, and community health programs. The most common work settings for occupational therapists are school systems, hospitals, and long-term care facilities. The current and future job outlook for occupational therapists is excellent. The occupational therapy program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE), which can be contacted at: ACOTE c/o Accreditation Department AOTA, 4720 Montgomery Lane, Suite 200, Bethesda, MD, 20814-3449, phone (301) 652-2682. Standards comply with the U.S. Department of Education criteria for recognition of accrediting agencies. Graduates of the program are eligible to sit for the national certification examination for occupational therapist. The National Board for Certification in Occupational Therapy (NBCOT) is the certifying agency responsible for development and implementation of this examination. Most states, including Washington, require state licensure in order to practice.

Master of Occupational Therapy

Admission Requirements

1. Bachelor's degree in any major and Graduate Record Examination (GRE) taken within the past five years. Seven prerequisite courses as shown below. Volunteer or work experience in at least two practice areas of occupational therapy. Admission is once a year for entry autumn quarter; applications are evaluated starting January 15.
2. Specific prerequisite courses at the UW. (Students who have attended schools other than the UW must take comparable courses.)

3. *Natural Sciences*: BIOL 118; B STR 301; CHEM 120; EDPSP 490
4. *Social Sciences*: PSYCH 305; PSYCH 306; SOC 110 or ANTH 202
5. *Requirements to Apply*: Completion of five prerequisite courses, including three courses in the natural sciences; 3.00 minimum GPA in prerequisite courses with no single course graded less than 2.7; minimum 3.00 GPA on the most recent 60 semester or 90 quarter credits. Admission is based on academic ability, communication skills, and understanding and experience in occupational therapy. Detailed program requirements and selection process information are available by calling (206) 598-5764, or by consulting the program's website at rehab.washington.edu/education/degree/ot, or by emailing ot@uw.edu.

Degree Requirements

1. *Courses*: To be completed in the scheduled sequence, beginning autumn quarter only, at the UW: REHAB 510, REHAB 520, REHAB 522, REHAB 533, REHAB 541, REHAB 542, REHAB 543, REHAB 544, REHAB 545, REHAB 548, REHAB 551, REHAB 566, REHAB 570, REHAB 571, REHAB 572, REHAB 574, REHAB 575, REHAB 576, REHAB 577, REHAB 578, REHAB 579, REHAB 580, REHAB 581, REHAB 582, REHAB 584, REHAB 585, REHAB 591, and REHAB 594.
2. *GPA Requirement*: Cumulative 3.00 GPA in all required professional coursework to retain satisfactory standing and to graduate. Detailed scholastic requirements are available on the program's website at rehab.washington.edu/education/degree/ot/.
3. *Continuation Policy*: If at any point the OT curriculum cumulative GPA falls below 3.00, the student is placed on academic probation and must raise the GPA to 3.00 by the end of two subsequent quarters. Students unable to remove their probation status are subject to dismissal from the program. If a student receives a grade below 2.7 in a required course, continuation in the program is reviewed and determined by the Occupational Therapy Advisory and Evaluation Committee.
4. *Fieldwork Placement*: The student must satisfactorily complete all academic coursework before taking the two required Level II Fieldwork placements (REHAB 594). Both fieldwork placements must be satisfactorily completed within 24 months following completion of the academic portion of the program in order to graduate.

For more information on the Master of Occupational Therapy program, visit the department's website at rehab.washington.edu/education/degree/ot/.

PHYSICAL THERAPY

Interim Head

Sarah Westcot McCoy

Physical therapy is a direct form of professional patient care that can be applied in most disciplines of medicine. The principal objective in physical therapy is to restore or improve motor function in individuals with musculoskeletal or neuromuscular conditions.

Management of problems related to motor function is only part of the work of physical therapy. Equally important is rebuilding self-confidence and creating a desire to return to a normal, active life. Other primary objectives of physical therapy are prevention of disability and pain, and training in mobility skills for those who must adapt to permanent disability.

As a consequence of the scope of the profession, physical therapists function in a variety of settings, the most familiar being the hospital. Physical therapists also plan, provide, evaluate, and direct patient care in outpatient clinics,

rehabilitation centers, health maintenance organizations, developmental centers, home-health agencies, schools, extended-care facilities, voluntary health programs, industry, and private practices. The physical therapist may be found anywhere quality healthcare is needed. Increasingly, physical therapists are becoming involved in basic and clinical research, such as the academic community, either as full-time faculty members or as supervisors of clinical education, and as consultants in local, state, and federal health-planning activities.

Physical therapists function in compliance with the licensing laws and ethical principles that govern the practice of physical therapy. The steps to licensure as a physical therapist vary slightly from state to state, but all physical therapists graduate from an accredited curriculum of physical therapy that includes a specific period of clinical training. As physical therapy relates to the majority of medical specialties, the education program is broad in scope, including an emphasis on physical and social sciences. The physical therapist evaluates the patient's problem by testing such factors as range of joint motion, muscle strength, posture and gait, pulmonary function, sensory perception, orthotic and prosthetic fit, reflexes and muscle tone, and functional skills. Intervention procedures used may include ultrasound, superficial heat and cold, electrical stimulation, massage, traction, joint mobilization, biofeedback, therapeutic exercise, and assisted ambulation training.

As with all professionals in health fields, physical therapists are responsible for subscribing to a program of continuing education. Some therapists also develop the knowledge and skills of a specialist via continuing education and concentrated practice in one area, such as sports or pediatric therapy. A formal mechanism for certifying specialists is implemented by the national professional association, the American Physical Therapy Association.

The University of Washington program in physical therapy is accredited by the American Physical Therapy Association Commission on Accreditation in Physical Therapy Education. For complete program details visit rehab.washington.edu/education/degree/pt.

Doctor of Physical Therapy

Admission Requirements

1. Enrollment is limited to 44 students each year and admission is competitive.
2. Application is restricted to those who are U.S. citizens or U.S. permanent residents by the autumn program entrance date.
3. Applicants are required to submit scores from the General Test portion of the Graduate Record Examinations (GRE).
4. Prior to the application deadline of December 15, the student must have met the following academic requirements:
 - a. Minimum 3.00 GPA on all college-level courses
 - b. Minimum 3.00 GPA on PT prerequisite courses
 - c. Minimum 2.0 (C) grade on each PT prerequisite course
 - d. Half (50%) of PT prerequisite courses completed.

For a list of PT prerequisite course descriptions, see the program Website at depts.washington.edu/rehab/pt/eligibility.asp#prereq
5. Minimum requirements above must be maintained until program entrance and all prerequisite courses must be finished at that time. Applicants must complete a bachelor's degree before they start the program.
6. Most clinical internship placement sites require potential trainees to undergo a criminal history background check for crimes against vulnerable populations. To ensure that all students offered positions in the PT program have no such history and therefore are able to finish

the clinical portion of the curriculum, the completion of a criminal background check process is required of applicants accepting admission.

Degree Requirements

157 credits, as follows:

Year One

1. *Autumn Quarter:* REHAB 504, REHAB 509, REHAB 517, REHAB 521, REHAB 522, REHAB 541, REHAB 544
2. *Winter Quarter:* REHAB 506, REHAB 517, REHAB 533, REHAB 542, REHAB 545, REHAB 551
3. *Spring Quarter:* REHAB 507, REHAB 517, REHAB 525, REHAB 533, REHAB 536, REHAB 543, REHAB 548
4. *Summer Quarter:* REHAB 500, REHAB 508, REHAB 517, REHAB 537, REHAB 538, REHAB 540

Year Two

1. *Autumn Quarter:* REHAB 510, REHAB 511, REHAB 523, REHAB 547, REHAB 566
2. *Winter Quarter:* REHAB 502, REHAB 512, REHAB 527, REHAB 529
3. *Spring Quarter:* REHAB 502, REHAB 503, REHAB 531, REHAB 566, REHAB 569
4. *Summer Quarter:* REHAB 505, REHAB 514, REHAB 535, REHAB 515, REHAB 567, REHAB 801

Year Three

1. *Autumn Quarter:* REHAB 595, REHAB 801
2. *Winter Quarter:* REHAB 595, REHAB 801
3. *Spring Quarter:* REHAB 595, REHAB 801

PROSTHETICS AND ORTHOTICS

Division Director

Ann Yamane

The prosthetist-orthotist is a member of the rehabilitation healthcare team, which also includes physicians, surgeons, physical and occupational therapists, psychologists, vocational rehabilitation counselors, and other appropriate specialists. The interdisciplinary rehab team works with physically challenged individuals to increase their functional abilities, enhance their daily life, and help them to participate in activities they enjoy.

Certified Prosthetists Orthotists (CPOs) provide direct patient care and management. CPOs work in conjunction with physicians, surgeons, and therapists to evaluate the prosthetic or orthotic needs of the patient. Prostheses replace or substitute for a missing limb or part of a limb, and orthoses help with the control of motion and the support of a weakened body segment. Before designing a specific device, the prosthetist-orthotist examines a patient to find any conditions that might affect the future success of that device. Following the evaluation, the prosthetist-orthotist obtains an impression of the affected segment along with the appropriate measurements. A technician fabricates the prosthesis or orthosis, and the prosthetist-orthotist assesses the fit and function of the device and follows up with the patient, as necessary. To evaluate the fit and function, the prosthetist-orthotist must have a detailed knowledge of anatomy and kinesiology, joint range of motion, muscle strength, human locomotion, material science, and the human-device interaction.

Graduate Program Coordinator

BB808 Health Sciences Center

(206) 543-6763

pando96@uw.edu

The prosthetics and orthotics division offers the following program of study:

- The Master of Prosthetics and Orthotics degree

Master of Prosthetics and Orthotics

Admission Requirements

1. Bachelor's degree in any major from a regionally accredited U.S. college or university
2. Minimum 3.00 cumulative GPA
3. Prior to the start of the program, all prerequisites must be completed, including one course each in the areas of biology* (or other life science), statistics, and chemistry*; a two-course series in the areas of (1) anatomy and physiology and (2) physics*, and two courses in psychology (to include a general psychology course as well as either a developmental or abnormal psychology course). Laboratories must be taken with courses marked with an asterisk*.
4. Minimum 3.00 cumulative prerequisite GPA. No single course graded less than 2.0. Grades lower than 2.0 are not accepted.
5. GRE general test scores. Test must be taken within the past five years.
6. Volunteer or work experience in a prosthetics-orthotics clinic is strongly encouraged
7. Admission is competitive based on scholastic achievement, written skills, references, and involvement in activities or experiences related to the health professions.
8. Admission occurs once a year for entry autumn quarter; applications are evaluated starting December 15.
9. International applicants must meet several requirements in addition to those required of U.S. applicants to be admitted to the UW Graduate School. Consult the FAQs on the UW Graduate School website for more information.

See program website for complete details on admissions requirements.

Degree Requirements

112 credits as follows:

1. *Courses:* To be satisfactorily completed in a specific sequence beginning autumn quarter of entry year, and only at the UW: REHAB 522, REHAB 544, REHAB 541, REHAB 504, REHAB 509, RHB PO 511, RHB PO 501, REHAB 533, REHAB 545, REHAB 542, REHAB 551, REHAB 506, RHB PO 515, REHAB 548, REHAB 543, RHB PO 512, RHB PO 581, RHB PO 541, RHB PO 502, RHB PO 521, RHB PO 522, RHB PO 523, REHAB 580, RHB PO 561, REHAB 510, RHB PO 524, RHB PO 525, RHB PO 526, RHB PO 527, RHB PO 581, RHB PO 582, RHB PO 562, RHB PO 528, RHB PO 529, RHB PO 583, RHB PO 563, RHB PO 530, RHB PO 531, RHB PO 534, RHB PO 558, RHB PO 584, RHB PO 564.
2. *Grade Requirements:* A student must maintain a minimum 3.00 cumulative program GPA, and receive "credit" grades in all courses graded credit/no credit only, to maintain good standing in the program and be eligible for graduation.
3. *Continuation Policy:* If at any point the cumulative GPA in the curriculum courses falls below 2.70, the student is placed on academic probation. In order to be removed from probation, the student must achieve a cumulative GPA of 3.00 by the end of two consecutive quarters, or within a time frame designated by the Advisory and Evaluation Committee. If a student is unable to remove his or her probation status, he or she is subject to dismissal from the program.

POST-PROFESSIONAL PROGRAMS

Doctor of Philosophy in Rehabilitation Science

Director

Deborah Kartin

Rehabilitation science is an interdisciplinary field that focuses on human function and disability. Basic and applied research from health sciences, social sciences, engineering, and related fields is directed toward (1) enhancing physical and psychosocial functioning, participation in life situations, and quality of life for people with disabilities; and (2) informing relevant social and healthcare policy.

The program targets students from diverse backgrounds in rehabilitation-related fields including occupational therapy, physical therapy, speech and language pathology, rehabilitation counseling, medicine, nursing, prosthetics and orthotics, and engineering.

The goal of the PhD program in rehabilitation science is to prepare future researchers, educators, and leaders in the area of rehabilitation science. Graduates contribute to the field of rehabilitation science, working in settings such as academic and research institutions, service delivery systems (e.g., hospitals, public schools), government agencies, and the private sector. These individuals are prepared to address research, education, service delivery, and policy issues from an interdisciplinary perspective.

1. Demonstrate advanced knowledge and productivity in rehabilitation science specific to research, education, service delivery, and/or policy.
2. Demonstrate leadership in interdisciplinary collaboration for the purpose of optimizing research, education, service delivery, and/or policy.
3. Generate and extend knowledge that is innovative and rigorously tested within a focused area of rehabilitation science.

Admission Requirements

1. Baccalaureate degree from a college or university of recognized rank
2. Copy of current professional certification/licensure to practice (as appropriate)
3. Letters of recommendation from three persons knowledgeable about the individual's potential for doctoral-level work in rehabilitation science
4. Letter of application
5. Resume/CV
6. Official university transcripts
7. Official Graduate Record Examination (GRE) General Test Scores

Degree Requirements

100 credits minimum, as follows:

1. **Core Course Series (21 credits):** coursework and practicum experiences in teaching (minimum 5 credits), and coursework in statistics and research methods (minimum 18 credits). In addition, each student must complete three cognates (minimum 6 credits each) specific to the student's goals. The student's committee and the core faculty in the rehabilitation science doctoral program must approve the entire course of study.
2. **General Requirements:** In addition to meeting all requirements of the UW Graduate School, all students are expected to meet the following general requirements.
 - a. Minimum 3.00 cumulative and quarterly GPA.
 - b. 100 credits minimum, of which 27 are dissertation credits.

- c. Completion of at least one teaching practicum (3-credit minimum).
- d. Satisfactory completion of a research and scientific inquiry day manuscript and presentation.
- e. Satisfactory completion of general examinations.
- f. Dissertation.
- g. Final examination.

For more information on the PhD program in rehabilitation science, visit the program's website at rehab.washington.edu/education/degree/rehabsci/.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

REHAB 300 Introduction to Occupational Therapy (1) Introduction to occupational therapy profession. Provides historical perspectives, theoretical foundations, and clinical case studies in various practice arenas. Credit/no-credit only.

REHAB 496 Special Topics in Rehabilitation (1-9, max. 14) Guided opportunity for in-depth study in specific areas of rehabilitation. Topics vary.

REHAB 498 Undergraduate Thesis (*, max. 15)

REHAB 499 Undergraduate Research (*, max. 15) Opportunity to design, perform, and analyze research investigation in problem areas in rehabilitation medicine. These include clinical and basic research problems in, for example, head and spinal injury, chronic disease, pain neurophysiology, electrodiagnosis, communication, and bio-engineering.

REHAB 500 Clinical Clerkship in Physical Therapy (4) *Robinson* Observation, instruction, and supervised practice in treatment of patients in diverse clinical settings. Emphasis is given to the application of previously learned material and skills to specific clinical problems. Required for physical therapy students. Credit/no-credit only.

REHAB 502 Pediatric Physical Therapy (4-, max. 8) *C. KERR* Provides foundational knowledge in development and an overview of pediatric physical therapy practice for children with atypical development. Presents examination, evaluation, and development of physical therapy plans of care for children with various disabilities within the frameworks of family-centered care and disablement models.

REHAB 503 Lifespan III: Geriatric Physical Therapy (3) *Matsuda* Theory and principles of exercise procedures used when treating the geriatric patient. Includes a discussion of age related changes in the systems essential to movement control; factors contributing to physical disability and frailty with aging; adaptation of assessment and treatment procedures to the geriatric patient. Lectures and laboratories.

REHAB 504 Procedures I: Basic Physical Examination of the Extremities (2) *Maitland* Develops technical skills and theoretical foundations in the examination of patients from a neuromusculoskeletal perspective. Special emphasis on examination of the extremities, including applied anatomy, posture, screening tests, special tests, and scanning exams.

REHAB 505 Introduction to Pharmacology (2) *D. MACK* Pharmacological survey of drugs commonly prescribed for clients seen in a physical therapy practice setting. Presentations on basic principles. Additional data search and group reports. Overview of medical emergencies.

REHAB 506 Procedures II: Basic Physical Examination of the Spine (2) *Bennett* Develops technical skills and theoretical foundations in the examination of patients from a neuromusculoskeletal perspective. Emphasizes exami-

nation of the spine including applied anatomy, posture, screening tests, special tests, and scanning exams.

REHAB 507 Physical Therapy Procedures III: Modalities (3-4) *McGough* Principles and practice of physical therapy clinical treatment procedures utilizing therapeutic modalities. Lecture and laboratory format.

REHAB 508 Principles of Therapeutic Exercise (3) *E. MCGOUGH* Theory, principles, and practice of exercise procedures used for treatment purposes in physical therapy, including motor learning, variables of motor performance, and exercise prescription. Lectures and laboratories. Simulated patient problems.

REHAB 509 Physical Therapy Procedures: Functional Skills Assessment (1) *Robinson* Development of clinical competence in assessment and training of basic patient functional skills, including handling techniques, transfers, and assisted ambulation.

REHAB 510 Rehabilitation Psychology (2) *Patterson* Focuses on understanding assimilation of disability, participation in rehabilitation, management of behavior, and maintenance of performance from both the practitioner and patient perspective. Focuses on the role of the psychologist in the rehabilitation team. Includes case study and case conference materials.

REHAB 511 Musculoskeletal IV: Clinical Management (5) *Bennett* Physical therapy clinical evaluation and management of patients with musculoskeletal dysfunction. Special emphasis on upper quadrant anatomy. Lecture and laboratory format.

REHAB 512 Musculoskeletal V: Clinical Management (4) *Maitland* Physical therapy clinical evaluation and management of patients with musculoskeletal dysfunction. Special emphasis on lower quadrant anatomy. Lecture and laboratory format.

REHAB 513 Special Studies in Physical Therapy (1-5, max. 15) Theory and practice in specialized areas of physical therapy. Includes organization and administration of specialized programs, advanced evaluation and treatment techniques, role of the consultant. Credit/no-credit only.

REHAB 514 Systems Review for Physical Therapists (3) *Maitland* Development of advanced physical assessment skills to provide students with the ability to determine if a patient's disorder is within the scope of practice for physical therapy or requires referral to another healthcare provider. Lectures and laboratory format, with an emphasis on the lab component. Credit/no-credit only.

REHAB 515 Advanced Neuromusculoskeletal Interventions in Physical Therapy (3) *Bennett* Advanced neuromusculoskeletal treatment techniques. Emphasis on review of manual therapy, exerciser and modality interventions in case studies across lifespan and continuum of care. Credit/no-credit only.

REHAB 516 Medical Information for Rehabilitation Counselors (3) *Johnson* Lectures in medical science field regarding the etiology, prognosis, and physical restoration of common disabling conditions. Case studies are used extensively, and major emphasis is placed on vocational implications of physical disability. Prerequisite: permission of instructor.

REHAB 517 Physical Therapy Seminar (2-, max. 12) *D. KARTIN, S. MCCOY, K. MCQUADE* Focuses on physical therapy topics pertaining to transcurricular and professional practice issues.

REHAB 519 P-Preceptorship in Rehab Medicine (1, max. 12) *McNalley* Explores the field of physical medicine and rehabilitation. Students observe a physiatrist one half day each week, and gain understanding of the management of acute injuries, chronic disease, and disabilities. Offered: AWSps.

REHAB 520 Seminar (1-5, max. 12) Conferences, seminars, discussions of advanced physical medicine and rehabilitation topics for graduate students, residents, and

postdoctoral fellows in rehabilitation medicine. Lectures, discussion, and laboratory work in selected aspects appropriate to elected area of study for applicants for master-level degree.

REHAB 521 Survey of Pathophysiology for Rehabilitation (2-3, max. 6) *Kerfeld* Uses a systems approach overview of the disease process and the impact it has on the rehabilitation process. Provides a foundation for understanding how dysfunction of major systems can influence a person's ability to move. Discusses risk reduction and prevention strategies surrounding diseases. Credit/no-credit only.

REHAB 522 Neurophysiological Topics in Rehabilitation Medicine (2) *Kinney* Reviews traditional neurophysiological concepts related to the nervous, musculoskeletal, and cardiopulmonary systems as a foundations for rehabilitation practice. Includes recent advances in research and applicable case studies.

REHAB 523 Neuroscience III: Applied Neurology (4) *Matsuda* Theory and principles of advanced exercise procedures used when treating patients with neurologic pathology. Includes the application of principles of motor learning and control; facilitation and inhibition of variables affecting functional motor performance; adaptation of assessment and treatment procedures to patients with different types of neurologic impairments. Lectures and laboratories.

REHAB 525 Exercise Physiology for Rehabilitation (3) *Moritz* Provides systems approach to exercise physiology, including cardiovascular and musculoskeletal response to exercise training, and the impact it has on the rehabilitation process. Reviews common disease processes that effect ability and tolerance, and may benefit from rehabilitation interventions.

REHAB 527 Neuroscience IV: Special Topics in Neurologic Rehabilitation (3) *Kelly* Critical analysis and application of physical therapy assessment and treatment techniques to problems related to specific adult neurological disorders. Neurological disorders to be covered include stroke, spinal cord injury, traumatic brain injury, and multiple sclerosis.

REHAB 528 International Clinical Clerkship (2) *Robinson* Short-term clinical education experience outside the United States. Participants work in a mentored relationship as part of a multi-disciplinary rehabilitation team providing direct clinical services and consultation to patients and their caregivers. Sponsored sites selected and screened by clinical coordinator. Students may choose area of clinical focus. Credit/no-credit only.

REHAB 529 Professional and Practice Issues in Physical Therapy (2) *K. MCQUADE* Augments the student's understanding of the profession and current issues in healthcare. Includes healthcare delivery, scope of practice, professional organization, political activism, specialist certification, licensure, collaboration, therapeutic relationships, disclosure, privacy, and informed consent. Credit/no-credit only.

REHAB 530 Medical Aspects of Vocational Counseling (2-3) *Johnson* Introduction to vocational implications of physical and emotional disabilities. Methods, counseling techniques, therapeutic modalities, community resources used in producing vocational assistance for persons with disabilities. Prerequisite: resident standing in rehabilitation medicine or permission of instructor.

REHAB 531 Critical Thinking Skills in Physical Therapy (3) *K. MCQUADE* Introduces students to structured critical thinking for discussion and analysis of selected musculoskeletal approaches. Interactive small groups explore key papers with controversial or novel assertions, or that address commonly used treatment techniques. Credit/no-credit only.

REHAB 532 Clinical Affiliation for Rehabilitation Counselors (5-6) *Johnson* Under preceptorship of rehabilitation counseling staff, students counsel and evaluate patients with severe physical, emotional, or social problems; administer vocational testing; obtain placement on job stations;

work with community resources for vocational/educational placement; and develop activity-oriented schedules. Prerequisite: permission of instructor.

REHAB 533 Diseases and Diagnosis in Rehabilitation (2-, max. 4) Provides an introduction to medical diagnoses and diseases having high rates of referral to rehabilitation services in order to promote comprehensive patient care.

REHAB 535 Physical Therapy Administration Issues (2) *S. MCCOY* In-depth discussion of administrative issues overarching physical therapy practice, including economic trends, operational policy, budgeting, reimbursement, staffing, business structure, and entrepreneurship. Required for physical therapy students. Credit/no-credit only.

REHAB 536 Patient Evaluation and Clinical Decision Making (1-2, max. 8) *Robinson* General principles and practice of physical therapy patient evaluation and use of the clinical decision-making models. The application of patient management principles through examination techniques and documentation strategies. Lecture and laboratory format.

REHAB 537 Functional Mobility Skills (2) *Pradhan* Principles and practice of physical therapy interventions related to functional mobility skills, including transfer training, wheelchair fitting, wheelchair mobility, gait training, and caregiver training. Lecture and laboratory format.

REHAB 538 Integumentary, Edema Management, and Circulatory Screening for PT (2) *Robinson* Principles and practice of physical therapy evaluation and interventions related to wound care, burn care, edema management, circulatory screening, and splinting applications. Lecture and laboratory format.

REHAB 539 Communication Disorders in Rehabilitation Medicine (1) *Yorkston* Overview of communication disorders secondary to central and peripheral nervous system impairment. Emphasis on facilitating identification of speech/language disorders with discussion of implications for rehabilitation.

REHAB 540 Acute Care Practice in Physical Therapy (2) *Robinson* Principles and practice of physical therapy evaluation and interventions related to individuals with diagnoses in the recent onset (or acute) stage of development.

REHAB 541 Gross Anatomy Laboratory - Extremities (1) *Guthrie, Rollinger* Uses cadavers to study the musculoskeletal, peripheral-vascular, and peripheral-nervous systems. Focuses on the extremities. Uses primarily prospected material, but provides some opportunity for independent dissection. Credit/no-credit only.

REHAB 542 Gross Anatomy Laboratory - Spine (1) *Guthrie, Rollinger* Studies the musculoskeletal, peripheral-vascular, and peripheral-nervous systems from cadavers. Focuses on the spine. Uses primarily prospected material, but includes some opportunity for independent dissection. Credit/no-credit only.

REHAB 543 Rehabilitation Kinesiology Laboratory (1) *Robinson, Rollinger* Provides instruction and focus on practical experience and clinical problem solving in kinesiology by exploring and developing proficiency in a framework for observation, analysis, and description of human movement on the normal pathological spectrum. Credit/no-credit only.

REHAB 544 Functional Anatomy for Rehabilitation of the Extremities (4-) *Goldstein, Guthrie* Covers the functions of the musculoskeletal system as applied by professionals in the practice of clinical rehabilitation. Focuses on anatomy and of the upper and lower extremities, including associated peripheral-vascular and peripheral-nervous systems. Intended to enhance functional assessment and to improve diagnosis and treatment through greater understanding of underlying anatomy.

REHAB 545 Functional Anatomy for Rehabilitation of the Spine (-3) *Goldstein, Guthrie* Covers functions of the musculoskeletal system as applied by professionals in the

practice of clinical rehabilitation. Focuses on the anatomy of the spine, including associated vascular and nervous systems. Enhances functional assessments and the improvement of diagnosis and treatment through greater understanding of underlying anatomy.

REHAB 546 Teaching Practicum in Rehabilitation (1-3, max. 15) Integration of knowledge and skills in teaching through teaching in the classroom or presentation of a minicourse, workshop, or in-service training series. Prerequisite: permission of instructor.

REHAB 547 Biomechanics Basis of Exercise (3) *McQuade* Provides an in-depth exploration of the neuromechanical basis of exercise. Focuses on the applications of biomechanical principles to exercise, including: exercise equipment analysis; neuromuscular basis of strength, power and flexibility; and joint kinematics and stability. Prerequisite: knowledge of basic kinesiology and biomechanics or permission of instructor.

REHAB 548 Kinesiology for Rehabilitation (3) *Guthrie* Advanced study of joint motion and muscle function in relation to both the normal and abnormal state. Focuses on principles of kinesiology as they are applied to human movement and disability. Analyzes specific techniques and interventions employed in the field of rehabilitation medicine.

REHAB 550 Neuropsychology in Rehabilitation (2) *J. HOFFMAN* Examination and management of patients with brain lesions, as well as an understanding of the consequences of such conditions. Prerequisite: graduate standing in rehabilitation medicine.

REHAB 551 Neurobiology for Rehabilitation (5) *Kinney, Pradhan* In-depth analysis of human neuroanatomical structure and neurophysiological function as a basis for rehabilitation practice.

REHAB 555 P-Neuromuscular Electrodiagnosis (2.5) *Kraft* Demonstration of fundamentals of electromyography and peripheral nerve stimulation followed by participation in clinical electrodiagnosis examinations. Develops awareness of knowing when such procedures are indicated for patients and interpreting results rather than developing proficiency in performing these examinations. Prerequisite: permission of instructor.

REHAB 556 Foundations of Rehabilitation Science (3) *Johnson, Kartin, Yorkston* Overview of rehabilitation science and social constructs of disability emphasizing biopsychosocial-environmental models of the enabling-disabling process across the lifespan. Lays the philosophical and theoretical foundations for the study of rehabilitation as a science and is designed to promote interdisciplinary thinking. Prerequisite: instructor permission.

REHAB 557 Evidence-Based Rehabilitation (3) *Kartin, Yorkston* Addresses frameworks for evaluating the evidence in rehabilitation science; asking answerable questions, using advanced search strategies; critically appraising literature; understanding the systematic review process; conducting and interpreting meta-analyses; developing evidence-based practice guidelines; communicating the evidence to stakeholders; and translating evidence into rehabilitation practice. Prerequisite: permission of instructor.

REHAB 558 Rehabilitation Research Methods (3) *Johnson, Kartin, Yorkston* Provides an orientation and critical analysis of current practices in disability and rehabilitation research by appraising methodologies and strategies used to investigate consequences of human function, activity performance, and social participation. Topics include introduction to qualitative and quantitative methodologies with respect to rehabilitation research. Prerequisite: permission of instructor.

REHAB 560 Defining and Measuring Outcomes in Rehabilitation Research (3) *Amtmann* Introduces the importance, methods, and challenges of outcomes research in rehabilitation. Addresses definitions and importance of

outcomes research; behaviors measurement, functional abilities, quality of life, and consumer satisfaction; outcomes measurement for diverse populations across lifespan; research outcomes design; and challenges specific to outcomes research. Prerequisite: permission of instructor.

REHAB 561 Epidemiological and Health Services Approaches to Rehabilitation Research (3) *Ciol, Hoffman* Introduces the application of principles and methods from the fields of epidemiology and health services to rehabilitation research. Provides an overview of epidemiological research methods applicable to rehabilitation research, health services approaches, ethics, and use of research to inform disability policy. Prerequisite: permission of instructor.

REHAB 562 Neuroscience in Rehabilitation (3) *Kelly, Yorkston* Develops knowledge related to neural control of movement; movement dysfunction from neurologic pathology; and methodological approaches to investigating neural control of movement. Includes concepts in motor control; motor learning; and neural plasticity relating to movement dysfunction in people with neurologic pathology and to rehabilitation science. Prerequisite: permission of instructor.

REHAB 564 Practice Skills for Occupational Therapy (1, max. 3) *J. PITONYAK* Provides an introduction to physical assessments and interventions with a focus on physical management of clients, management of medical and adaptive equipment, splint fabrication, and maintenance of therapist and client safety. The therapeutic skills covered serve as a foundation for more advanced technical and professional competencies in subsequent courses and field-work. Credit/no-credit only. Offered: AWSp.

REHAB 566 Special Topics in Rehabilitation (1-9, max. 14) Philosophy and concepts in the interdisciplinary rehabilitation of persons with major disabilities, including advanced content in the rehabilitation theory and process of selected categories.

REHAB 567 Practicum in Rehabilitation (1-12, max. 24) Specialized practicum experience in environment providing rehabilitation services. Practicum arrangements and permission by instructor.

REHAB 568 Biophysics as Applied to Physical Medicine (2) *Esselman* Propagation and absorption characteristics of physical forms of energy used for treatment in physical medicine. Physiologic effects basic to prescription of the physical therapy modalities. Prerequisite: resident standing in rehabilitation medicine; others by permission of instructor.

REHAB 569 Prosthetics and Orthotics for Physical Therapists (2) Introduces the principles and designs of orthoses and prostheses, using a clinical problem-solving approach to determine functional deficits to create joint rehabilitation goals between physical therapy and prosthetics and orthotics in regards to the prosthesis and orthosis. Emphasizes team medicine and collaboration in rehabilitation.

REHAB 570 Foundations of Occupational Therapy (5) *Powell* An overview of the practice of occupational therapy, emphasizing the role of occupational performance in context, frames of reference, clinical reasoning, and purposeful activity. Introduces the diversity of occupational therapy practice environments through didactic and clinical experiences.

REHAB 571 Occupational Performance through the Life Span (4) Overview of human development as it relates to occupational performance and functional adaptation in the ages and stages of life from infancy through old-old age. Emphasis on environmental influences, activity, and occupational roles, tasks, and component behaviors as they relate to individuals in different ages and stages.

REHAB 572 Occupational Therapy Theory and Practice in Psychosocial Dysfunction I (1-7, max. 7) *Fogelberg* An overview of bodies of knowledge in psychosocial practice as related to occupational performance. Learning topics

include major frames of reference, effects of psychosocial disorders on occupational performance (life activities), and occupational therapy evaluation and intervention skills. Lectures, reading, class discussions, role-playing, problem-based learning, and fieldwork comprise the learning experiences.

REHAB 574 Occupational Therapy Theory and Practice in Physical Disabilities I (6) Provides theoretical bases and clinical practice skills used in evaluation and intervention of occupational performance (life activities). Focus is on individuals with sensorimotor (physical) and/or cognitive impairments. Practical applications of theory occur through lecture, laboratory, and problem-based learning approaches.

REHAB 575 Occupational Therapy Theory and Practice in Physical Disabilities II (5) *Powell* Provides theoretical bases and clinical practice skills used in evaluation and intervention of occupational performance (life activities). Focus is on individuals with sensorimotor (physical) and/or cognitive impairments. Practical applications of theory occur through lecture, laboratory, and problem-based learning approaches.

REHAB 576 Occupational Therapy Theory and Practice in Pediatrics (1-7, max. 7) *T. JIRI-KOWIC, J. PITONYAK* Provides knowledge and skills necessary for providing occupational therapy evaluation, intervention, and transition services focused on occupational performance (life activities) for children and teens with disabilities and their families.

REHAB 577 Occupational Therapy Theory and Practice in Geriatrics (5) *Powell* Occupational therapy evaluation and intervention with older adults. Covers psychology, physiology, and socio-demographics of aging. Emphasis on interaction skills with the elderly and occupational performance (life activities). Laboratory experiences and fieldwork in the practice setting enhance didactic coursework.

REHAB 578 Occupational Performance Analysis (3) *Rollinger* Skills in the analysis, adaptation, and sequencing of therapeutic and functional activities as they apply to occupational performance. Analysis focuses on performance components (sensorimotor, cognitive, psychosocial, psychological), temporal aspects (chronological, developmental), and environmental aspects (physical, social, cultural).

REHAB 579 Therapeutic Communication (3) Introduces basic principles and skills of effective interpersonal communication in dyadic interactions and in groups. Emphasis on effective listening, interviewing, and principles and concepts of occupational therapy groups. Lectures, readings, class discussions, role playing, and in-class exercises comprise the learning experiences.

REHAB 580 Introduction to Research in Rehabilitation (3) Evaluation of rehabilitation research literature and design of research studies relevant to rehabilitation.

REHAB 581 Application of Measurement Systems (3) *Jirikowic* Provides basis for critically evaluating and using tests and measurements in occupational therapy evaluation. Focus on reliability, validity, norms, test development process, statistics relevant to tests and measurement, and ethical implications of testing. Critical evaluation of selected standardized test used in occupational therapy.

REHAB 582 Assistive Technology in Rehabilitation (3) *T. JIRIKOWIC* Overview of the field of assistive technology as it impacts occupational performance in self-care, work, and leisure activities. Covers interface devices, computer applications, environmental controls, augmentative communications, power mobility, seating and positioning systems, and sensory enhancements.

REHAB 583 Exploring Disability (1) Explores multiple aspects of disability including social, mental, physical, and financial factors. Provides skills for working with people with disabilities and exposure to a multidisciplinary team approach to overcoming healthcare barriers. Utilizes inter-

active didactic with patient participation and introduction to community resources for people with disabilities.

REHAB 585 Leadership and Management in Occupational Therapy (5) *T. MROZ* Focuses on occupational therapy leadership and management in healthcare delivery systems. Includes theoretical and professional competencies focuses on healthcare access, health policy laws, service delivery settings, reimbursement, regulation, political advocacy. Management topics include leadership, program planning, budgeting, personnel, and outcome measurement.

REHAB 588 Fieldwork II Seminar (1) *Rollinger* Supports a successful transition from academic work to the full-time Fieldwork II clinical experiences by reinforcing the integration and application of acquired technical and professional competencies needed for REHAB 594, Fieldwork II. Credit/no-credit only. Offered: Sp.

REHAB 591 Graduate Project (1-4, max. 10) Graduate project focuses on practice, administration, education, policy, research, or other scholarly or creative work. Required of entry-level occupational therapy students.

REHAB 592 Principles of Orthotic Use in Rehabilitation (2) *Crane* General principles and clinical applications of orthoses in patient management, with exposure to research issues in orthotic design.

REHAB 593 Principles of Prosthetic Use in Rehabilitation (2) *Morgenroth* General principles of prevention of amputation, prosthetic design, biomechanics, and clinical applications of upper and lower extremity prostheses.

REHAB 594 Clinical Fieldwork in Occupational Therapy (10, max. 30) *Rollinger* 12-week, full-time fieldwork, delivering occupational therapy services to clients focusing on application of meaningful occupation under direct supervision. Exposure to varied clients across the lifespan and in various settings reflective of current practice. Students must complete a minimum of two 12-week placements. Credit/no-credit only.

REHAB 595 Clinical Affiliation in Physical Therapy ([2-10], max. 30) *Robinson* Clinical practice of physical therapy techniques under supervision in community-based clinics. Credit/no-credit only.

REHAB 596 Electromyography and Clinical Neurophysiology (4) *Kraft* Didactic course covering electromyography and clinical neurophysiology. First part covers basic neurophysiology and second covers electromyography, nerve conduction studies, somatosensory-evoked potentials, residual- and auditory-evoked potentials, single fiber EMG, late response, quantitative analysis, and macro EMG. Prerequisite: resident standing in rehabilitation medicine; others by permission of instructor.

REHAB 597 Electromyography and Electrodiagnosis Laboratory (1-) *Kraft* Elective work in clinical electromyography and other electrodiagnostic methods. Prerequisite: resident standing in rehabilitation medicine; others by permission of instructor. Credit/no-credit only.

REHAB 598 Electromyography and Electrodiagnosis Laboratory (-1) *Kraft* Elective work in clinical electromyography and other electrodiagnostic methods. Prerequisite: resident standing in rehabilitation medicine; others by permission of instructor. Credit/no-credit only.

REHAB 599 Electromyography and Electrodiagnosis Laboratory (-1) *Kraft* Elective work in clinical electromyography and other electrodiagnostic methods. Prerequisite: resident standing in rehabilitation medicine; others by permission of instructor. Credit/no-credit only.

REHAB 600 Independent Study or Research (*-) Credit/no-credit only.

REHAB 684 Rehabilitation Elective - Boise, ID (8) Students work directly with the physician, seeing a variety of patients with musculoskeletal diagnoses as outlined in the objectives for the course, as well as working as a member of a multi-disciplinary rehab team. They also observe procedures such as EMGs, nerve conduction studies, and

a variety of peripheral and central injections. Students participate in care of injured workers and their return to work. (Four weeks).

REHAB 685 P-Chronic Disease and Disability (4) *McNalley* Structured clinical experience on rehabilitation medicine services. Differences between acute and chronic medicine, identification of disability problems, and therapeutic techniques for re-moving disability. Hospitals are within University system, local area, and WWAMI area. Pre-requisite: third-year medical student standing.

REHAB 686 P-Rehabilitation Medicine Clerkship - Pediatrics (8/12) *McNalley* Incorporates material of REHAB 685 and expands into disabling pediatric disease. School planning, family counseling, community support services included. Four- or six-week package permits inpatient, outpatient, and consultation experience. Recommended for students contemplating pediatrics. Prerequisite: third-year medical student standing.

REHAB 687 P-Rehabilitation Medicine Clerkship (8/12) *McNalley* Incorporates material of REHAB 685 and expands into disability problems. Four- or six-week package permits inpatient, outpatient, and consultation experience. Recommended for careers in family medicine, internal medicine, rheumatology, cardiology, neurology, geriatrics, orthopedic surgery, neurosurgery, and cardiovascular surgery. Prerequisite: third-year medical student standing.

REHAB 689 P-Spinal Cord Injury (8/12) *McNalley* Introduction to diagnosis, management, rehabilitation of patients with spinal-cord injuries. Interaction with rehabilitation team, psychiatrists, and subspecialists in urology, neurosurgery, and plastic surgery. Performance at subintern level expected. Veterans' Administration Medical Center only. Prerequisite: MED 665, SURG 665.

REHAB 697 P-Rehabilitation Medicine Special Elective (*, max. 24) *McNalley* Equivalent to REHAB 686, REHAB 687, or REHAB 688. Student arranges with another university, using the "special assignment form." Students qualify after review, similar experience at another university. Prerequisite: permission of instructor.

REHAB 699 P-WWAMI Rehabilitation Medicine Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department.

REHAB 700 Master's Thesis (*-) Credit/no-credit only.

REHAB 800 Doctoral Dissertation in (*-) Offered: AWSpS.

REHAB 801 Practice Doctorate Project/Capstone ([1-4], max. 12) Credit/no-credit only. Offered: AWSpS.

Prosthetics and Orthotics

RHB PO 501 Prosthetics and Orthotics Skills (1) Emphasizes the development of psychomotor skills for the application of contemporary technology uses. Practice and discussion of material and design theories related to durability, weight, and ease of fabrication to encourage problem-solving skills for independent practice. Credit/no-credit only. Offered: A.

RHB PO 502 Professional and Practice Issues (1) Provides an overview of professional and practice issues in prosthetics and orthotics. Includes discussion of healthcare, policy, and systems; introduction to reimbursement, Medicare and Medicaid rules and regulations; practice management; bioethics; professional organizations; legislative issues; and medical ethics and compliance. Offered: Sp.

RHB PO 511 Upper Limb Prosthetics I (4) Covers upper limb prosthetics providing students with background knowledge of rehabilitation planning and principles of below elbow prosthetic management and prescription consideration. With direct patient contact, students assess and then formulate, implement, and evaluate a prosthetic treatment plan. Offered: A.

RHB PO 512 Upper Limb Prosthetics II (4) Integrates principles from upper limb prosthetics I, focusing on above-elbow prosthetic management. Encourages critical thinking and appropriate clinical decision-making through discussions and case study exercises that include body-powered, externally-powered, and hybrid systems. Offered: Sp.

RHB PO 515 Upper Limb Orthotics (3) Focuses on the integration of information acquired in previous foundational courses in anatomy and patient evaluation procedures with knowledge and skills of orthotic principles and theories related to upper limb orthotic interventions and patient management.

RHB PO 521 Lower Limb Prosthetics and Orthotics I: Theory and Application (5) Integrates prior core foundational knowledge (anatomy, kinesiology, medical science, gait analysis, patient evaluation procedures, and functional skills) with new knowledge of prosthetic and orthotic theory, patient evaluation, and clinical practice. Analyzes, evaluates, and synthesizes principles and theories in developing intervention plans for individuals with lower limb dysfunction or amputation. Offered: S.

RHB PO 522 Lower Limb Prosthetics I: Clinical Practice (4) Explains and applies biomechanical principles of prosthetic gait and alignment to treatment of individuals with amputations below the knee. Students develop individualized treatment plans that demonstrate analysis of client needs, application of transtibial socket design, prescription principles, and components. Integrates knowledge of available research and protocols into the planning process. Offered: S.

RHB PO 523 Lower Limb Orthotics I: Clinical Practice (4) Utilizes patient evaluation skills and applies knowledge of pathology, anatomy, biomechanics, and orthotic theory and principles to evaluate and provide orthotic treatment plans for individuals with lower extremity dysfunction. Students refine professional skills and behavior and develop psychomotor and cognitive skills required for patient care. Offered: S.

RHB PO 524 Lower Limb Prosthetics and Orthotics II: Theory and Application (5) Integrates prior foundational knowledge acquired in RHB PO 521 with new knowledge and skills of prosthetic and orthotic theory and practice. Students actively analyze, evaluate, and synthesize principles and theories in the development of prosthetics/orthotics intervention plans for individuals with lower limb dysfunction or amputation. Prerequisite: RHB PO 521. Offered: A.

RHB PO 525 Lower Limb Prosthetics II: Clinical Practice (4) Includes advanced instruction in concepts and skills developed in Lower Limb Prosthetics I. Offered: A.

RHB PO 526 Lower Limb Orthotics II: Clinical Practice (3) Utilizes patient evaluation skills and applies knowledge of pathology, anatomy, biomechanics, and orthotic theory and principles to evaluate, develop, and provide orthotic treatment plans for individuals with lower extremity dysfunction. Students refine professional skills and behavior and develop psychomotor and cognitive skills required for patient care. Offered: A.

RHB PO 527 Pediatric Prosthetics and Orthotics (2) Focuses on the integration of information from previous coursework focusing on specific pediatric medical conditions and interventions. Includes discussion of pathology/pathophysiology, etiology, clinical presentation, natural history, and surgical and medical management. Discusses implications of various medical interventions and their functional considerations based on the available literature. Offered: ASp.

RHB PO 528 Lower Limb Prosthetics III: Theory and Application (5) Develops individualized prosthetic treatment plans based on a comprehensive knowledge of prosthetic gait, alignment, transfemoral socket design, and component principles. Develops support treatment plans by in-

tegrating knowledge of available research and treatment protocols into the decision-making process. Offered: W.

RHB PO 529 Lower Limb Prosthetics III: Clinical Practice (6) Advanced instruction in application of biomechanical principles of prosthetic gait and alignment to treatment of individuals with amputations above the knee. Includes obtaining histories, assessing physical function, and taking residual limb impressions and measurements to prove prosthetic care. Offered: W.

RHB PO 530 Lower Limb Orthotics III: Theory and Application (4) Integrates knowledge and competencies from prior courses with new knowledge of orthotics management of the lower limb involving the knee and hip. Students acquire knowledge of components and design options for dysfunction of the hip and knee. Offered: WSp.

RHB PO 531 Lower Limb Orthotics III: Clinical Practice (4) Integrates prior knowledge of design principles, material science, and fabrication process; acquires knowledge of components and design options; and analyzes efficacy of orthotic treatment plans in achieving desired biomechanical goals and outcomes. Offered: WSp.

RHB PO 532 Spinal Orthotics (5) *Yamane* Integrates competencies gained from core foundational courses with additional theories and principles of orthotic management of spinal pathologies including scoliosis, trauma, and congenital and degenerative etiologies. Offered: Sp.

RHB PO 533 Spinal Orthotics I (2) Integrates prior knowledge (anatomy, physiology, patient evaluation skills) obtained in the foundational courses with knowledge and skills of orthotic theory and practice related to trauma and degenerative etiologies. Learning is achieved through lectures, discussion, and laboratory experiences. Offered: AWSp.

RHB PO 534 Spinal Orthotics II (3) Integrate prior knowledge of anatomy, physiology, and clinical evaluation with knowledge and skills of orthotic theory and practice related to scoliosis and kyphosis. Learning is achieved through lectures, discussion, and laboratory experiences.

RHB PO 541 Engineering Concepts (2) Solves problems based on principles of mechanics, strength of materials, force analyses, and fatigue that are related to prosthetic and orthotic design. Applies basic science to component failure. Discusses fiber reinforced materials, thermoforming plastics and hydraulic knee units. Offered: Sp.

RHB PO 561 Clinical Rotation I (2) Students actively observe patient care, perform patient histories and evaluation procedures, and develop clinical patient care psychomotor skills under the guidance and mentorship of clinical preceptors. Offered: S.

RHB PO 562 Clinical Rotation II (1) Students actively observe patient care, perform patient histories and evaluation procedures, and develop clinical patient care psychomotor skills under the guidance and mentorship of clinical preceptors. Offered: A.

RHB PO 563 Clinical Rotation III (1) Students actively participate in the provision of prosthetics and orthotics treatment services and develop clinical patient care skills under the mentorship of clinical preceptors. Offered: W.

RHB PO 564 Clinical Rotation IV (1) Students actively participate in the provision of prosthetics and orthotics treatment services and refine clinical patient care, decision-making, and problem-solving skills under the mentorship of clinical preceptors. Offered: Sp.

RHB PO 581 Outcome Measures for the Prosthetics and Orthotics Clinic (2) Examines development and use of health-related outcome measures. Focuses on the relationship between measurement constructs and patient populations as well as psychometric properties. Students select, implement, and critically evaluate patient outcome measures. Offered: Sp.

RHB PO 582 Critical Evaluation of the Prosthetics and Orthotics Literature (1) Examines and applies appropriate

methods of analyzing prosthetics/orthotics literature. Offered: A.

RHB PO 583 Evidence Based Practice I (3) Focuses on the use and critical evaluation of evidence to answer clinical problems. Encourages students to become consumer of evidence by developing an understanding of how to acquire and incorporate evidence into routine clinical practice. Offered: W.

RHB PO 584 Evidence Based Practice II (3) Covers developing a treatment plan based on theory, evidence, and experience; and proposing a quantitative and qualitative assessment strategy to evaluate the developed treatment. Encourages students to become consumers of evidence to answer clinically relevant questions. Offered: Sp.

Surgery

BB487 University of Washington Medical Center

The Department of Surgery carries out instruction during all four years of School of Medicine attendance. The third-year six-week clerkship constitutes the core of student exposure to general surgery and is required of all students. The fourth-year emergency-room clerkship is also a required part of the curriculum. The department offers a variety of fourth-year elective clerkships in a number of the specialty aspects of the department's clinical activities, including but not limited to trauma, cardiothoracic surgery, plastic surgery, vascular surgery, transplantation, surgical critical care, pediatric surgery, and the management of burn patients.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

SURG 498 Undergraduate Thesis (*, max. 35) Offered to those students who have engaged in undergraduate research in general surgery. (Full- or part-time.)

SURG 499 Undergraduate Research (*, max. 35) Provides an opportunity to participate in ongoing research projects or carry out an independent research project under supervision of Department of Surgery faculty. Practical experience in experimental design and execution is provided under direct supervision of selected faculty members. (Full- or part-time.)

SURG 505 P-Preceptorship in Surgery (1, max. 12) Opportunity for first- and second-year medical students to gain personal experience with clinical faculty members in the community. Students observe general aspects of private practice, including clinical problems seen; practice limitation; doctor-doctor, doctor-patient, and doctor-nurse relationships in the office and hospital. Prerequisite: permission of department.

SURG 600 Independent Study or Research (*-)

SURG 602 P-Clinical Clerkship - Coeur D'Alene, ID (*, max. 24) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms.

SURG 603 P-Clinical Clerkship - Spokane VAMC (*, max. 24) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating room.

SURG 604 P-Clinical Clerkship - Bozeman, MT (*, max. 24) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms.

SURG 605 P-Clinical Clerkship - Swedish Medical Center (12) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms.

SURG 606 P-Clinical Clerkship - Anchorage, AK (12) Diagnosis and management of surgical problems. Physiological basis of surgical care, differential diagnosis and decision-making, and basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery.

SURG 630 P-WRITE Surgery Clinical Clerkship (*, max. 24) Basic clinical clerkship for students enrolled in the WRITE Program. Prerequisite: completion of basic curriculum; third- and fourth-year students; acceptance in the WRITE program.

SURG 642 P-Rural Surgery Clerkship - Pullman, WA (8) Designed to supplement basics learned in surgery required clerkship. Excellent opportunity to participate in general surgery and various other subspecialties in a smaller city. Highly suggested for student entering primary care. Prerequisite: required surgery clerkship; medicine clerkship.

SURG 644 P-Rural Surgery Clerkship - Lewiston, ID (8) Designed to supplement basics learned in surgery required clerkship. Excellent opportunity to participate in general surgery and various other subspecialties in a smaller city. Highly suggested for student entering primary care. Prerequisite: required surgery clerkship; medicine clerkship.

SURG 646 P-Rural Surgery Clerkship - Gillette (8) Designed to supplement basics learned in surgery required clerkship. Provides an excellent opportunity to participate in general surgery and various other subspecialties in a smaller city. Recommended for students entering primary care. Prerequisite: surgery clerkship; medicine clerkship; permission of the department.

SURG 647 P-Rural Surgery Clerkship - Powell (8) Designed to supplement basics learned in SURG 665. Opportunity to participate in general surgery and various other subspecialties in a smaller city. Recommended for students entering primary care. Prerequisite: surgery required clerkship and permission of department.

SURG 648 P-Rural Surgery Clerkship - Libby (8) Designed to supplement basics learned in SURG 665. Opportunity to participate in general surgery and various other subspecialties in a smaller city. Recommended for students entering primary care. Prerequisite: surgery required clerkship and permission of department.

SURG 649 P-Rural Surgery Clerkship - Lewistown (8) Designed to supplement basics learned in SURG 665. Opportunity to participate in general surgery and various other subspecialties in a smaller city. Recommended for students entering primary care. Prerequisite: surgery required clerkship and permission of department.

SURG 650 P-Rural Surgery Clerkship - Twin Falls (8) Designed to supplement basics learned in SURG 665. Opportunity to participate in general surgery and various other subspecialties in a smaller city. Recommended for students entering primary care. Prerequisite: surgery required clerkship and permission of department.

SURG 651 P-Community Surgery Clerkship - Rock Springs, WY (8) Designed to supplement basics learned in Surgery 665. Excellent opportunity to participate in general surgery and various other subspecialties in a smaller city. Encouraged for students entering primary care. Prerequisite: completed required Surgery and Medicine clerkships.

SURG 652 P-Plastic Surgery - Spokane (8) Introduces fundamental techniques and enhances knowledge of plastic surgery, wounds, trauma, burns, cancers, and pediatric and adult cosmetic and reconstructive surgery. Participate in all surgery-related activities. Prerequisite: surgery and medicine required clerkships.

SURG 653 P-Pediatric Surgery - Spokane (8) Student functions as a subintern directly assisting on the services and is an integral part of the team. Prerequisite: surgery required clerkship.

SURG 654 P-Cardiothoracic Surgery - Spokane (4-8) The student functions as a subintern and directly assists on the service and is an integral part of the team. Prerequisite: surgery required clerkship.

SURG 656 P-Trauma/Acute Care Surgery - Boise (8) The student functions as a subintern and directly assists on the service and is an integral part of the team at St. Alphonsus Trauma Services. (Four weeks).

SURG 657 P-Vascular Surgery - Spokane (4/8) Student spends two or four weeks at the Vascular Institute in Spokane. The student functions as a subintern and directly assists on the service and is an integral part of the team.

SURG 658 P-Ambulatory Surgery Clerkship - Mary Bridge (4) Rotation focuses on increasing the student's ability as a primary care physician to recognize and form an initial plan of management for common surgical problems seen in the outpatient setting. Offered: AWSpS.

SURG 659 P-Ambulatory Surgery Clerkship - Madigan (4-8, max. 12) Rotation focuses on increasing the student's ability as a primary care physician to recognize and form an initial plan of management for common surgical problems seen in the outpatient setting. Offered: AWSpS.

SURG 660 P-Ambulatory Surgery Clerkship - Group Health (4) Rotation focuses on increasing the student's ability as a primary care physician to recognize and form an initial plan of management for common surgical problems seen in the outpatient setting. Offered: AWSpS.

SURG 661 P-Surgical Intensive Care Unit Sub-Internship - VA (8) Designed to augment experience gained in SURG 665. Excellent opportunity to participate in the management of critically ill patients under the close supervision of the staff/house staff. Recommended for students entering surgery or primary care. Prerequisite: surgery required clerkship.

SURG 662 P-Community Surgery Clerkship - Longview (8) Designed to supplement basics learned in SURG 665. Excellent opportunity to participate in general, thoracic, vascular, and plastic surgery in a group practice in a smaller city. Recommended for students entering primary care. Prerequisite: surgery required clerkship and permission of department.

SURG 663 P-Subinternship in General Surgery - Virginia Mason (*, max. 16) Diagnosis, preoperative care, and postoperative care; management of surgical emergencies, the ICU patient, and outpatient follow-up of discharged patients. Students function at the intern level under close supervision of the staff and house staff. Prerequisite: surgery required clerkship.

SURG 664 P-Subinternship in General Surgery - VAMC (*, max. 16) Diagnosis, preoperative care, and postoperative care; management of surgical emergencies, the ICU patient, and outpatient follow-up of discharged patients. Students function at the intern level under close supervision of the staff and house staff. Prerequisite: surgery required clerkship.

SURG 665 P-Clinical Clerkship - UWMC (*, max. 24) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms.

SURG 666 P-Clinical Clerkship - Boise (12) Diagnosis and management of surgical problems. Physiological basis of surgical care, differential diagnosis and decision making, and basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery.

SURG 667 P-Clinical Clerkship - Spokane (12) Diagnosis and management of surgical problems. Physiological basis of surgical care, differential diagnosis and decision-making, and basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery.

SURG 668 P-Clinical Clerkship - Casper (12) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery.

SURG 669 P-Clinical Clerkship - Billings (12) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery.

SURG 670 P-Clinical Clerkship - Missoula (12) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery.

SURG 671 P-Clinical Clerkship - Madigan (12) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision-making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery.

SURG 672 P-Clinical Clerkship - HMC (*, max. 12) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery. Prerequisite: HUBIO 563.

SURG 673 P-Clinical Clerkship - VA (*, max. 12) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery. Prerequisite: HUBIO 563.

SURG 674 P-Clinical Clerkship - Virginia Mason (*, max. 12) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery. Prerequisite: HUBIO 563.

SURG 675 P-Clinical Clerkship - Caldwell, ID (*, max. 12) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms.

SURG 677 P-Clinical Clerkship - Sheridan, WY (*, max. 12) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic

principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms.

SURG 678 P-Clinical Clerkship - Kalispell, MT (12) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms.

SURG 679 P-Clinical Clerkship - Wenatchee, WA (12) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms.

SURG 681 P-Peripheral Vascular Disease (4/8, max. 8) Peripheral arterial and venous problems, including methods of clinical evaluation; new diagnostic procedures; and the available methods of treatment. Patient workup, performance of diagnostic studies, and presentation of case material to the staff. Prerequisite: surgery required clerkship.

SURG 682 P-Clinical Burn Care (*, max. 12) Offered on the burn unit of Harborview Medical Center. Exposure to the care of patients with thermal injury, including management of severe metabolic and septic problems and opportunity to participate in surgical procedures. Exposure to plastic and reconstructive surgery. Prerequisite: surgery required clerkship.

SURG 683 P-Pediatric Surgery Externship (8/12) Surgical conditions peculiar to the particular age group with a preponderance of congenital and neoplastic conditions that are amenable to surgical treatment. Prerequisite: surgery required clerkship.

SURG 685 P-Cardiothoracic Surgery Externship (*, max. 12) Serve as subintern, participate in patient care while learning cardiopulmonary hemodynamics of cardiac and thoracic surgery. Observe a wide variety of both cardiac and thoracic disease entities. Participate in the open-heart procedures in the operating room. Opportunity to gain additional understanding of physiology of cardiopulmonary bypass.

SURG 686 P-Plastic Surgery Clerkship and Preceptorship (*, max. 12) Introduces fundamental techniques and enhances knowledge of plastic surgery, wounds, trauma, burns, cancers, and pediatric and adult cosmetic and reconstructive surgery. Participate in all surgery-related activities. Prerequisite: surgery and medicine required clerkships.

SURG 687 P-Transplantation Surgery Clerkship (8) Clerkship is in the University regional multi-organ transplantation center. Student participates fully in the care of all transplant patients, on twice daily multidisciplinary rounds, in pre-operative conference, and in the operating room and on the donor harvest team. Weekly didactic teaching sessions. Prerequisite: surgery and medicine required clerkships.

SURG 688 P-Subinternship in General Surgery (*, max. 12) Offered on the general surgery wards of the University-affiliated hospitals. Diagnosis, preoperative care, and postoperative care; management of surgical emergencies, the ICU patient, and outpatient follow-up of discharged patients. Students function at the intern level under close supervision of the staff and house staff. Prerequisite: surgery required clerkship.

SURG 689 P-Community Surgery Clerkship - Coeur d'Alene (8) Designed to supplement basics learned in SURG 665. Excellent opportunity to participate in general, thoracic, vascular, and plastic surgery in a group practice in a smaller city. Recommended for students entering primary care. Prerequisite: SURG 665 and permission of department.

SURG 690 P-Alaska Native Medical Center Surgery Sub-Internship (8/12) Designed to supplement basics learned in SURG 665. Excellent opportunity to participate in gen-

eral, thoracic, vascular, and plastic surgery in a specialized population of patients. Recommended for students entering primary care. Prerequisite: SURG 665 and permission of department.

SURG 691 P-Surgical Intensive Care Unit Sub-Internship - HMC (8) Designed to augment experience gained in SURG 665. Excellent opportunity to participate in the management of critically ill patients under the close supervision of the staff/house staff. Recommended for students entering surgery or primary care. Prerequisite: surgery required clerkship.

SURG 692 P-Ambulatory Surgery Clerkship - Seattle Children's (4) Rotation focuses on increasing the student's ability as a primary care physician to recognize and form an initial plan of management for common surgical problems seen in the outpatient setting. Offered: AWSpS.

SURG 693 P-Rural Surgery Clerkship - Buffalo (8) Designed to supplement basics learned in SURG 665. Opportunity to participate in general surgery and various other subspecialties in a smaller city. Recommended for students entering primary care. Prerequisite: surgery required clerkship and permission of department.

SURG 694 P-Rural Surgery Clerkship - Riverton (8) Designed to supplement basics learned in SURG 665. Opportunity to participate in general surgery and various other subspecialties in a smaller city. Recommended for students entering primary care. Prerequisite: surgery required clerkship and permission of department.

SURG 695 P-Vascular Thoracic Surgery (8/12) The student spends two weeks on the vascular and two weeks on the thoracic surgery services at Harborview Medical Center. The student functions as a subintern and directly helps the residents manage all patients on the service and is an integral part of the OR team.

SURG 696 P-Breast Surgery - Spokane (4/8) Two or four weeks at the Breast Center in Spokane. Student functions as a subintern directly assisting on the service and is an integral part of the team.

SURG 697 P-Surgery Special Electives (*, max. 24) Special clerkship, externship, or research opportunities may be available at institutions other than the University of Washington. Prospective students obtain from the dean's office a special assignment form at least one month before pre-registration. Prerequisite: surgery required clerkship and permission of department.

SURG 698 P-Clinical Clerkship - Fairbanks (*, max. 24) Includes the diagnosis and management of surgical problems. Focuses on the physiological basis of surgical care, differential diagnosis and decision making, and basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery.

SURG 699 P-WWAMI Surgery Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions, other than the University of Washington, located within the WWAMI region. Prerequisite: permission of department.

Urology

BB1115 Health Sciences

Urology is the surgical discipline concerned with diseases of the urinary tract in males and females, and the genital system in the male. The science is broadly based: major areas of practical and investigative concern include congenital defects, cancer, renal diseases, reproductive biology, neuropathology, renal stone formation, and transplantation.

Clinically the field encompasses a large variety of technical skills including real-time imaging and manipulation, endoscopy, laparoscopy and robotics, and open surgery. Medical diagnosis and treatment are a large part of the discipline.

The department is actively involved in patient care, instruction, and research concerning the problems of urology. Training for medical students starts in the second year and continues through the third and fourth years. Training is also provided for residents, fellows, nurses, and applied specialists. The department is responsible for a fully approved urology residency program. Contact the Urology Clerkship Coordinator at (206) 731-3205 for further information.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

UROL 498 Undergraduate Thesis (*, max. 35) Provides an opportunity for medical students to write in the area of urology.

UROL 499 Undergraduate Research (*, max. 35) The student participates in current urologic research projects under supervision of full-time staff. Certain specific problems may be elected by the student. Elective for medical students.

UROL 501 P-Urology Preceptorship (1, max. 12) Individual experiences with one or more of the full-time department faculty members covering research, teaching, and patient care. Students observe activities in the clinic, hospital ward, operating room, and research laboratories. Prerequisite: first- or second-year medical student standing; permission of instructor.

UROL 675 P-Urology Preceptorship (*, max. 8) Student follows a private practice preceptor in all of his or her work. Becomes acquainted with the office management of urological problems. (Two or four weeks). Prerequisite: UROL 680, HUBIO 562.

UROL 679 P-Urology Clerkship - Boise VA (*, max. 8) Two or four week rotation. Full activities of clinical service. Emphasizes basic principles of urology. Prerequisite: HUBIO 562.

UROL 680 P-Urology Clerkship (*, max. 8) *Dalkin, Grady, Krieger, Lendvay, Porter, Voelzke, Wessells, Yang* Full activities of clinical service. Basic principles of urology emphasized. (Two or four weeks). Prerequisite: HUBIO 562.

UROL 681 P-Female Urology (4) *J. Miller* Observation of cases of lower urinary tract disorders specific to women, emphasizing behavioral management and multidisciplinary care. Ninety-five percent of cases observed are women. Not intended as the only exposure to urology for students considering urology as career choice. Prerequisite: third- or fourth-year standing and permission of instructor.

UROL 682 P-Urology Clerkship - Spokane (8) Full activities of clinical service. Basic principles of urology emphasized. (Two or four weeks). Prerequisite: HUBIO 562.

UROL 683 P-Urology Clerkship - Boise (*, max. 8) Full activities of clinical service. Basic principles of urology emphasized. (Two or four weeks). Prerequisite: HUBIO 562.

UROL 684 P-Urology Clerkship - Billings (*, max. 8) Two or four week rotation. Includes full activities of clinical service. Emphasizes basic principles of urology. Prerequisite: HUBIO 562.

UROL 685 P-Urology Sub-Internship (*, max. 12) *Dalkin, Grady, Krieger, Lendvay, Porter, Voelzke, Wessells, Yang* Subintern is responsible for patient workups and for pre-operative and postoperative care and participates in the operating room. Prerequisite: MED 665 or pediatrics basic clerkship, or permission of instructor.

UROL 690 P-Urology Specialties (*, max. 8) For those who wish further exposure to a specific aspect of urology. Stu-

dents spend time with one attending at University of Washington Medical Center, Harborview Medical Center, Seattle Children's Hospital, or Veterans' Administration Hospital studying oncology, infections, infertility, stone disease, impotence, or other aspects of urology. Prerequisite: UROL 680 and permission of instructor.

UROL 697 P-Urology Special Electives (*, max. 24) Special clerkship, externship, or research opportunities may be available at institutions other than the University of Washington. Prospective students obtain from the dean's office a special assignment form at least one month before pre-registration. Prerequisite: permission of instructor.

UROL 699 P-WWAMI Urology Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions, other than the University of Washington, located within the WWAMI region. Prerequisite: permission of department.

School of Nursing

T301 Health Sciences

Dean

Azita Emami

Associate Deans

Joie Whitney, Associate Dean for Research

Maggie Baker, Associate Dean for Academic Affairs

Nurse professionals are members of interdisciplinary teams in clinics, hospitals, and community settings, and work with people of all ages, cultural backgrounds, and lifestyles to help them achieve the highest level of wellness possible. Nurse practitioners fill critical healthcare needs in both urban and rural settings, often for portions of the population who have not received adequate healthcare. Nurse scientists conduct important research about a variety of health problems and how best to promote health, prevent disease, and care for people who are ill. Nurses also teach in colleges and universities throughout the world.

UNDERGRADUATE PROGRAM

Adviser

T301 Health Sciences, Box 357260

(206) 543-8736

sonas@uw.edu

The School of Nursing offers the following programs of study:

- Bachelor of Science in Nursing degree with eligibility to take the licensure examination to become a registered nurse.
- An accelerated Bachelor of Science in Nursing option for candidates with an existing bachelor's degree. This option provides eligibility to take the licensure examination to become a registered nurse.
- A four-quarter modification of the basic curriculum is available for the registered nurse. This BSN Completion (RN to BSN) program is available at UW Bothell and UW Tacoma, and prepares graduates go on for advanced degrees in nursing.

Bachelor of Science in Nursing

Suggested First- and Second-Year College Courses: See below, under Admission Requirements.

Admission Requirements

Admission to the nursing major occurs once a year, for autumn quarter, with an application deadline of January 15. Selection is competitive.

Application Requirements

1. Cumulative 2.00 GPA or higher
2. To be considered for admission, applicants must satisfy one of the following requirements at time of application.
 - a. Three out of the total prerequisite science courses completed with a minimum 3.00 GPA.
 - b. Four out of the total prerequisite science courses with a minimum 2.80 GPA.
3. The science prerequisite courses are CHEM 120, CHEM 220, CHEM 221 (three-quarter chemistry series for UW students, two quarter sequence - one general chemistry and one organic - for non-UW applicants); BIOL 118,

BIOL 119; B STR 301; MICROM 301 (plus MICROM 302 for UW students; non-UW applicants must take a separate microbiology laboratory if laboratory is not included in the general microbiology course); NUTR 300.

Together with the application and college transcript(s), applicants submit a personal statement; a resume outlining volunteer/paid health-care experience, community service, and cultural awareness; and a recommendation from a health care provider (employer or volunteer coordinator).

4. Applicants are expected to have 100 hours of health care experience in a paid or volunteer position in one setting for three months or more, completed within 12 months preceding submission of the application. The majority of applicants present health care experiences of several hundred hours for nine months or more.
5. After an initial review of all applications, some applicants are asked to attend a proctored essay session. The proctored essay dates are published in the admissions publication. Eligible applicants are invited via email.

Entrance Requirements

Prior to beginning the nursing program in the autumn, students must meet the following requirements:

1. A minimum of 90 credits to include the following courses:
 - a. *Written Communication (10 credits):* English composition and W-courses
 - b. *Problem-Solving (8 credits):* One QSR course, chosen from MATH 107, MATH 111, MATH 112, MATH 120, MATH 124, MATH 134, MATH 144, PHIL 115, PHIL 120, PHIL 470, or Q SCI 291. One statistics course, such as STAT 220, STAT 311, Q SCI 381, QMETH 201, or EDPSY 490
 - c. *Visual, Literary, & Performing Arts (VLPA) (15 credits)*
 - d. *Individuals & Societies (I&S) (15 credits):* To include NURS 201 or equivalent
 - e. *Natural World (NW) (26-33 credits):* To include CHEM 120, CHEM 220, CHEM 221 (three quarter chemistry series for UW students; two-quarter sequence - one general chemistry and one organic - for non-UW applicants); BIOL 118, BIOL 119; B STR 301; MICROM 301 (plus MICROM 302 for UW students; non-UW applicants must take a separate microbiology laboratory if laboratory not included in general microbiology course); NUTR 300
 - f. Electives to complete 90 credits
2. A minimum 2.00 cumulative GPA, and a minimum 2.0 grade for each prerequisite course. Because admission is competitive, the GPA for admission is usually significantly higher.
3. All applicants must be exempted from all English language proficiency requirements at UW in order to start the program. If offered admission the applicant is required to pay for a background check to be run by a company specified by the School of Nursing.

For additional information on admission criteria, specific prerequisites, and deadlines, as well as application forms, visit the School of Nursing website, nursing.uw.edu. To contact the School of Nursing Office of Academic Services, call (206) 543-8736 or 1 (800) 759-NURS or email sonas@uw.edu. Information sessions are offered periodically in the School of Nursing, Health Sciences Building T301, and an information session podcast is available. For a schedule of sessions or to listen to podcast, visit nursing.uw.edu/admissions/info-sessions/.

Major Requirements

Students need a minimum of 180 credits to graduate with a bachelor's degree from the University of Washington. The required credits in the nursing curriculum total 94; thus 86

credits must be earned through general education, nursing prerequisites, and elective courses.

94 credits as follows:

1. *Nursing Foundations (52 credits):* NURS 301, NURS 303, NURS 304, NURS 308, NURS 309, NURS 310, NURS 401, NURS 404, NURS 405, NURS 407, NURS 410, NURS 412, NURS 415, NURS 417, NURS 419, NURS 420
 2. *Clinical Nursing (39 credits):* NCLIN 302, NCLIN 306, NCLIN 403, NCLIN 407, NCLIN 409, NCLIN 411, NCLIN 416, NCLIN 418
 3. *Nursing Research and Methods (3 credits):* NMETH 403
- Equivalent or higher-level coursework may be substituted with the approval of the academic adviser.

Accelerated Bachelor of Science in Nursing Option

Admission Requirements

Admission occurs once a year, for summer quarter, with an application deadline in preceding autumn quarter. Selection is competitive.

Application Requirements

1. Cumulative 2.80 college-level GPA or higher.
2. At least four of the total prerequisite science courses completed with a minimum 3.0 grade in each course, and a cumulative 3.30 GPA or higher in these courses. Science prerequisite courses are CHEM 120, CHEM 220, CHEM 221 (three-quarter chemistry series for UW students; two quarter sequence -- one general chemistry and one organic -- for non-UW applicants); BIOL 118, BIOL 119; B STR 301; MICROM 301 plus MICROM 302 for UW students. (Non-UW applicants must take a separate microbiology lab if lab is not included in the general microbiology course); NUTR 300.
3. Together with the application and college transcript(s), applicant submits a series of personal statements; a resume outlining volunteer/paid healthcare experience, community service, and cultural awareness; and a recommendation from a healthcare provider (employer or volunteer coordinator).
4. Applicants are expected to have 100 hours of health-care experience in a paid or volunteer position in one setting for three months or more, completed within 12 months preceding submission of the application. The majority of applicants present healthcare experiences of several hundred hours for nine months or more.
5. All applicants are asked to attend a proctored essay session.

Entrance Requirements

Prior to beginning the nursing program in summer, students must meet the following requirements:

1. Bachelor's degree in a non-nursing field.
2. Completion of a lifespan growth and development course -- NURS 201 or equivalent.
3. Completion of one statistics course, such as STAT 220, STAT 311, Q SCI 381, QMETH 201, or EDPSY 490.
4. Completion of all Natural World courses: CHEM 120, CHEM 220, CHEM 221 (three-quarter chemistry series for UW students; two-quarter sequence - one general chemistry and one organic - for non UW applicants); BIOL 118, BIOL 119; B STR 301; MICROM 301 plus MICROM 302 for UW students. (Non UW applicants must take a separate microbiology laboratory if laboratory not included in general microbiology course.); NUTR 300. Minimum 3.30 cumulative GPA in these courses.
5. Minimum 3.00 cumulative GPA, and minimum 3.0 grade for each prerequisite course.

- All applicants must be exempted from all English language proficiency requirements at UW in order to start the program. If offered admission the applicant is required to pay for a background check to be run by a company specified by the School of Nursing.

For additional information on admission criteria, specific prerequisites, and deadlines, as well as application forms, visit the School of Nursing website, nursing.uw.edu. To contact the School of Nursing Office of Academic Services, call (206) 543-8736 or 1 (800) 759-NURS or email sonas@uw.edu. Information sessions are offered periodically in the School of Nursing, Health Sciences Building T301, and an information session podcast is available. For a schedule of sessions or to listen to podcast, visit nursing.uw.edu/admissions/info-sessions/.

Major Requirements

94 credits, as follows:

- Nursing Foundations (52 credits)*: NURS 301, NURS 303, NURS 304, NURS 308, NURS 309, NURS 310, NURS 401, NURS 404, NURS 405, NURS 407, NURS 410, NURS 412, NURS 415, NURS 417, NURS 419, NURS 420
- Clinical Nursing (39 credits)*: NCLIN 302, NCLIN 306, NCLIN 403, NCLIN 407, NCLIN 409, NCLIN 411, NCLIN 416, NCLIN 418
- Nursing Research and Methods (3 credits)*: NMETH 403

Equivalent or higher-level coursework may be substituted with the approval of the academic adviser.

Student Outcomes and Opportunities

- Learning Objectives and Expected Outcomes:** The School of Nursing prepares its graduates to function as generalists in professional nursing practice and to collaborate with other health-care providers. The BSN/ ABSN undergraduate curriculum emphasizes theory and clinical practice to ensure critical thinking, human caring, and clinical expertise. Clinical experiences are provided in institutional and community settings for preventive and acute care. For the ten goals of the BSN degree program, visit nursing.uw.edu/admissions/bsn/curriculum/.
- Instructional and Research Facilities:** Learning Laboratory
- Honors Options Available:** With College Honors (Completion of Honors core curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- Research Internships and Service Learning:** Students complete eight clinical courses during the BSN program beginning with the first quarter of the program. Each student experiences placements in medical-surgical nursing, pediatric, family nursing, psychosocial mental health, and community-based nursing. Clinical hours per course range from six hours/week during the first quarter to 24 hours/week during the final quarter.
- Department Scholarships:** Limited scholarships based on student need established by FAFSA. Students are invited to apply after they have been admitted to the program by completing the School of Nursing Financial Aid application.
- Student Organizations/Associations:** Students may join the Professional Organization of Nursing Students (PONS) after admission to the program. PONS' involvement spans all aspects of the undergraduate program: recruitment, orientation, education, fund raising, and social events.

GRADUATE PROGRAM

Graduate Program Coordinator

T301 Health Sciences, Box 357260

(206) 543-8736

sonas@uw.edu

The School of Nursing offers graduate study leading to the degrees of Master of Nursing (MN), Master of Science (MS), Doctor of Nursing Practice (DNP) and Doctor of Philosophy in nursing science (PhD). The DNP program admits RNs interested in advanced clinical practice. The PhD program prepares students for roles as scientists, scholars, and educators. Neither the MS nor the PhD program requires RN licensure for admission.

The School of Nursing offers an MN degree with a focus in community health systems nursing. A thesis or scholarly project is required for the MN degree. A concurrent MN/ MPH degree is also available.

The MS degree is in Clinical Informatics and Patient-Centered Technologies (CIPCT). A thesis or scholarly project is required for the MS degree.

The Doctor of Nursing Practice (DNP) program admits postbaccalaureate or post-graduate students for either advanced practice registered nursing or advanced systems and population systems health. The following tracks are available (subject to change; visit School of Nursing website): adult gerontology primary care nurse practitioner; community health-systems nursing; family nurse practitioner; pediatric nurse practitioner; pediatric clinical nurse specialist; neonatal clinical nurse specialist; neonatal nurse practitioner; nurse midwifery; perinatal nurse specialist; and psychiatric mental health nurse practitioner. Applicants who already have a MN degree may apply to earn a DNP degree in their same specialty. The DNP program of study culminates in a capstone clinical investigative project.

The PhD in nursing science is a research-based degree program that trains students to create knowledge that influences and alters the health of individuals, groups, and populations, using current theories of nursing science. PhD students work closely with faculty to create their own research-based programs of study. These programs of study are based on applicants' research interests as they intersect with the current research interests of School of Nursing faculty. The PhD in nursing science program also offers an optional concentration in statistics in partnership with the Center for Statistics and the Social Sciences. All PhD students must successfully defend a dissertation at the end of their program of study.

The School of Nursing also offers a Graduate Certificate Program in Advanced Practice Nursing (GCPAPN), with sub-tracks as follows: adult nurse practitioner; psychiatric mental health nurse practitioner; advanced practice environmental health; infant mental health; pediatric nurse practitioner; nurse midwifery; neonatal clinical nurse specialist; and neonatal nurse practitioner. (See School's website for updated information.) Admission criteria vary slightly based on focus of the graduate certificate. Some graduate certificate options require an RN license and a graduate degree in nursing. All options require completion of or concurrent enrollment in a graduate degree and a minimum 3.00 GPA in the last 90 quarter (60 semester) graded credits. Admission and program requirements for these certificates are the same as requirements for the umbrella degree in which the student is enrolled.

Part-time study is available for some graduate degree programs. Coursework may be started prior to formal admission to a program as a graduate nonmatriculated student (GNM). GNM status allows the student to take non-clinical courses and to earn up to 12 graduate-level credits that may be applied to a graduate program if the student is later

admitted. Time limits for acceptance of courses taken as a GNM student are six years for a master's degree and ten years for a doctoral degree from the first course to completion of the degree.

Master of Nursing

Admission Requirements

- Baccalaureate degree from a nationally accredited nursing program with a minimum 3.00 GPA on a 4.00 scale for the last 90 graded quarter credits,
 - OR -
 - Associate of Arts degree or diploma from a nationally accredited RN program, in combination with a baccalaureate degree in a field other than nursing, acceptable to the UW. In addition, RNs with non-nursing baccalaureate degrees are required to demonstrate competencies in community health and professional leadership equivalent to those of baccalaureate degree nursing graduates, and are required to submit nursing equivalency essays.
- A 3-credit basic course in descriptive and inferential statistics with a minimum 2.0 grade
- An active, unrestricted United States RN license at the time of application. If the applicant does not have a Washington State license, the applicant must obtain one prior to beginning the UW Master of Nursing program.
- Proof of English Language Proficiency. All applicants to the DNP program whose native language is not English must demonstrate English language proficiency unless the applicant received a degree from an institution in an English-speaking country, or can provide official evidence that their previous degree instruction was in English. For questions about proof of English language proficiency, visit <http://nursing.uw.edu/node/310>, or contact the School of Nursing.
- Applications to both the School of Nursing and to the UW Graduate School via the Graduate School online admission process
- Three letters of recommendation: one academic, one clinical, and one additional recommendation of either type. Recommendations may be submitted online through the Graduate School.
- Admission essays relevant to the MN program objectives
- One official transcript from each collegiate institution attended, mailed to the School of Nursing along with other application materials
- If admitted to the MN program, the applicant is required at that time to obtain criminal history/background check clearances via a service designated by the School of Nursing. All applicants pay a fee for this service.

Degree Requirements

38-41 credits, as follows:

Nursing science and professional foundations (15 credits); clinical practice (6 credits); scholarly inquiry (11 credits with scholarly project or 14 credits with thesis); related coursework (6 credits). Specific courses determined in consultation with adviser according to the student's specific background and needs.

Master of Nursing/Master of Public Health Concurrent Degree Program (MN/ MPH)

Admission Requirements

See admission requirements for MN and MPH individual degrees. Students must apply separately to, and be accepted by, each school. Students already enrolled in one

school may apply for admission to the other and to the concurrent degree track. Students are encouraged to complete up to one year of study in one school before entering the other.

Degree Requirements

See MN and MPH individual degree requirements; common requirements are as follows:

At least 18 quarter credits for the master's degree in each program numbered 500 and above. Numerical grades in at least 18 quarter credits of coursework for each degree and all required courses taken graded. Up to 12 credits taken in one school can be counted toward the other school's total credit requirements, if approved by both programs. Electives for each School's program can be fulfilled by taking the required courses of the other School's program.

One thesis is required. The 9 required thesis credits can be taken in either School, which then becomes the "home" School and the source of the thesis committee chair as well as the program authorized to approve the thesis. Each School agrees to accept the other School's thesis as meeting its thesis requirement. Faculty from each School should be involved in development of the thesis and sit on the thesis committee.

Master of Science

Admission Requirements

1. A baccalaureate degree in any discipline from a regionally accredited institution of higher learning with a minimum 3.00 GPA on a 4.00 scale for the last 90 graded quarter credits by date of enrollment. Applicants to the Master of Science need not have a previous degree in nursing.
2. A 3-credit basic course in descriptive and inferential statistics with a minimum 2.0 grade. Visit the School of Nursing website for a list of approved statistics courses.
3. Proof of English Language Proficiency. All applicants to the MS program whose native language is not English must demonstrate English language proficiency unless the applicant received a degree from an institution in an English-speaking country, or can provide official evidence that the previous degree instruction was in English. For questions about proof of English language proficiency, visit <http://nursing.uw.edu/node/310>, or contact the School of Nursing.
4. Three letters of recommendation, two from persons qualified to comment on the applicant's academic abilities and one from a person who can provide work-related (practice) information.
5. Applications to both the School of Nursing and to the UW Graduate School via the Graduate School online admission process.
6. Resume describing relevant work, professional, and volunteer experiences.
7. Admission essays relevant to the MS degree program objectives.
8. If admitted to the MS program, the applicant is required at that time to obtain criminal history/background check clearances via a service designated by the School of Nursing. All applicants pay a fee for this service.

For students planning to take clinical nursing courses as part of their program of study, an active, unrestricted Washington RN license is required. Other applicants to the Master of Science program are not required to have an active RN license or to have a previous degree in nursing.

Degree Requirements

46-49 credits, as follows:

Nursing science (15 credits); professional foundations (3 credits); theory development (5 credits); modes of inquiry (11 credits); scholarly project (6 credits) or thesis (9

credits); related coursework (6 credits). Specific courses determined in consultation with adviser according to the student's specific background and needs.

Doctor of Nursing Practice

Admission Requirements

1. Baccalaureate degree from a nationally accredited nursing program with a minimum 3.00 GPA on a 4.00 scale for the last 90 graded quarter credits. Applicants with a master's degree from a nationally accredited nursing program are also welcome to apply and must have a minimum 3.00 GPA on a 4.00 scale for the last 90 graded credits of the master's degree.

- OR -

Associate of Arts degree or diploma from a nationally accredited RN program, in combination with a baccalaureate degree in a field other than nursing, is acceptable. In addition, RNs with non-nursing baccalaureate degrees are required to demonstrate competencies in community health and professional leadership equivalent to those of baccalaureate degree nursing graduates, and are required to submit nursing equivalency essays.

2. If an applicant has not completed a master's degree, a 3-credit basic course in descriptive and inferential statistics with a minimum 2.0 grade, taken within five years of matriculation.
3. Proof of English Language Proficiency. All applicants to the DNP program whose native language is not English must demonstrate English language proficiency unless the applicant received a degree from an institution in an English-speaking country, or can provide official evidence that their previous degree instruction was in English. For questions about proof of English language proficiency, visit <http://nursing.uw.edu/node/310>, or contact the School of Nursing.
4. Applications to both the School of Nursing and to the UW Graduate School via the Graduate School online admission process
5. Three letters of recommendation, one academic, one clinical, and one additional recommendation of either type. Recommendations may be submitted online through the Graduate School.
6. Response to three admission questions
7. Resume describing relevant work, professional, and volunteer experiences.
8. BSN equivalency, if applicable
9. One official transcript from each collegiate institution attended, mailed to the School of Nursing along with other application materials.
10. All applicants to the Doctor of Nursing Practice program must have an active, unrestricted United States RN license at the time of application. If the applicant does not have a Washington State RN license, the applicant must obtain one prior to beginning the UW Doctor of Nursing Practice program.
11. If admitted to the DNP program the applicant is required at that time to obtain criminal history/background check clearances via a service designated by the School of Nursing. All applicants pay a fee for this service.

Degree Requirements

93 credits minimum, as follows:

1. Advanced Practice (minimum 45 credits)
2. Leadership (minimum 15 credits)
3. Practice Inquiry (minimum 30 credits)

Doctor of Philosophy

Admission Requirements

1. A baccalaureate degree from a college or university of recognized rank. Although the majority of applicants have a master's degree in nursing, neither a nursing background nor RN licensure is required for admission.
2. Applications to both the School of Nursing and to the UW Graduate School via the Graduate School online admission process
3. Proof of English Language Proficiency. All applicants to the PhD program whose native language is not English must demonstrate English language proficiency unless the applicant received a degree from an institution in an English-speaking country, or can provide official evidence that their previous degree instruction was in English. For questions about proof of English language proficiency, visit <http://nursing.uw.edu/node/310>, or contact the School of Nursing.
4. A scholarly writing sample (25 pages or less) providing an example of an applicant's current skills in scholarly writing. The sample should analyze a current clinical problem or professional issue using appropriate references to making an argument and supporting that position. The paper must be solely authored by the applicant. It is evaluated on multiple factors, including clarity, logical consistency, insight, and creativity or innovation. These are not accepted. If an editor is used, copies of both the edited and non-edited versions should be submitted for review.
5. Letters of recommendation from three persons knowledgeable about the individual's potential for a research career in nursing.
6. Statement of goals and research interests in response to specific questions listed on the application related to the pursuit of doctoral studies. The statement is used to evaluate the applicant's ability in written self-expression and the congruency of goals and research interests with the program objectives.
7. If admitted to the PhD program the applicant is required at that time to obtain criminal history/background check clearances via a service designated by the School of Nursing. All applicants pay a fee for this service.

Degree Requirements

93 credits minimum, as follows:

1. *Theory and Domain of Knowledge (minimum 41 credits)*: Coursework in this category provides grounding in science and nursing science fundamental to examination of more specific issues in the relationship of human health and nursing.
2. *Scholarly Inquiry (minimum 52 credits)*: Coursework deals with means of developing knowledge. Exposure to variety of approaches with encouragement to develop advanced skills is at least one methodology. Includes 27 dissertation credits.

Financial Aid

A limited number of nurse traineeships are available for pre-master's study. Other financial aid is available on a limited basis. Teaching assistantships and research assistantships are available to a limited number of students. Priority for these appointments is given to pre-doctoral students.

Additional Information

For additional information on current graduate program content, admission criteria, deadlines, as well as application forms, visit the School of Nursing website at <http://nursing.uw.edu>. To contact the Office of Academic Services, School of Nursing, call (206) 543-8736 or 1- (800) 759-NURS or email sonas@uw.edu. Information sessions

are offered periodically in the School of Nursing, Health Sciences Building T310, and an information session podcast is available.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

NSG 432 Infants and Children: Risk and Resilience (5) I&S C. DILLON, M. HIRSCHSTEIN, S. SPIEKER Provides a survey of infant and early childhood development, including prenatal and neonatal factors, and social/societal influences, using an infant mental health framework. Emphasizes how risk and protective factors can impact social-emotional, physical, and cognitive growth. Includes research-based principles and approaches to supporting families, teachers, and caregivers of young children. Offered: SpS.

NSG 505 Applied Occupational Health and Safety (3) Application of occupational safety and health principles. Student teams perform evaluations, assess production methods/processes and exposures, health and safety procedures and programs, and develop engineering and administrative controls. Students perform on a consulting project with a local company including budgeting, project reporting, and presentation. Offered: jointly with ENV H 559/IND E 567; Sp, even years.

NSG 506 Occupational Safety Management (4) Explores industrial organization and methods of integrating safety and industrial hygiene programs with industrial operations. Investigates philosophic issues related to industrial safety and health such as responsibility for safety, dependency on safe practice, and hierarchy of prevention. Contains numerous case problems and student involvement opportunities. Offered: jointly with ENV H 560; Sp.

NSG 507 Technical Aspects of Occupational Safety (3) Reviews federal OSHA (Occupational Safety and Health Administration) and state WISHA (Washington Industrial Safety and Health Act) standards. Explores the impact of these regulations on industry, particularly construction. Upon completion of the course, student receive an OSHA 510 30-hour Construction Safety and Health certificate. Offered: jointly with ENV H 562; W.

NSG 508 Introduction to Ergonomics (3) Basic principles of ergonomics in work environment applied to problems of worker and management. Topics include measurement of physical work capacity, problems of fatigue and heat stress, applied biomechanics, worker-machine interactions and communication, design of displays and controls. Prerequisite: basic human physiology or permission of instructor. Offered: jointly with ENV H 566/IND E 566; W.

NSG 511 Prevention Issues in Community Health (3) An interdisciplinary overview of community health prevention approaches focusing on the social determinants of health and health disparity reduction among vulnerable populations. Analysis of community and population preventive strategies across the life course. Roles of advanced community health nurses as prevention leaders and consumers of prevention information are emphasized. Offered: Sp.

NSG 512 Prevention Critique in Community Health (3) Critical examination of community health prevention programs that build community health capacity and show promise in facilitating long-term health equity among vulnerable populations. Focuses on the leading health disparities among U.S. racial and ethnic people of color, and how to be a critical program consumer, adopter, and adapter. Offered: A.

NSG 513 Psychopharmacology for Children and Adolescents (1) Tyson, Walsh Reviews pertinent issues in prescribing psychoactive medications to children and adolescents. Emphasizes empirical neuroendocrine bases, and nursing management relevant to these interventions. Examines legal and ethical issues pertaining to prescrib-

ing for children and adolescents. Credit/no-credit only. Offered: S.

NSG 516 Physiological Aspects of Aging (3) B. COCHRANE Focuses on biological theories of aging, major physiological and pathophysiological changes that occur in human body systems with aging. Also addresses health considerations and individual adaptations based on current research. Offered: A.

NSG 530 Leadership, Communication, and Professional Identity (4) Brown, Shannon Analyzes professional identity, transition to new roles and responsibilities, leadership approaches, and inter-professional teamwork skills needed to provide effective, efficient and patient/community-centered care. Covers advanced, multi-modal communication strategies specific to professional role certification, conflict resolution, professional communication, inter-professional teamwork and leadership using interactive, skills-based learning. Offered: A.

NSG 537 Development and Psychopathology: Parents and Infants (3) Spieker Provides an overview of typical social and emotional development and psychopathology in children ages three and younger. Demonstrates attachment relationships with parents and family to infant's development and psychopathology. Core course of Infant Mental Health Certificate program. Offered: W.

NSG 539 Assessment and Management of Common Psychosocial and Biophysical Conditions in the Perinatal Period (1-3, max. 3) Teaches assessment and management of psychosocial and biophysical adaptation of child-bearing women and families during the perinatal period, with emphasis on parenthood transition including common stressors, parent-infant interactions, and community-based support models. Included is adaptation of the neonate and the continuum from prenatal to pediatric care.

NSG 540 Telehealth Systems and Applications (4) G. DEMIRIS Prepares consumers, managers, and researchers of telehealth systems through guided exploration into the components of such systems. Introduces challenges and opportunities facing designers and managers of telehealth and remote healthcare delivery networks. Offered: jointly with BIME 581.

NSG 548 Basic Arrhythmia, Conduction Disturbance, and 12-Lead Electrocardiography Interpretation (2) Covers the theory and practice of basic arrhythmia, conduction disturbance, and 12-lead electrocardiography (ECG) interpretation, as well as selected pharmacologic and electrical management. Content is appropriate for primary care, and provides foundation for advanced interpretation for students in acute/critical care.

NSG 549 Complex Arrhythmia, Conduction Disturbance, and 12-Lead Electrocardiography Interpretation (2) Covers the theory and practice of complex arrhythmia, conduction disturbance, and 12-lead electrocardiography (ECG) interpretation, as well as selected pharmacologic and electrical management. Appropriate for acute/critical care. Prerequisite: NSG 548, or satisfactory pretest of basic ECG interpretation.

NSG 550 Seminar on Professional Issues in Nursing Education (3) Seminar on role and related professional issues in nursing education. Prerequisite: either NSG 545, B NURS 513, or T NURS 513; either NSG 546, B NURS 511, or T NURS 511. Offered: jointly with B NURS 550/T NURS 550.

NSG 551 Health Politics and Policy (3) Critically analyzes the politics of health policy in the United States. Examines leadership and advocacy in influencing politics and policy to address and influence health outcomes. Offered: W.

NSG 552 Social Determinants of Health and Health Equity (3) Examines fundamental concepts, emerging theory, research, and intervention strategies regarding the influence and putative mechanisms of environment and societal factors on health at population, community, and individual levels. Emphasizes an interdisciplinary, multi-level

so-cio-ecological perspective on health and illness with consideration of principles of equity and justice in societal contexts. Offered: W.

NSG 553 Foundations of Health Systems and Health Economics (3) Examines health systems and care delivery in the context of principles of business, finance, and economics. Concepts applied in the design of cost and care effectiveness system-level health improvements. Prerequisite: either NMETH 536, which may be taken concurrently, or permission of instructor. Offered: Sp.

NSG 554 Occupational Health Nursing: Practice Issues (3) Examination of current, emerging occupational health and safety topics affecting worker populations. Includes discussion of workforce groups, work environments, and socio-political contexts; introduces prevalent health matters resulting from occupational exposures; applies theoretical concepts to the prevention of work-related injuries and illnesses; and identifies issues affecting advanced professional practice and leadership roles.

NSG 555 Perspectives on Implementing Research in Advanced Nursing Practice (3) Boutain, Landis Provides an overview of contemporary multidisciplinary perspectives, models and research approaches for advanced practice nursing. Focuses on understanding and applying science to practice, and practice to science. Emphasizes ethical practice, scientific responsibility, research curiosity and use. Offered: A.

NSG 556 Program Planning and Health Systems and Multicultural Communities (4) Chrisman, Strickland, Tsai Explores culture as it related to the program planning process, methods, theories, attitudes, and skills in health promotion and disease prevention through community engagement. Offered: W.

NSG 557 Physiology and Pathophysiology Across the Life Span (4) Analyzes disordered physiologic responses in individuals within the context of lifespan physiology. Examines pathophysiologic principles and responses, using case studies as exemplars for selected concepts, and the relationship between physiologic and pathophysiologic principles and the evidence basis for current practice. Offered: A.

NSG 558 Occupational Health Nursing: Advanced Practice and Leadership in Program Development (3) Examination of advanced professional practice and leadership in the context of occupational health and safety programs. Focuses on assessment, development, implementation, and evaluation of programs involving workplace health surveillance, case management, workers' compensation, and health promotion in consideration of political, economic, legal, ethical issues, and application of current research.

NSG 559 Prevention Effectiveness in Community Health (1) Focuses on increasing effectiveness of organization- and community-level health promotion and prevention programs with multicultural communities. Includes web-based tool-kits pertaining to: cross-cultural adaptations of health promotion programs; mental health promotion in communities; institutional readiness to sustain prevention policies; and community engagement in health promotion efforts. Credit/no-credit only.

NSG 560 Pediatric Case Studies (2) Focuses on integration and application of pediatric history-taking, diagnostic reasoning, behavioral and developmental assessment, health promotion, and management of common pediatric conditions in case-based scenarios. Prerequisite: NCLIN 502; NURS 518; NURS 529, any of which may be taken concurrently, or permission of instructor. Credit/no-credit only. Offered: W.

NSG 561 Community Health Systems for Equity (3) Defines, evaluates, and synthesizes how community health systems promote health equity. Emphasizes how various systems, such as care, public health, governmental, tribal, family, and social-kin, nonprofit, faith-based, and business, inhibit or promote communal health. Highlights advanced

practice, practice inquiry, and leadership implications. Offered: A.

NSG 562 Management of Adults I (2-3) Focuses on evidence-based clinical-decision making and management of common adult health problems, emphasizing episodic and acute concerns. Emphasizes concepts of health promotion and patient/family focuses care. Provides a theoretical and conceptual foundation for clinical decision-making and critical appraisal of data to determine diagnosis and comprehensive, cost-effective plan of care.

NSG 563 Management of Adults II (3) Focuses on evidence-based clinical-decision making and management of common adult health problems, emphasizing episodic and acute concerns. Emphasizes concepts of health promotion and patient/family focuses care. Provides a theoretical and conceptual foundation for clinical decision-making and critical appraisal of data to determine diagnosis and comprehensive, cost-effective plan of care. Offered: Sp.

NSG 564 Management of the Adult III (3) Focuses on evidence-based patient-centered care of older adults with multiple chronic conditions across the continuum from outpatient to acutely or critically ill, including prevention and management of geriatric syndromes. Explores strategies for optimal transition across care settings and across the health continuum.

NSG 565 Primary Care Management Across the Lifespan (1) Clinical application of theories of health promotion and chronic disease management in complex patients across lifespan, utilizing evidence-based approaches to health promotion, assessment, differential diagnosis and disease management. Emphasizes clinical decision-making, considering the chronic care model, coordination of care, poly-drug therapy, and information systems. Prerequisite: NCLIN 518, which must be taken concurrently; permission of instructor. Credit/no-credit only. Offered: A.

NSG 566 Pediatric Pharmacology (1-2, max. 2) Focuses on clinical application of pharmacologic management in pediatric acute and chronic illnesses. Emphasizes pediatric pharmacotherapeutics including selection of therapeutic agents, indications, efficacy, therapeutic and adverse effects, monitoring parameters, and dosing principles. Includes didactic as well as case-based learning strategies. Offered: Sp.

NSG 567 Advanced Pharmacotherapeutics in Complex Case Management (1) Uses a case-based method to examine an evidence-based approach to pharmacotherapeutic management of complex chronic conditions across the lifespan. Incorporates examination of both pharmacologic factors and patient-related factors, such as age, socioeconomic status, and behavioral aspects that support the selection of commonly used drugs for patients of all ages across multiple settings. Prerequisite: PHARM 514; permission of instructor. Offered: A.

NSG 568 Infant Observation (1-, max. 4) C. DILLON, S. SPIEKER Includes observing an infant and parent in the first year of life and reflecting on observations. GCPAPN-IMH core course. Four quarter sequence begins each Autumn. Offered: AWSpS.

Nursing

NURS 201 Growth and Development Through the Life Span (5-6) I&S Focuses on human growth and development throughout the life span. Emphasizes influence of growth and development theory and research on achievement of health and health promotional efforts directed toward persons of various ages and life styles. Optional service learning component. Open to nonmajors. Offered: AWS.

NURS 204 Learning Wellness: Healthy Ways to Respond to Stressful Student Life (3) Examines the intimate connections of body, mind, spirit, as well as how stress challenges personal health. Provides overview of methods that respond to stress in health-producing ways, including time management, making healthy choices, and practicing well-

ness. Discusses evidence for each method and provides experiential components. Credit/no-credit only.

NURS 205 Nursing as a Career in Contemporary Society (1) Introduces an accurate description of nursing career, educational requirements and rationale, including advanced degree career possibilities. Explores breadth of nursing roles in promoting health to individuals, groups, and populations. Links historical development with contemporary practice. Explores factors that promote student and professional success in nursing. Credit/no-credit only.

NURS 301 Clinical Applications of Anatomy and Physiology (3) Application of anatomic and physiologic concepts to selected clinical phenomena. Focuses on integrated responses and functional health patterns. Exemplars of developmental and lifespan factors are identified. Includes experiential activities to enhance integration of content. Offered: AS.

NURS 303 Foundations of Professional Nursing (2-3) Exploration of the profession of nursing, including past and present work of nurses, the experience of being ill and seeking healthcare, and the U.S. healthcare system. Offered: Sp.

NURS 304 Human Responses I (3) Examines normal and pathophysiological responses to states of health and illness. Examines internal and external defense systems, balance and regulation of body systems, and integration of these concepts in the assessment and management of patient problems. Offered: A.

NURS 308 Human Responses II (3) Examines normal and pathophysiological responses to states of health and illness. Examines internal and external defense systems, balance and regulation of body systems, and integration of these concepts in the assessment and management of patient problems. Offered: W.

NURS 309 Pharmacotherapeutics in Nursing Practice I (2-) Emphasizes the principles of pharmacology, drug therapy, pharmacologic-therapeutic classes of drugs, clinically important prototype drugs, and drug information resources. Nursing issues related to drug administration are also discussed. First of a two-quarter sequence. Offered: A.

NURS 310 Pharmacotherapeutics in Nursing Practice II (-[2-3]) Emphasizes the principles of pharmacology, drug therapy, pharmacologic-therapeutic classes of drugs, clinically important prototype drugs, and drug information resources. Nursing issues related to drug administration are also discussed. Second of a two-quarter sequence. Offered: W.

NURS 401 Care in Illness I (5) Introduces major concepts relevant to the experience of acute and chronic illness, including physiological, pathophysiological, behavioral and experimental human responses, assessment of functional health status and interdisciplinary therapeutics in common alteration across the lifespan. First of a two-quarter sequence. Offered: W.

NURS 404 Gerontological Nursing (2) Focuses on concepts and issues relevant to the nursing care of older adults across the care continuum. Major course themes include nursing assessment of the older adult, health promotion, patient safety, geriatric syndromes, gerontechnology and influence of payer systems on care for older adults. Prerequisite: NURS 310.

NURS 405 Care in Illness II (5) Continuation of NURS 401, further examining selected psychopathologic and pathophysiological alterations in health of individuals in context of families across life span. Emphasizes assessing functioning in psychosocial, cultural, person-environment relationships, and healthcare resources to plan nursing strategies for acutely/chronically ill individuals of all ages.

NURS 407 Culture, Diversity, and Nursing Practice (3) Analyzes the impact of cultural, social, and global factors on the health of multicultural and diverse groups at the individual, population, and systems levels. Students gain knowledge and skills to effectively respond to the healthcare needs

of multicultural societies through non-discriminatory and culturally appropriate nursing care practice. Offered: Sp.

NURS 410 Legal and Ethical Issues in Clinical Practice (3) Identification of ethical and legal issues and the ensuing dilemmas relevant to the profession of nursing and nurses as health professionals and citizens. Selected problems and dilemmas affecting nurses, nursing, and the delivery of healthcare analyzed using specific moral-ethical perspectives. Offered: AW.

NURS 412 Healthcare Systems (3) Introduction to analysis of healthcare systems with emphasis on political economy of health, access and utilization, disparities in health, public and private health insurance and reimbursement issues. Comparison of U.S. and other national healthcare systems. Offered: Sp.

NURS 415 Nursing of Families: Childbearing and Childrearing (5) Applies family concepts to nursing of childbearing and childrearing families. Focuses on family as context for care of individuals. Emphasizes use of physiological, psychological, developmental, cultural, and environmental theories for health promotion, disease prevention, and nursing therapeutics. Offered: AW.

NURS 417 Psychosocial Nursing in Health and Illness (3) Examines psychosocial disorders/issues of life transitions from integrated perspective of biological, social sciences, nursing, and humanities. Emphasizes utilizing psychosocial nursing and interpersonal therapeutics for assessment, intervention, health promotion with individuals/families/groups at risk for experiencing psychosocial disorders. Prerequisite: NCLIN 418, which may be taken concurrently. Offered: AW.

NURS 419 Transition to Professional Practice (3) Focuses on critical examination, synthesis, and evaluation of professional nursing care. Emphasizes mastery, synthesis, and application of theory, research, and practice in relation to nursing management, leadership, and nursing care of individual clients or groups of clients and populations. Offered: SpS.

NURS 420 Promoting Community and Public Health (3) DIV Covers community and public health nursing theory focusing on populations. Includes a synthesis of theory, research, and practice in relation to community/public health, informed by a social justice framework, social determinants of health, community partnerships, and culturally appropriate population-based community/public health nursing. Corequisite: NCLIN 409.

NURS 445 Topics in Nursing (1-10, max. 10) Guided survey and discussion of current literature on major topics in physiological nursing. Seminar/lecture with analysis and discussion of selected topics and readings. May have clinical component. Implications for nursing practice and healthcare emphasized.

NURS 499 Special Electives (1-4, max. 15) Seminars on selected nursing issues of clinical problems, with independent study option, under supervision of nursing faculty. Credit/no-credit only. Offered: AWSpS.

NURS 500 Child Management II: Chronic Conditions (3) Kleckhefer, Magyary Focuses on approaches to caring for children and adolescents with chronic physical, neuro-biological, developmental, or psychosocial conditions. Emphasizes evidence-based, culturally-competent, family-centered, interdisciplinary, and comprehensive assessment, referral, management, and care-coordination strategies. Offered: S.

NURS 501 Child Mental Health Assessment and Interventions (3) Developmentally based assessment and therapeutic approaches relevant for children with psychosocial health problems. Consideration to matching therapeutic approaches with specific nature of symptomatology and other child, family, cultural, and environmental characteristics, including social and educational systems. Individual and group evaluation research emphasized.

NURS 504 Clinical Nursing Therapeutics (1-6, max. 6) Critical analysis of therapeutic modalities to assist patients with a variety of responses to health problems. Includes selected therapies such as suction/drainage, positioning to address responses in critical, life threatening, and chronic/continuing health states. Varying credits assigned for modules covering particular therapies. Prerequisite: NURS 502, NURS 503, or permission of instructor.

NURS 505 Selected Topics in Psychosocial and Community Health Nursing (2-10, max. 10) In-depth exploration of the major theoretical issues in psychosocial nursing. Seminar with analysis and discussion of selected topics and readings and implications for research and healthcare.

NURS 507 Older Adult Mental Health Assessment and Intervention (2) Examines the dynamics of mental health research and practice in normal, optimal, and pathological aging. Focuses on psychosocial and environmental influences on mental health of older adults. Topics include: models of aging, cognitive impairment, depression, severe mental illness, and successful strategies to enhance mental health in older adults.

NURS 509 Issues in Violence and Aggression for Health Professionals (3) Focuses on research and theory of violent/aggressive behavior. Perspectives of victim, offender, family, community, society examined. Focus is recognition of violence against women. Designed to challenge students to clarify beliefs, values related to topics such as rape, homicide, domestic violence. Prerequisite: graduate nursing student or permission of instructor.

NURS 514 Physiologic Adaptations in Women and Children: Physiologic Adaptations During Pregnancy and Postpartum (1-3, max. 6) *Blackburn* Analyzes the physiologic adaptations in the maternal-fetal-neonatal unit, fetal development, and developmental adaptations in children from infancy to adolescence. Implications of normal and altered physiologic functions for nursing practice and examination of the basis for selected nursing intervention strategies.

NURS 515 Common Adolescent Health Problems (2-3) Focuses on assessment, clinical decision making, and management of common adolescent problems. Concepts and theories of health promotion, adolescent development, and intervention strategies are explored to provide a broad framework for caring for adolescents in primary settings.

NURS 517 Pediatric Pulmonary Anatomy, Physiology, and Pathophysiology: Clinical Applications (2) Content includes normal pediatric lung development infancy through adolescence and explores evidence for diagnosis, management, and follow up of commonly encountered respiratory problems. Emphasizes coordination of care with multiple disciplines when diagnosing and treating children with special health care pulmonary needs and family centered care and professional leadership role. Prerequisite: permission of instructor. Offered: Sp.

NURS 518 Child Management I: Acute Conditions (3) Focuses on use of clinical decision making framework to develop theoretically and empirically sound individualized management plans for the young child, with physical and behavioral symptoms of common pediatric illness, in the primary care setting. Prerequisite: PNP or FNP specialty, or permission of instructor.

NURS 520 Evaluation of Clinical Performance in Nursing (3) For graduate students preparing for faculty or staff development positions in nursing. Theory and principles of evaluation. Instruments to appraise clinical nursing performance developed as part of course requirements. Prerequisite: graduate standing or permission of instructor.

NURS 522 Legal and Ethical Issues in Advanced Practice Nursing (3) *Shannon* Reviews selected ethical issues in healthcare and legal guidelines relevant to healthcare decision-making. Explores bioethics as a type of applied eth-

ics. Focuses on preparing students for ethical challenges in advanced nursing roles. Offered: Sp.

NURS 524 Conceptual Foundations for Care Systems Management (3) Critical analysis of nature and theoretical bases of care systems management practice. Concepts of nursing and organization science foundations to person-provider transaction management and leadership in context of economic, political, and social environments and health outcomes. Prerequisite: graduate standing.

NURS 525 Managing Clinical Effectiveness Within Care Systems (3) Optimizing person-provider clinical therapeutic transactions at multiple levels of care systems, complexity, and population aggregation. Emphasis on designing, managing and evaluating clinical effectiveness and efficiency within care systems.

NURS 526 Managing Organizational Effectiveness Within Care Systems (3) Analysis of management strategies for attaining effective and efficient organizational structures and processes within healthcare systems. Prerequisite: NURS 524 or permission of instructor.

NURS 527 Managing Effective Access and Utilization Within Care Systems (3-4) In-depth inquiry into healthcare access and resource utilization patterns among diverse populations, with emphasis on management strategies for establishing effective population-system fit. Additional credit for exploring access and utilization patterns within specific populations.

NURS 529 Childhood Common Developmental and Behavior Issues (2) Focus on common developmental and behavioral issues presented by children and their families in primary care setting. Emphasis on the developmental, family, and cultural aspects of assessment and management of the common issues.

NURS 533 Healthcare of Cancer Survivors (2) Focuses on teaching the health science graduate students about cancer survivorship issues. Discusses the health concerns of those who have been cured of their initial malignancy but are still at risk of long-term effects of chemotherapy, radiation, and surgery.

NURS 534 Aging and Health in Contemporary Society (3) Explores demographic, cultural, psychological, theoretical, political, and ethical context of aging and health in contemporary society. Content is based on empirical data and policy statements on aging. Analyzes healthcare delivery at an individual, community, and systems level to support optimal functioning across the health continuum for older adults. Offered: Sp.

NURS 536 Biological Aspects of Cancer: Implications for Care (3) Survey of major concepts from tumor biology and implications for advanced oncology nursing practice. Areas covered include carcinogenesis, cancer epidemiology, pathology, metastasis, treatments (chemotherapy, radiation, surgery, immunotherapy), and cancer detection and prevention. Discussion of role of advanced nurse clinician and complex patient responses are incorporated into discussion of basic biological concepts.

NURS 537 Symptom Management in Cancer Care and Serious Illness (3) *Berry, Nguyen* Focuses on assessment, integration of research findings into clinical decision-making, diagnostic reasoning, and management of common symptoms experienced by adult patients with cancer and/or serious illness. Explores individual and family responses to serious illness and malignant processes. Emphasizes concepts of prevention, tailored patient/family education, management and evaluation strategies. Offered: Sp.

NURS 538 Management of Adults with Respiratory Dysfunction (3) In-depth examination of problems such as abnormal secretions and shortness of breath associated with respiratory dysfunction due to pulmonary diseases and other pathophysiological states.

NURS 539 Seminar in Critical-Care Nursing (3, max. 9) Systematic inquiry into pathophysiology, initial nursing

management, and systems of care for the critically ill adult or child.

NURS 541 Women's Healthcare: Diagnosis and Management (1-3, max. 3) Examines advanced practice women's healthcare issues including unique health issues for women, health maintenance, contraceptive care, diagnosis, and treatment of women's health problems across the lifespan. Prerequisite: permission of instructor.

NURS 542 Theoretical Foundations of Advanced Practice Nursing: Childbearing I (1-4, max. 4) Analyzes and applies concepts of advanced practice nursing/nurse-midwifery care, specific to the normal childbearing woman, during preconception, antepartum, intrapartum, and postpartum. Examines primary care management of pregnant client within the context of the individual, family, socio-cultural environment, and healthcare system.

NURS 543 Theoretical Foundations of Advanced Practice Nursing: Childbearing II (3) Analyzes and applies concepts of advanced practice nursing/nurse-midwifery care, specific to at-risk childbearing woman, during preconception, antepartum, intrapartum, and postpartum. Examines primary care management of at-risk pregnant client within the context of the individual, family, socio-cultural environment, and healthcare system.

NURS 546 Interpersonal Therapeutics in Advanced Psychiatric Mental Health Nursing: Current Perspectives (3) Selected theories in relation to psychosocial development and adaptation across life span for individuals, families, and small groups and as explanatory models of major psychosocial disabilities. General and psychosocial nursing models evaluated for heuristic value for research and practice. Prerequisite: graduate standing or permission of instructor.

NURS 547 Neuroscience Basis of Advanced Practice Psychiatric/Mental Health (3) Analysis of biological processes influencing psychosocial behavior in response to internal and external stimuli. Research and theory of neuroendocrine mechanisms in psychosocial disabilities. Analysis of nursing management and evaluation of biopsychosocial modalities used in modification of behavior. Prerequisite: graduate standing in nursing or permission of instructor.

NURS 548 Frameworks in Infant Mental Health (3) *Spieker* Review infant mental health (IMH) and early development from a developmental interdisciplinary perspective. Pays special attention to brain development, sensory integration, early communication, and emotion regulation. Offered: A.

NURS 549 Assessment in Psychosocial Nursing (3) Conceptual and clinical approaches to advanced-level data collection and diagnostic reasoning in psychiatric/psychosocial disorders. Synthesizes knowledge from psychosocial nursing and multiple allied fields to enhance learners' cognizance of principles for establishing accurate and comprehensive data bases and sound multifaceted diagnostic formulations. Emphasizes DSM diagnostic scheme.

NURS 552 Wellness, Health Promotion, and Disease Prevention (3) Covers theoretical perspectives and evidence for wellness, health promotion, disease prevention, and risk reduction through the lifespan for advanced practice nursing. Examines issues impacting individual, family, population, and community health related to context and culture. Includes strategies for health promotion and behavior change at individual, family, population, and community levels. Offered: A.

NURS 554 Management of Psychiatric Disorders: Adult and Adolescent (3-4) Focuses on advanced nursing management strategies for psychiatric disorders and primary mental health conditions. Emphasizes the synthesis and integration of scientific evidence to formulate psychiatric diagnoses, and select appropriate interventions for individuals, families, and communities. Measures outcomes

through practice inquiry at both system and policy levels. Prerequisite: NURS 549.

NURS 555 Relationship Based Mental Health Assessment of Infant and Toddlers (3) *Dillon* Focuses on multi-disciplinary, diagnostic mental health assessments of infants and toddlers within the context of their primary relationships. Core course of Infant Mental Health Certificate Program. Prerequisite: permission of instructor. Offered: Sp.

NURS 556 Addictions and Substance Abuse: Biopsychosocial Perspectives (3) Psychosocial and pathophysiological aspects of substance use examined for their effects on individuals and families throughout life span. Theories and empirical findings serve as basis for evaluating preventive and therapeutic nursing approaches to substance use disorders, including those related to target populations. Prerequisite: basic course in biological sciences.

NURS 557 Health, Culture, and Community (3) *Chrisman* A multidisciplinary approach to the development of leadership in personal and organizational cultural competence in community-based participatory research. Emphasizes understanding collaborative assessment, planning, and evaluation of health promotion and disease prevention programs to address the social determinants of health at the population level. Offered: jointly with HSERV 576; W.

NURS 560 Dynamics of Community Health Practice (3) Analysis of principles of community health as applied to the delivery of clinical services in order to improve public health, reduce disparities, provide leadership in delivery of care, and synthesize one's clinical role with public health. Examines environmental, social, cultural, and behavioral determinants of health. Includes family, aggregates, and populations. Offered: jointly with HSERV 508.

NURS 561 Selected Topics in Comparative Nursing Care Systems (2/3, max. 10) In-depth examination of the literature pertinent to major theoretical issues in cross-cultural nursing and healthcare systems. Seminar with analysis and discussion of selected topics and readings. Implications for research and healthcare stressed.

NURS 562 Clinically Applied Anthropology (3) Anthropology as it relates to interdisciplinary delivery of culturally relevant healthcare. Cultural variation in illness beliefs and behavior, types of healing practices, illness prevention, social support networks. Prerequisite: graduate standing, permission of instructor. Offered: jointly with ANTH 562.

NURS 564 Biological Intervention in Advanced Practice Psychiatric/Mental Health Nursing (3-4) Biological and pharmacological interventions pertinent to practice of psychosocial nursing, including psychopharmacology, electroconvulsive therapy, and phototherapy. Emphasis on empirical neuroendocrine bases and then nursing management issues pertaining to these interventions. Legal and ethical issues pertaining to advanced practice and putative neurological mechanism are examined. Prerequisite: NURS 547 or permission of instructor.

NURS 566 Work Stress and Health (3) Delineates our understanding of the relationship between work-related stressors and worker health. Theoretical models of job stress are considered and methodological issues examined. Uses social justice framework to explore worker stress and health disparities in immigrants and other disadvantaged populations. Offered: Sp.

NURS 569 Observation and Assessment of Relationships (2) *C. DILLON, S. SPIEKER* Culminating course in the GC-PAPN-Infant Mental Health. Focuses on reflective practice, consultation, and supervision, a core features of practice across disciplines that are providing services to infants, toddlers, and their families. Prerequisite: NURS 548; NSG 537; NURS 555. Offered: Sp.

NURS 576 Assessment and Collaboration with Communities and Systems (3) Examines, critiques, and applies theory in assessing communities, populations, and systems cross-culturally. Focuses on advanced practice, executive leadership/policy, and practice inquiry; broad definition of

community includes organizations. Emphasizes team work in assessment implementation, i.e., survey, interview, focus groups, observation/participant observation to advance understanding of social determinants of health.

NURS 579 Transcultural Nursing Practices (3) Seminars examine four decades of nursing practice literature and other disciplines related to appropriate and competent care of diverse and multicultural populations. Concepts and methods from anthropology and other behavior sciences are considered in relationship with current health practice guidelines. Graduate standing or instructor permission.

NURS 580 Current Issues in Occupational and Environmental Medicine (2, max. 12) Interdisciplinary seminar on current and emerging topics in the practice of environmental and occupational health. Faculty- and student-led presentations with an interdisciplinary focus, including occupational hygiene, nursing, and medical issues. Prerequisite: environmental health graduate student, occupational health nursing student, or permission of instructor. Offered: jointly with ENV H 596; AWSp.

NURS 581 Study of International Health (2-3) International health based on the concept of health ecology. Assigned readings, discussions, and analysis of different perspectives, strategies, systems, and the wide range of conditions and forces affecting global and local health and illness. Emphasizes roles of healthcare providers. Credit/no-credit only.

NURS 582 Culture, Society, and Genomics (3) *B. MCGRATH* Examines social and cultural issues of human genome sequencing and control of genetic expression. Attitudes and behaviors toward health, illness, and disability are studied using historical, contemporary, and cross-cultural case study material. Offered: jointly with ANTH 574/PHG 521; Sp.

NURS 583 Emotions and Mental Health: From Adversity to Adaptation (3-4) *Betrus, Elmore* Provides an understanding of nature and function of emotions as well as relationship of emotion to mental health/illness. Emphasizes adversity arising from individual and community sources and its impact on emotional health. Addresses implications for interpersonal and social policy interventions.

NURS 584 Critical and Interdisciplinary Approach to Health Policy (3) Advanced seminar to critically analyze various public health policies from a social justice framework.

NURS 587 Role Transition Seminar (2) Emphasizes the transition to doctoral study and eventual post-graduate roles. Includes information to clarify expectations and skills to facilitate success: various forms of scholarly and interpersonal communication, principles of scholarly collaboration, giving and receiving critiques, development of a program of study, and other topics developed by participants. Prerequisite: Enrolled in PhD program in Nursing Science. Credit/no-credit only.

NURS 588 Philosophical Basis of Nursing Inquiry (3) Overview and critical analysis of historical and contemporary views of knowledge development and of science, with particular emphasis on the ways these views influence approaches to nursing inquiry. Emphasis on analyzing the underlying epistemological and ontological assumptions and implications of diverse approaches to knowledge generation in nursing.

NURS 589 Theoretical Perspectives in Nursing (3) Critical analysis of theory development, including evaluation of relationships among theories, evidence, and explanation. Diverse approaches used to appraise historical and contemporary milestones in the development and evaluation of nursing knowledge. Emphasis on process and implications of theory development for nursing research, practice, education, and systems. Prerequisite: NURS 588. Offered: W.

NURS 590 Ecology of Human Health (5) Provides conceptual foundation for the study of human health ecology within nursing science. Frameworks for understanding human health as an outcome of individual, family, and group interactions and transactions with environments are applied. Provides the basis for evaluation and developing therapeutic approaches to improve health.

NURS 592 The Science of Therapeutics: Theoretical Foundations (4) Addresses the state of the science of nursing therapeutics. Students examine the practices of nursing to promote, maintain, and restore human health from an ecological perspective. Therapeutics considered from the perspectives of the individual, family, and community systems. Prerequisite: NURS 590 or equivalent with permission of instructor.

NURS 595 Synthesis of Nursing Science (3) Advanced seminar for critical analysis, integration, and synthesis of material for a research proposal. Focus includes discussion of research integrity and ethics, including scientific conduct, risk management related to scientific misconduct and negligence. Prerequisite: NURS 587; NURS 588; NURS 589; NURS 590; NURS 592; NMETH 579; NMETH 580; and NMETH 591. Credit/no-credit only.

NURS 597 Health in the Context of Culture (5-6, max. 24) Provides basic overview of health and healthcare challenges and opportunities in other countries. Examines socio-cultural, environmental, economic, political, and ecological factors that influence, health, health promotion, illness, disability, and death. Address responses to health issues both within and outside the health sector. May include study abroad.

NURS 599 Selected Readings in Nursing Science (1-3, max. 18) Analysis of synthesis of selected readings with faculty mentor. Prerequisite: permission of instructor. Credit/no-credit only.

Nursing Clinical

NCLIN 302 Practicum: Health Assessment (1-5, max. 5) Lecture and lab emphasize nursing skills in communication, interviewing, functional and physical health assessment. Includes: basic communication skills, beginning physical and psychosocial assessment of the individual across the lifespan, and family assessment. Offered: AS.

NCLIN 306 Practicum: Basic Skills of Nursing Practice (4) Practicum in communication, interviewing, health assessment, identification of threats to health in clinical settings. Explores risk, vulnerability identification, communication, physical/psychosocial assessment of individuals across lifespan, nursing care planning, documentation, psychomotor skills development. Prerequisite: NCLIN 302, which may be taken concurrently. Credit/no-credit only.

NCLIN 403 Practicum: Pediatric Nursing (4) Provides supervised acute/chronic illness nursing care to pediatrics clients. Emphasizes beginning skills in systematic health and developmental assessment, including person/environment fit, basic competency in selected nursing therapies, and developing role as care agent for pediatrics clients and their families. Prerequisite: NURS 401, may be taken concurrently. Credit/no-credit only. Offered: WSp.

NCLIN 407 Practicum: Nursing Care of Ill Adults (5) Provides supervised nursing care to ill adults and their families. Emphasizes systematic assessment, including person/environment fit, developing competency in selected nursing therapies, and developing a role as a professional nurse. Prerequisite: NURS 401, which may be taken concurrently. Credit/no-credit only.

NCLIN 409 Partnerships in Community Health (4) Analysis, application, and evaluation of community partnership process for health. Analysis of nursing role in community/public health, including community building, collaboration, policy. Development and formulation of community interventions to maintain/promote biopsychosocial health, and

to promote health/prevention of injury and disease. Credit/no-credit only.

NCLIN 411 Transition to Clinical Practice (9) Focuses on critical examination, synthesis, and evaluation of professional nursing care with individual clients or groups reflecting diverse settings, ages, and ethnic communities. Emphasizes mastering theoretical concepts, applying research findings, improving skill competency, and developing clinical leadership capabilities. Credit/no-credit only.

NCLIN 416 Practicum: Nursing of Families: Childbearing and Childrearing (4) Provides the opportunity for supervised nursing of childbearing and childrearing families and individuals. Emphasizes expanding nursing process skills, especially health promotion, with individuals and families during childbearing and childrearing. Prerequisite: NURS 415, which may be taken concurrently. Credit/no-credit only. Offered: AW.

NCLIN 418 Practicum: Psychosocial Nursing (4) Provides supervised psychosocial nursing care to individuals/families/groups/communities with threats to or alterations in psychosocial health. Emphasizes increasing skill in systematic assessment, developing competency in selected psychosocial nursing interventions, and evaluation of treatment outcomes. Prerequisite: NURS 417, which may be taken concurrently. Credit/no-credit only. Offered: AW.

NCLIN 490 Special Laboratory Elective (1-4, max. 4) Provides supervised laboratory experience to enhance and document clinical skills and decision making. Prerequisite: permission of instructor. Credit/no-credit only.

NCLIN 499 Clinical Practicum Elective (1-5) Provides opportunities to develop nursing skills in the care of individuals, groups, communities, or care-systems. Individually arranged with faculty member for application of theory and principles to direct care, consultation, education, or care coordinator roles. Prerequisite: NCLIN 302; NCLIN 306; NCLIN 402; NCLIN 406.

NCLIN 500 Comprehensive Health Assessment (3) Uses didactic and experimental learning to develop evidence-informed advanced assessment skills including systematic collection, organization, interpretation, and communication of data reflecting the health status of adolescents/adults/older adults. Emphasizes a holistic analysis of developmental, familial, physiological, psychosocial, occupational, environmental, functional, nutritional, and cultural aspects of health. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWS.

NCLIN 501 Diagnostic Health Assessment (1-5, max. 5) Examines evidence-informed clinical decision-making in the advanced assessment of symptoms experienced by adolescents/adults/older adults. Uses didactic and experimental learning in the systematic collection, integration, analysis, interpretation, and communication of focuses subjective and objective data, including formulation of diagnostic hypotheses. Prerequisite: NCLIN 500, which may be taken concurrently. Credit/no-credit only. Offered: AWS.

NCLIN 502 Pediatric Diagnostic Health Assessment ([1-2]-, max. 2) Uses didactic and experimental learning to develop evidence-informed advanced assessment skills including systematic collection, organization, interpretation, integration, and communication of data reflecting health status of children from birth to adolescence. Emphasizes holistic analysis of development, familial, physiological, psychosocial, environmental, functional, nutritional, and cultural aspects of health. Prerequisite: permission of instructor. Credit/no-credit only. Offered: A.

NCLIN 503 Advanced Fieldwork Community Health Nursing (2-6, max. 12) Guided experience in delineating nursing roles in community settings. Development of a philosophy of community health nursing. Application of core concepts pertaining to health, ethics, care, and community. A minimum of four hours of guided experience weekly. Prerequisite: graduate standing and permission of instructor.

NCLIN 505 Diagnostic Management and Decision Making (3) P. CHRISTIANSON Examines diagnostics pertinent to adult and geriatric illnesses from individual and population perspectives, in the context of evidence, risks/benefits, equity, cost, access, and quality of care. Case analyses integrate health assessment and differential diagnoses into selection of appropriate tests. Includes didactic and lab components. Prerequisite: NCLIN 501 or equivalent. Offered: W.

NCLIN 508 Seminar in Group Treatment (1) Seminar on the theoretical basis for working with various treatment groups. Analysis of selected approaches to group treatment. Analysis of leader responsibilities and functions in the development of therapeutic group experiences.

NCLIN 510 Group Work with High-Risk Youth (3-6, max. 6) Theory and application course in group counseling for high-risk youth. Central theme is group leader effectiveness in helping young people increase school performance, decrease drug involvement, and increase emotional well-being. Open to graduate students in nursing, education, and related human services professions.

NCLIN 512 Advanced Practicum in Family and Child Nursing I (2-12, max. 35) Clinical seminar and practicum provide opportunities to develop advanced nursing practice competencies in the care of women, families, children, and/or adolescents. Focuses on the application of theory and principles when providing direct patient care, patient education, and the collaboration of care with individuals and/or groups. Credit/no-credit only.

NCLIN 514 Seminar in Home Care for Chronic Illness (3) Home-care services as component of community health nursing. Understanding effects of direct nursing functions on care of chronically ill persons and their families. Selected field study experiences in community health settings. Prerequisite: NURS 563, graduate standing, and permission of instructor.

NCLIN 516 Advanced Clinical Practicum I (4) Clinical practicum and seminar providing opportunities to develop advanced nursing practice competencies with targeted populations. Focuses on the application of theory and principles when providing care, education, and collaboration with individuals and groups. Credit/no-credit only. Offered: Sp.

NCLIN 517 Advanced Clinical Practicum II (5) Clinical practicum and seminar providing opportunities to develop advanced nursing practice competencies with targeted populations. Focuses on the application of theory and principles when providing care, education, and collaboration with individuals, groups, and systems. Credit/no-credit only. Offered: S.

NCLIN 518 Advanced Clinical Practicum III (6) Clinical practicum and seminar providing opportunities to develop advanced nursing practice competencies with targeted populations. Focuses on the application of theory and principles when providing care, education, and collaboration with individuals, groups, and systems. Credit/no-credit only. Offered: A.

NCLIN 519 Newborn Assessment for Advanced Practice (1) Develops knowledge and skills to obtain and evaluate health histories and perform systematic physical assessment on newborns and young infants using diagnostic reasoning process and evidence-based approach. Analyzes data to develop different diagnoses and management plans. Prerequisite: nurse-midwifery and perinatal nurse specialist students or permission of instructor. Credit/no-credit only.

NCLIN 520 Clinical Reasoning and Assessment Across the Lifespan (2) Provides the framework to begin evidence-informed clinical decision-making in the advanced assessment of patients across the lifespan. Includes didactic and experiential learning in systematic collection, integration, analysis, interpretation, and communication of focused subjective and objective data, including formulation of

diagnostic hypotheses. Emphasizes a holistic approach. Credit/no-credit only. Offered: A.

NCLIN 521 Diagnostic Decision Making and Clinical Skills Laboratory (2) Designed to enhance student's knowledge, performance, and interpretation of various diagnostic tests and clinical procedures in multiple settings. Includes skills across the age span. Skill demonstration and validation occur in the lab classroom. Co-requisite: NCLIN 516; permission of instructor. Credit/no-credit only.

NCLIN 532 Advanced Practice in Community Health Systems Nursing: Overview (3) Seminar and practicum focusing on evidence-based approaches to community health systems nursing, integration and application of theories, and content related to social determinants of health and social justice. Emphasizes the development of advanced practice, leadership, and practice inquiry competence. Credit/no-credit only. Offered: A.

NCLIN 533 Advanced Practice in Community Health Systems Nursing: Culture (3) Seminar and practicum focusing on evidence-based approaches to community health systems nursing, integration and application of theories, and content related to cultural issues affecting the health of individuals, populations, and communities. Emphasizes the development of advanced practice, leadership, and practice inquiry competence. Credit/no-credit only. Offered: W.

NCLIN 534 Advanced Practice in Community Health Systems Nursing: Assessment (3) Seminar and practicum focusing on evidence-based approaches to community health systems nursing. Includes integration and application of theories and content related to the assessment and appraisal of communities and populations. Emphasizes the development of advanced practice, leadership, and practice inquiry competence. Credit/no-credit only. Offered: Sp.

NCLIN 535 Advanced Practice in Community Health Systems Nursing: Policy (4) Seminar and practicum focusing on evidence-based approaches to community health systems nursing. Includes integration and application of theories and content related to health-related organizational and public policy that promotes health equity. Emphasizes the development of advanced practice, leadership, and practice inquiry competence. Credit/no-credit only. Offered: A.

NCLIN 536 Advanced Practice in Community Health Systems Nursing: Health Systems (4) Seminar and practicum focusing on evidence-based approaches to community health systems nursing. Includes integration and application of theories and content related to systems-level models of practice to service delivery among communities and populations. Emphasizes the development of advanced practice, leadership, and practice inquiry competence. Credit/no-credit only. Offered: W.

NCLIN 540 Infant Mental Health Practice: Parent Child Relationships and Intervention ([3-6]-, max. 18) Focuses on reflective practice, relationship-based consultation, and therapeutic interventions with infants/toddlers and caregivers. Students complete required clinical practicum at assigned community sites for three quarters. Prerequisite: admission to Infant Mental Health certificate program. Credit/no-credit only. Offered: AWSp.

NCLIN 541 Advanced Practice Specialist Clinical Practicum (1-10, max. 10) Apply, synthesize, evaluate, and communicate knowledge about a specific domain of advanced medical/surgical or forensics nursing practice. Emphasis is on specialization and role development. Prerequisite: permission of instructor. Credit/no-credit only.

NCLIN 542 Advanced Practice Specialist Clinical Practicum II (1-10, max. 10) Apply, synthesize, evaluate, and communicate knowledge about a specific domain of advanced medical/surgical or forensics nursing practice. Fieldwork emphasizes greater depth/complexity/independence in specialization and role development. Seminars emphasize critical analysis of role-related issues.

Capstone experience for clinical practicum. Prerequisite: NCLIN 541. Credit/no-credit only.

NCLIN 543 Advanced Practice Specialist Clinical Practicum III (1-10, max. 10) Apply, synthesize, evaluate, and communicate knowledge about a specific domain of advanced medical/surgical or forensics nursing practice. Role development within specialty context. Emphasis is on critical analysis of leadership-related issues. For students in final clinical, serves as capstone. Prerequisite: NCLIN 542. Credit/no-credit only.

NCLIN 544 Advanced Practice Specialist Clinical Practicum IV (1-10, max. 20) Apply, synthesize, evaluate, and communicate knowledge about a specific domain of advanced medical/surgical or forensics nursing practice. Fieldwork serves as capstone experience. Seminar emphasis is on consultation and collaboration. Prerequisite: NCLIN 543. Credit/no-credit only.

NCLIN 549 Nurse Practitioner Clinical Practicum I: Adults/Older Adults (1-10, max. 10) Clinical fieldwork and seminar in advanced nursing practice with individual/groups. Students practice under clinical preceptor supervision. Focuses on data collection/critical thinking related to health status and threats to health, incorporating knowledge from the biological, behavioral, and social sciences. Prerequisite: permission of instructor, or NCLIN 501 or equivalent. Credit/no-credit only.

NCLIN 550 Nurse Practitioner Clinical Practicum II: Adults/Older Adults (1-10, max. 10) Clinical fieldwork and seminar in advanced practice nursing. Builds on NCLIN 549, emphasizing critical thinking related to the differential diagnosis/management of health problems and human responses. Students practice under clinical preceptor supervision. Addresses selected role issues in advanced practice nursing. Prerequisite: NCLIN 549 or permission of instructor. Credit/no-credit only.

NCLIN 551 Advanced Practice Nursing Clinical Practicum III: Adults/Older Adults (1-10, max. 10) Clinical fieldwork and seminar in advanced practice nursing. Builds on NCLIN 550, emphasizing the integration and application of previous learning in the care of people with multiple health problems. Students practice under preceptor supervision. Addresses selected role issues in advanced practice nursing. Prerequisite: NCLIN 550 or permission of instructor. Credit/no-credit only.

NCLIN 552 Nurse Practitioner Clinical Practicum IV: Adults/Older Adults (1-10, max. 10) Intensive clinical experience in which students integrate previous learning to assume responsibility for care of older adults and/or adults with multiple health problems. Students practice as an advanced practice nurse supervised by a preceptor, assuming increasing responsibility for planning/implementing therapies and for documenting/evaluating outcomes. Prerequisite: NCLIN 551. Credit/no-credit only.

NCLIN 562 Professional Interpersonal Styles of Communication with Families to Enhance Health Outcomes (3) Complex communication processes evaluated and applied to the family as unit of interaction within interdisciplinary context. Empirical based communication practices analyzed considering family variables adherence, satisfaction, health outcomes, and cost effectiveness. Engagement in experiential learning through challenging clinical scenarios. Emphasizes cultural competencies. Prerequisite: DNP nursing student or permission of instructor. Credit/no-credit only.

NCLIN 566 Advanced Clinical Practicum in Psychosocial Nursing (1-9, max. 20) Seminar and practicum focus on development of advanced clinical and role-function skills. Practicum in settings with select populations under supervision of expert clinicians. Seminars use evidenced-based practice criteria to integrate cases into discussion. Prerequisite: NURS 570, NURS 564, one theory course, or permission of instructor. Credit/no-credit only.

NCLIN 567 Advanced Practice Clinical Practicum (2-6, max. 22) Practicum used to expand, deepen, or enrich advanced practice skills relevant to area of specialty preparation. Uses clinical activities to reflect an integration of advanced practice, leadership, and practice inquiry. Emphasizes self-directed learning, in-depth clinical skill building and decision-making, continuity of care, and interprofessional collaboration. Prerequisite: permission of instructor. Credit/no-credit only.

NCLIN 599 Independent Study Clinical Practicum (1-12, max. 25) Clinical practicum to develop advanced-practice nursing skills in care of individuals, groups, communities, or care systems. Individually arranged with faculty member for application of theory and principles to direct care, consultation, education, or care coordinator roles. Prerequisite: matriculated MN, DNP students, or post-master's student, and permission of academic adviser and instructor. Credit/no-credit only. Offered: AWSpS.

NCLIN 798 Tripartite Immersion Practicum ([1-5]-, max. 5) Practicum to synthesize and expand knowledge and skills in application of tripartite role of advanced practice, inquiry, and leadership. Analysis of practice issues including reflective practice, collaboration, health systems, technology, ethics, and policy. Prerequisite: permission of instructor and Supervisory Committee. Credit/no-credit only.

NCLIN 801 Advanced Clinical Practicum Immersion (9) Immersion clinical practicum and seminar providing opportunities to integrate advanced nursing practice competencies, leadership, professional role, and collaboration with targeted populations. Focuses on the application of theory and principles when providing care, education, and collaboration with individuals, groups, and systems. Offered: A.

Nursing Methods

NMETH 403 Introduction to Research in Nursing (3) Organization of the structure of nursing knowledge through research. Concepts and processes of research utilized in the investigation of nursing science.

NMETH 416 Methods for Research and Inquiry in Nursing I (2) Explores the generation of new knowledge and evidence base for nursing practice in health and illness. Focuses on appraising literature and methods for generating evidence. Offered: A.

NMETH 417 Methods for Research and Inquiry in Nursing II (2) Explores the generation of new knowledge and evidence base for nursing practice in health and illness. Focuses on searching evidence, appraising evidence, and classifying different types/levels of evidence. Offered: W.

NMETH 418 Methods for Research and Inquiry in Nursing III (2) Explores the generation of new knowledge and evidence base for nursing practice in health and illness. Focuses on identifying gaps in the literature/evidence, and formulating a plan to conduct research. Offered: Sp.

NMETH 419 Application of Methods for Research and Inquiry in Nursing (2) Apply methods for contributing to evidence relevant to nursing. In small groups identify, implement, and disseminate a plan for generating, evaluating, synthesizing, or translating evidence around health, healthcare, and/or nursing practice. Offered: Sp.

NMETH 499 Undergraduate Research (1-5, max. 12) Supervised individual scholarly inquiry on a specific nursing problem. Credit/no-credit only.

NMETH 520 Scholarly Inquiry for Nursing Practice (5) Analyzes conceptual, theoretical, ethical, and empirical knowledge as a basis for posing nursing research questions, identifying research designs, selecting sampling and data collection strategies, and proposing analytic methods to answer a research question, and evaluate completed research for its scientific adequacy and applicability to practice. Offered: AWSpS.

NMETH 522 Data Management for Research Professionals (4) Surveys industrial strength data management, using techniques applicable to multi-center, longitudinal re-

search trials with survey instruments. Involves challenges research professionals face as they graduate from a student project to a study with hundreds of cases, variables, multiple survey instruments and a staggered, repeated sampling protocol. Credit/no-credit only.

NMETH 523 Project Management and System Analysis for Health Informatics (3) Masuda Overview of information technology project management principles as contained within the Project Management Body of Knowledge (PM-BOK) and the Systems Development Life Cycle within formal Systems Analysis. Offered: A.

NMETH 524 Healthcare Information Systems and the Electronic Health Records (3) Masuda, Murphy Overview and analysis of healthcare informatics issues, including patient safety and Information Technology (IT), infrastructure, clinical systems, definitions and functions of EHR systems, IT leadership in healthcare organizations, informatics change management, including key user roles evaluating EHR and workflow changes. Offered: W.

NMETH 526 Patient-Centered Interactive Health Communication Technologies (3) Overview of current and emerging consumer-centric eHealth tools and technologies. Researchers and practitioners from multiple disciplines present theories, concepts, and principles from health, information, cognition, and human-factors sciences as they relate to the development and use of these tools and technologies.

NMETH 527 Introduction to Health Informatics and Systems Thinking (3) Masuda, Oyler Examines how informatics aids in the transformation of healthcare delivery and how to most effectively use the theories and best practices in informatics toward building and deploying informatics solutions. Offered: A.

NMETH 528 Computing Concepts: From Theory to Application (3) Johnson Survey of conceptual and applied computing concepts. Conceptual topics include a global survey of hard/software, networking, information systems analysis/design, and programming. The applied component emphasizes desktop system management skills and the creative use of spreadsheets to enhance personal productivity. Offered: W.

NMETH 529 Database Concepts and Applications in Clinical Informatics (3) Oyler Introduction to relational database theory and technology from a health informatics perspective. Focuses on transactional database theory, architecture, and implementation in a socio-technical context. Analyzes database applications used in clinical environments. Introduces knowledge bases and data warehouses. Prerequisite: NMETH 528. Offered: Sp.

NMETH 530 Proposal and Project Development (3/5) Focuses on the application of methods of inquiry to develop a scholarly proposal through faculty-guided small group discussion and individual composition. Students select project option to complete the conceptual phase and most activities to fulfill their plan. Offered: AWSpS.

NMETH 533 Appraisal and Translation of Evidence for Practice (5) Designed to enhance use of methods to critically appraise literature, design, and implement processes to evaluate outcomes of practice, and promote patient-centered care. Applies relevant findings to improve practice, develop guidelines, and use information technology and research methods. Includes dissemination of findings. Prerequisite: either NMETH 535 or permission of instructor. Offered: Sp.

NMETH 535 Nursing Inquiry to Support Evidence-Based Practice (5) Cochrane, Ward Works to understand and apply conceptual, ethical, and practical aspects of quantitative and qualitative research methods by design, sampling, data collection, measurement, and analysis, as a basis for evaluating and generating evidence for nursing practice. Develops skills in data management and statistical analysis to utilize in practice-based inquiry. Prerequisite: either NGS 555 or permission of instructor. Offered: W.

NMETH 536 Methods of Program Evaluation and Quality Improvement (4) *Jarrett, Walsh* Teaches principles and practice of program evaluation and quality assurance. Emphasizes current practices in designing, managing, evaluating, and disseminating finding for use in a variety of healthcare contexts. Includes content on use of informatics to improve healthcare delivery effectiveness, efficiency, and safety. Prerequisite: either NMETH 535, which may be taken concurrently, or permission of instructor. Offered: Sp.

NMETH 570 Seminar in Clinical Research in Nursing (3) Philosophy, problems of design; use of criterion measures in terms of patient care.

NMETH 575 Methodological Issues in Family Research (3) Emphasizes research with the family as unit of analysis. Examines patterns of family functioning in relation to responses to heal situations. Reviews family units from generational and intergenerational perspectives. Critiques methods assessing dyadic and triadic relationships and therapeutic interventions on family outcomes. Prerequisite: permission of instructor.

NMETH 579 Research Design and Methods in Nursing Science (4) Focuses on elements of rigorous research designs and methods commonly used in nursing science; including descriptive, explanatory, predictive, and experimental and quasi-experimental designs, concepts of validity and reliability, and integration of design with analytical approaches for clinical research.

NMETH 580 Methodological Perspectives in Nursing Inquiry (3) Allows students to translate philosophical and theoretical perspectives into research methodologies. Foci include the relationship of theoretical perspectives to methodologies; the methodological issues among and between varying schools of thought such as interpretive/postmodern, critical/feminist, and contemporary empiricist; and how the methodologies influence choices of research design and methods. Prerequisite: NURS 588 or permission of instructor.

NMETH 581 Observational Research Methods (2-6, max. 6) Examines observational methods for conducting verbal and nonverbal behavioral research. Emphasizes critical analysis and rigor in research question formulation, measurement decisions, coding scheme development, data collection, and analysis and interpretation of data. In-depth application of observational method optional. Prerequisite: graduate standing and basic research methods course or permission of instructor. Offered: W.

NMETH 582 Interpretative Methods in Nursing Research (4-) Seminar and field practicum for interpretative research methods. Study on health-related issues using a selected tradition in interpretative methods. Prerequisite: permission of Instructor.

NMETH 583 Interpretative Methods in Nursing Research (-4) Seminar and field practicum for interpretative research methods. Study on health-related issues using a selected tradition in interpretative methods. Prerequisite: permission of instructor.

NMETH 584 Methods: Physiologic Measures (4) Exploration of the measurement of physiologic functioning in human and animal models. Examples include biochemical and biophysical measure. Students develop beginning skills with one physiologic measure. Prerequisite: physiology and chemistry and permission of instructor.

NMETH 585 Meta-Analysis (4) Meta-analysis examined as a method to synthesize research. Overview of meta-analytic methods; description of the collection, analysis, synthesis, and reporting of studies; explanation of statistical calculations; and discussion of reliability and validity measures incorporated into meta-analytic design. Prerequisite: permission of instructor.

NMETH 586 Instrument Development and Testing (4) Includes measurement theory, reliability, validity, level of measurement, and the process of scale development,

modification, or translation. Students learn to evaluate, develop, modify, translate, and test instruments for use in research. Prerequisite: student in health science discipline and permission of instructor.

NMETH 587 Methods of Theory Testing: Causal Modeling with Path Analysis and Structural Equation Modeling (4) Includes causal inferencing and theory testing through causal modeling with path analysis and structural equations modeling. Students learn to evaluate theory models and to apply the content by developing and testing models. Prerequisite: student in health science discipline and permission of instructor.

NMETH 590 Special Topics in Nursing Research (2-5, max. 9) Examination of a specific research method, with evaluation of appropriateness, efficiency, rigor of measurement, and potential for inference for nursing research. Prerequisite: minimum of 5 credits of basic nursing research methodology at graduate level and permission of instructor.

NMETH 591 The Science of Therapeutics: Design and Outcomes (4) Synthesizes advanced strategies to evaluate the short- and long-term outcomes of clinical therapeutics with special emphasis on feasibility, pilot studies, and randomized control trials. Includes analysis of completed studies as well as the design of a randomized control trial of a clinical therapeutic. Prerequisite: NMETH 579, NURS 592, or permission of instructor.

NMETH 592 Clinical Outcome Research II (2-4, max. 4) Application and evaluation of philosophical, methodological, and analytical concepts and issues examined in NMETH 591. Two modules are offered: a) case study and small-n studies and b) large-n studies. Students demonstrate application of decision-making process involved in development of clinical outcome study. Prerequisite: permission of instructor.

NMETH 593 Time Series and Sequential Analysis (4) Basic introduction to terminology and methods of time series and sequential analysis as applicable to nursing-relevant processes in the form of samples of interval and categorical data collected over time; autocorrelation, autoregression, spectrum, socinor, Markovian, lag sequential, and log-linear analyses. Development of practical analysis skills on real data sets. Prerequisite: permission of instructor. Credit/no-credit only.

NMETH 598 Special Projects ([1-12]-, max. 12) Fulfills the requirements of the non-thesis option for Master's students in nursing. Projects involve scholarly inquiry with in-depth focused analysis, culminating in a written product/report for dissemination. Prerequisite: NMETH 520 or permission of instructor. Credit/no-credit only.

NMETH 600 Independent Study or Research (*-) Credit/no-credit only.

NMETH 700 Master's Thesis (*-) Credit/no-credit only.

NMETH 800 Doctoral Dissertation (*-) Prerequisite: permission of Supervisory Committee chairperson or Graduate Program Coordinator. Credit/no-credit only.

NMETH 801 Practice Doctorate Project/Capstone (3-, max. 6) Addresses a clinical or systems problem using an evidence-based, practice relevant approach. Students engage in self-reflection, collaborative partnership building, and use of leadership strategies. Analyzes implications of project for future practice and practice inquiry activities. Culminates in written and oral reports for dissemination. Credit/no-credit only. Offered: AW.

School of Pharmacy

Dean

Thomas A. Baillie

Associate Deans

Nanci L. Murphy

Stanley S. Weber

Established in 1894, the UW School of Pharmacy is proud of its strong commitment to excellence and the recognition given to its faculty, students, and graduates for their outstanding educational, research, and service activities. The School's Dean's Office and three departments - Medicinal Chemistry, Pharmaceuticals, and Pharmacy - are located in the H-Wing of the Health Sciences Building and the South Campus Center. The School is a member of the American Association of Colleges of Pharmacy and its programs are accredited by the Accreditation Council on Pharmacy Education.

DOCTOR OF PHARMACY PROGRAM

The School of Pharmacy offers a four-year program leading to the Doctor of Pharmacy (PharmD) degree. The curriculum of the PharmD program is designed to provide students the scientific background and clinical skills necessary to take the North American Pharmacist Licensure Examination (NAPLEX) and the Multistate Pharmacy Jurisprudence Examination (MPJE) to enter professional practice.

Limited class enrollment allows for individualized attention from instructors while students still enjoy the benefits of attending a large university. Instructional methods emphasize the critical thinking, problem-solving, and clinical skills necessary to provide rational drug therapy, reduce medication-related problems, promote healthy lifestyles and disease prevention, optimize health outcomes, enhance patient adherence, and render care in a changing health-care system. The School fosters a commitment to life-long learning and provides an environment where students develop the knowledge, attitudes, and skills consistent with the profession's high standards.

Admission

Admission is for autumn quarter only. Applicants who are current UW students or who are considered admissible to UW are not assured admission. Admission is competitive, based on a number of factors including cumulative and prerequisite GPAs, PCAT scores, written communication skills as demonstrated in application essays, interview results, and review of all application materials. Competitiveness varies from year to year, depending on size and strength of the applicant pool.

Because of limits on enrollment, the School cannot admit all qualified applicants. On average, over 600 students apply each year for 100 generally available positions. Admission is contingent upon satisfactory completion of all prerequisites, eligibility to obtain a Washington State Pharmacy Intern Certificate, and satisfactory results on the Criminal Background Check and Conviction/Criminal History Information Form. Accepted students are required to meet the University and health sciences immunization requirements.

After a preliminary assessment of the applicant pool, based on completeness of the application, review of all application materials, prerequisite and cumulative GPA thresholds and PCAT score thresholds, the most qualified applicants are invited for an interview in Seattle with members of the PharmD Admissions Committee. Residents from states participating in the Western Interstate Commission for Higher Education (WICHE) Pharmacy Student

Exchange Program (Alaska and Nevada) are encouraged to apply. Applicants who meet or exceed GPA and PCAT minimum thresholds are not guaranteed an interview. Offers of interview are dependent on the size and competitiveness of the applicant pool during each annual admission cycle.

Further information on admission requirements, application procedures, and program content is available from the School of Pharmacy Office of Academic and Student Programs or at sop.washington.edu/school-of-pharmacy/pharmd-admissions/applications-to-pharmd-program.html.

GRADUATE PROGRAMS

Graduate Program Coordinator

H375 Health Sciences, Box 357630

(206) 616-1383

The Department of Pharmacy offers graduate study leading to a PhD degree in pharmaceutical outcomes research and policy. Emphasis of this program is on the health and cost outcomes of pharmaceuticals and pharmaceutical services and policies. Graduate training in this program prepares students for career opportunities in teaching and research in universities, safety and economic evaluation of products in the pharmaceutical industry, policy analysis of governmental agencies, and drug use management within healthcare delivery and financing organizations.

Also offered is a track in the PharmD/MS program in pharmaceutical outcomes research and policy, which provides an opportunity for one-to-two students currently completing their PharmD training at the UW to enter the graduate program in their fourth year of training. The program requires completion of 64 credit hours, a written thesis, and a quarter of practicum in a managed care, government, industry, or other appropriate setting. At the end of this training, students may elect to receive a master's degree, or continue on toward a PhD degree.

The UW's biomedical regulatory affairs Master of Science program, offered by the UW School of Pharmacy in partnership with UW Educational Outreach, addresses a growing need for well-trained professionals in the regulatory field. The degree serves those who wish to advance their careers in the medical products industry or those entering the field from related areas.

Deadline for application for the PhD and the PharmD/MS programs is December 31. Applicants are notified of acceptance or rejection by March 30. Refer to the application deadline for the biomedical regulatory affairs master-of-science program posted at: www.biomedreg.uw.edu/admissions/deadlines.asp.

Application materials and additional information are available in the Department of Pharmacy or at program websites listed below:

- sop.washington.edu/porpp/graduate-program/phd-program27.html.
- sop.washington.edu/porpp/graduate-program/concurrent-pharmdms-degree-in-pharmaceutical-outcomes-research-a-policy.html.
- www.biomedreg.uw.edu.

Residency and Fellowship Programs

The Department of Pharmacy offers several postdoctoral fellowships in pharmacotherapeutics and pharmaceutical outcomes, and advanced community residency programs, primarily intended for PharmD graduates. Additional information is available on the department's website: sop.washington.edu/pharmacy/about/fellowship-a-residency-opportunities.html.

Clinical and Affiliate Faculty

In addition to the School of Pharmacy's full- and part-time faculty listed above, a large number of practicing pharmacists contribute to the School's academic programs. Over 500 pharmacists throughout the Pacific Northwest are members of the clinical and affiliate faculty, representing a variety of pharmacy practice settings such as community, hospital, nursing home, government, and industry. Information on the names, addresses and practice settings of these faculty members is available from the Office of Professional Pharmacy Education.

Medicinal Chemistry

The Department of Medicinal Chemistry offers programs of graduate study leading to the degree of doctor of philosophy. The degree includes didactic and research-based learning with faculty who are leaders in several areas of modern biomedical research.

Graduates of the program acquire the skills necessary to develop quantitative and qualitative methodologies necessary for the study of biochemical processes that occur at the cellular and subcellular levels. These include the elucidation of biochemical transformations and interactions using techniques such as protein engineering, and a broad array of supportive spectroscopic techniques including mass spectrometry and NMR.

One major area of research interest is the role of biotransformation processes in the toxification and detoxification of drugs and environmental contaminants. A second area of interest is the determination of protein and small ligand structure and function using NMR, mass spectroscopy, and other biophysical techniques. Issues of biomedical importance include elucidation of mechanisms of drug-induced cell toxicity, drug-drug and drug-herbal interactions, identification of enzyme attributes that dictate substrate specificity and catalytic mechanism, pharmacogenetics, proteomics, and mechanisms of viral assembly.

Most students proceed directly to the doctoral degree program. Successful completion of a series of cumulative examinations and at least two quarters of teaching experience are among the requirements for completion of the doctoral program.

GRADUATE PROGRAM

Graduate Program Coordinator

H164 Health Sciences, Box 357610

(206) 543-2224

medchem@uw.edu

Admission Requirements

Students with undergraduate degrees in pharmacy or in the biological or physical sciences are accepted for graduate study in medicinal chemistry. Undergraduates who plan to pursue graduate study are encouraged to expedite their programs by selection of pertinent electives. Although the choice of electives varies with the student's ultimate goals, graduate study in medicinal chemistry requires an adequate background in biological and physical sciences.

Degree Requirements

Doctor of Philosophy

90 credits minimum, to include:

Proficiency in organic, medicinal and physical chemistry, pharmacology, biochemistry, and molecular biology. Most coursework is completed in the first two years. The pro-

gram is flexible and easily adaptable to meet individual interests and needs.

In the first year, students rotate through the laboratories of at least two faculty members. At the end of the first year, the student chooses a faculty sponsor and a dissertation research project.

1. *First Year:* CHEM 530, CHEM 531, CHEM 532; MEDCH 501, MEDCH 502, MEDCH 503; MEDCH 520 (1 credit each quarter); MEDCH 582 (1 credit each quarter); MEDCH 600
2. *Second Year:* BIOC 530; MEDCH 527 MEDCH 541; PHCOL 510, PHCOL 511; MEDCH 520 (1 credit each quarter); MEDCH 582 (1 credit each quarter); MEDCH 600
3. *Third Year:* MEDCH 520 (1 credit each quarter); MEDCH 582 (1 credit each quarter); MEDCH 600 (7 credits each quarter)
4. *Fourth Year:* MEDCH 800

Financial Aid

Financial support in the form of research assistantships and fellowships may be available to students in good standing throughout their graduate careers. Availability of financial support varies from year to year, and prospective applicants should contact the Graduate Program Coordinator for additional information.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsat/

MEDCH 400 Fundamental Concepts in Medicinal Chemistry (3) *Nelson* Principles of physical organic chemistry; chemical bonding, stereochemistry, acids/bases, and reaction mechanisms relevant to processes such as drug distribution, specificity, and metabolism. Prerequisite: either CHEM 239 or CHEM 337. Offered: A.

MEDCH 495 Special Studies in Medicinal Chemistry (*, max. 6) Opportunity to expand the breadth and depth of understanding in specific areas. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

MEDCH 499 Independent Study/Research (*, max. 24) Research problems in medicinal chemistry. Prerequisite: cumulative GPA of 2.50 and permission of instructor. Offered: AWSpS.

MEDCH 520 Seminar (1, max. 30) *A. NATH* Graduate students attend seminars and make one formal presentation per year while in residence; maximum of three presentations. Credit/no-credit only. Offered: jointly with PCEUT 520.

MEDCH 521 Advanced Medicinal Chemistry (3) *Atkins, Nelson* Application of integrated data from the physical and biological sciences to problems of chemotherapy, including transport of drugs to site of action, biotransformation of drugs, interaction of drugs with enzyme systems, and recent advances in drug design. Prerequisite: CHEM 457, CHEM 531, and BIOC 442, or permission of instructor. Offered: Sp.

MEDCH 527 Drug Metabolism (4) *A. RETTIE, K. THUMMEL* Considerations of the biochemical mechanisms for the biotransformation of drugs and foreign compounds. Includes reaction mechanisms, ultrastructural considerations, induction mechanisms, methodology, kinetics of inhibition and activation, steroid and amine metabolism. Offered: jointly with PHCOL 527; W, odd years.

MEDCH 528 Biophysical Enzymology and Biopharmaceuticals (3) *Atkins, Catalano* Covers in-depth treatment of chemical catalysis and transition state theory as related to enzyme mechanisms; thermodynamics and kinetics of protein-ligand interactions, protein-protein-interactions and protein-lipid interactions, and methods for their study.

Discusses therapeutically relevant examples, including viruses, therapeutic antibodies, and drug targets. Offered: W, even years.

MEDCH 529 Advanced Medicinal Chemistry (4) *Atkins, Kunze, Nelson, Rettie, Totah* Covers the fundamental aspects of contemporary medicinal chemistry. Discusses the chemical characteristics of drugs and drug targets, pharmaceutical properties of drugs, drug metabolism, toxicology, and pharmacogenetics. Focuses on various drug classes; their biochemistry, pharmacology, mechanism of action, and toxicology. Offered: W.

MEDCH 530 Integrated Pharmacology (1) *Atkins, Beavo, Rettie* Students present and discuss primary literature that integrates aspects of medicinal chemistry and pharmacokinetics with the physiology, pharmacology, and genetics of therapeutic drug targets. Examples of targets discussed include ion channels and enzymes relevant to cardiovascular disease, and neurodegenerative disease. Credit/no-credit only. Offered: Sp.

MEDCH 535 P-Diagnostic Medicinal Chemistry (3) *Catalano, Kunze* Examination of clinical diagnostic tests with regard to the chemical or biochemical rationale of the testing method, interpretation of test results, and major factors influencing test values with special emphasis on the effects of medications. Clinical laboratory data from patients considered in light of these factors. Offered: W.

MEDCH 541 Biological Mass Spectrometry (3) *Whittington* Covers the basics of modern ionization methods and mass analyzers; small molecule structure assignment, quantitative assay development by LC-MS and metabolomics; quantitative discovery-based proteomics and validation methods; and peptide sequence determination, post-translational modification mapping, and protein structure determination methods. Prerequisite: permission of instructor. Offered: Sp.

MEDCH 551 Flavin and Heme-Containing Monooxygenases (1) *Rettie* Discussion of research strategies and methodologies concerning the structure, function, and polymorphic expression of human monooxygenases, especially the cytochrome P450s and flavin-containing monooxygenases. Emphasis placed on experimental problem solving, data analysis, and presentation. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

MEDCH 552 Medicinal Chemistry Aspects of Drug Action and Drug Metabolism (1) *Nelson* Discussion of research strategies, methodologies, and literature concerning the mechanisms of drug action and drug metabolism, particularly as these apply to opiate drugs and beta blockers. Emphases placed on problem solving, data analysis, and presentation. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

MEDCH 553 Structure and Function of Macromolecular Protein Assemblies (1) *Atkins* Discussion of research strategies, methods, and current literature concerning macromolecular self-assembly processes and protein-protein interactions as they relate to biological specificity. Emphasis on experimental approaches used in current literature. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

MEDCH 554 Biophysical and Structural Virology (1) *Lee* Discusses current topics in virus research and literature. Weekly sessions led by all participating members of the research group. Credit/no-credit only. Offered: AWSpS.

MEDCH 555 Biophysics and Pharmacology of Dynamic Proteins (1) *Nath* Discusses current topics in protein dynamics, focusing on intrinsically disordered proteins and drug-metabolizing enzymes. Weekly sessions led by all participating members of the research group. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

MEDCH 556 Clinical and Mechanistic Aspects of Drug Metabolism (1) *Totah* Discussion of research methodologies and new approaches to elucidate chemical mechanisms

and enzymology of reactions catalyzed by cytochrome P-450. Emphasis on clinical applications and predicting in vivo drug behavior and toxicity. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

MEDCH 558 Human Cytochrome P-450 Biochemistry (1) *Kunze* Presentation and discussion of research strategies and methodologies related to current problems in human drug metabolism by cytochrome P-450 enzymes. Emphasis on hypothesis testing and experimental problem solving in the areas of enzyme kinetics and mechanism. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

MEDCH 559 Biosynthesis, Metabolism, and Analysis of Lipids (1) *L. XU* Covers recent advanced on oxidative metabolism of lipids, lipid biosynthesis, and application of advanced mass spectrometry to the analysis of lipids and oxidized lipids. Weekly sessions led by all participating members of the research group. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

MEDCH 561 P-Immunizing and Antimicrobial Agents (4) *Black, Lee, Totah* Mechanisms of action, spectrum of coverage, resistance patterns, toxicity, and therapeutic applications of antibiotics, antifungals, and antivirals. Also covering chemical and biologic properties of agents used to prevent or treat infectious diseases, including diagnostic, prophylactic, and therapeutic uses of immunizing agents. Prerequisite: MICROM 301, MICROM 302, MEDCH 570, or equivalent, PharmD major, or permission of instructor. Offered: Sp.

MEDCH 562 P-Medicinal Chemistry (3) *W. ATKINS, K. KUNZE, D. PORUBEK, A. RETTIE* Study of the various classes of medicinal compounds with particular emphasis on biological activity, mechanism of action, biotransformation, and the structural and physical properties governing absorption, distribution, and excretion. Prerequisite: MEDCH 400 or satisfactory completion of qualifying exam. Offered: A.

MEDCH 563 P-Medicinal Chemistry (3) *Nelson, Rettie* Study of the various classes of medicinal compounds with particular emphasis on biological activity, mechanism of action, biotransformation, and the structural and physical properties governing absorption, distribution, and excretion. Prerequisite: MEDCH 400 or satisfactory completion of qualifying exam. Offered: W.

MEDCH 564 P-Medicinal Chemistry (3) *Atkins, Nelson* Study of the various classes of medicinal compounds with particular emphasis on biological activity, mechanism of action, biotransformation, and the structural and physical properties governing absorption, distribution, and excretion. Prerequisite: MEDCH 400 or satisfactory completion of qualifying exam. Offered: Sp.

MEDCH 570 P-Medicinal Biochemistry (4) *Catalano, Kunze* Covers advanced topics in medical biochemistry directly related to understanding disease and drug therapy in pharmacy practice. Areas of study include enzymes of drug metabolism, metabolic control of disease states, signal transduction, virology, coagulation and complement cascades, cellular transport, and DNA replication/transcription. Offered: W.

MEDCH 582 Topics in Medicinal Chemistry (1, max. 30) Discussion of pertinent articles from current literature. Credit/no-credit only. Offered: AWSpS.

MEDCH 599 Cumulative Exams for Medicinal Chemistry (1) Quarterly cumulative examinations for graduate students. Credit/no-credit only. Offered: AWSpS.

MEDCH 600 Independent Study or Research (*-) Credit/no-credit only. Offered: AWSpS.

MEDCH 700 Master's Thesis (*-) Credit/no-credit only. Offered: AWSpS.

MEDCH 800 Doctoral Dissertation (*-) Credit/no-credit only. Offered: AWSpS.

Pharmaceutics

The Department of Pharmaceutics offers a program of study leading to the Doctor of Philosophy degree.

The doctoral degree program in pharmaceutics trains research scholars in the fundamental aspects of drug delivery, drug disposition, and drug action in animals and man. Drug disposition includes the facets of drug absorption, distribution, and elimination. Pharmacokinetics is the study of the time course of these processes and the time course of pharmacological effects. Drug delivery includes targeting of drugs and modulation of xenobiotic and drug transporters to tissues or specific cell types to improve their therapeutic effect. For further information, visit: sop.washington.edu/pharmaceutics/about/what-is-pharmaceutics.html.

Typically graduates interact with clinicians, medicinal chemists, biochemists, pharmacologists, analytical chemists, and physiologists. This is possible because their training is highly interdisciplinary at the didactic and research levels.

A wide range of career paths is available to graduates. Opportunities include research in the pharmaceutical industry; research in hospitals, institutes, and foundations; teaching and research in academic institutions; and positions with government regulatory agencies.

GRADUATE PROGRAM

Graduate Program Coordinator

H272 Health Sciences, Box 357610

(206) 543-9434

pceut@uw.edu

Doctor of Philosophy

Admission Requirements

1. One copy of official transcripts in a sealed envelope from each college attended
2. Official GRE score report
3. All foreign students must take the TOEFL and TSE test and send in the official score report
4. Statement of personal goals describing applicant's background, academic interests, and career objectives
5. A resume; or curriculum vitae listing educational and employment history
6. Three letters of recommendation from persons in a position to evaluate the applicant's potential for graduate school.

Degree Requirements

Minimum 90 credits of coursework, to include:

1. **Credits and Scholarship:** Minimum 41 credits of coursework, exclusive of thesis and non thesis research. 3.00 GPA in all numerically graded courses numbered 400 and 500. Minimum passing grade in any given course is 2.7, except required pharmaceutics courses (PCEUT 501, PCEUT 502, PCEUT 503, PCEUT 506) in which a passing grade is 3.0. Credits earned for a master's degree may apply towards the doctoral degree.
2. **Teaching Experience:** Minimum two quarters of teaching assistant experience. Students are not asked to assist more than one class an academic quarter (less than 12 contact hours/week). Most students complete this requirement during the first three years in the program.
3. **Examinations and Progress Evaluation:** A series of preliminary, cumulative (written) examinations; a general examination (oral) for advancement to PhD candidacy; a final examination (defense of the thesis). See Appendix A, "Progression Steps in Relation to the Doctoral De-

gree," for an overview. Appendix B describes the cumulative examination, which precedes the general exam. Appendix C provides details about formation of a doctoral Supervisory Committee and its role in the general exam and thesis defense. Appendix D provides details about the structure and conduct of the general exam.

4. **Master's Degree Bypass:** Students who qualify for continuation to the PhD degree may be allowed to bypass the M.S. degree. See Appendix A for petition procedure.
5. **Seminars:** All students must present a minimum of two and a maximum of four seminars while in the doctoral program (PCEUT 520). In addition, a presentation of papers from current literature is required twice a year, starting at the beginning of the second year until defense of the thesis (PCEUT 583). See Appendix E, "Training in Oral Communication through Seminars and Journal Club" for additional details.
6. **Didactic:** Coursework for the doctoral program is divided into four components: (a) prerequisites which define the level of entry into the program; (b) a required core program which is analogous to the major; (c) elective courses, which are not required but are encouraged; (d) seminars and literature review.

a. Prerequisites: MATH 124, MEDCH 400

Applicants with a PharmD degree should have fulfilled the medicinal chemistry requirement. MEDCH 400 can be taken in autumn quarter of the first year. Candidates are accepted on condition that any deficiencies in course requirements are rectified by the end of the first academic year.

b. Core Program: PCEUT 506, PCEUT 501, PCEUT 502, PCEUT 503, PCEUT 510, PHCOL 511, PHCOL 512, PHCOL 513, BIOST 511, BIOST 512, HCDE 509, PCEUT 600, PCEUT 800

Students entering with previous graduate-level coursework in the required areas may have some of the above courses waived. In addition, all students must attend the following training sessions, preferably during the first academic year: chemical safety, biological safety, and bioethics training. Radiation safety and animal care may also be required, if relevant to the student's thesis research.

c. Directed Electives: Electives are not required. However, students are encouraged to take elective courses that might benefit their thesis project and career goals. Courses that might be of interest can be found in the disciplines of biotransformation/biochemistry, biologics/drug delivery, pharmacology/cell biology, and physiological modeling/biostatistics.

d. Seminars and Literature Review:

- i. PCEUT 520 (1 credit/quarter; 3 quarters/year until graduation). Beginning the second year, students make one presentation each year, with a maximum of four presentations. A general topic seminar is presented in the second year; research presentations in subsequent years.
- ii. PCEUT 583 (1 credit/quarter; 3 quarters/year until graduation). Beginning the second year, students make two presentations each year until graduation. Journal club presentation is waived in the quarter during which the student is scheduled to make a PCEUT 520 seminar presentation.

7. Research: PCEUT 600, PCEUT 800.

Students complete three research laboratory rotations (PCEUT 600), one per quarter, starting autumn quarter of their first year. A student may opt to complete a rotation in summer quarter, before the initiation of classes. This involves an early appointment in the department and, thus, decisions must be made at the time they accept the offer to enroll. Matching of available labs with each incoming student is facilitated by the first year

graduate adviser. Student preferences are given due consideration.

Students must choose a thesis adviser by the end of spring quarter in their first academic year (See Appendix A for additional details).

Students must begin research in the lab of their adviser by summer quarter at the end of their first academic year (PCEUT 600). Most students may find that after-class and off-hours are the best and most productive time for laboratory research (See Appendix A1b for additional details).

After successful completion of the master's bypass requirements (see Appendix A for details), students sign up for PCEUT 800, until the defense of their thesis.

8. **Cumulative Examination:** Students begin taking cumulative exams in autumn quarter of their second academic year, and continue taking them at every offering until completion of pass requirements or until they take the maximum of eight exams. A total of eight exams are offered, two each in autumn, winter, spring, and summer quarters. For each exam, there two questions. Students must pass four of eight exams to complete the cumulative requirement. Students who do not achieve this goal are given the option of completing requirements for a terminal master's degree or withdrawal from the program.

Financial Aid

All students in the program receive financial support in the form of research assistantships, Public Health Service predoctoral training fellowships, and other fellowships such as the William E. Bradley Graduate Fellowship or those from the American Foundation for Pharmaceutical Education or from several pharmaceutical companies.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

PCEUT 499 Undergraduate Research (1-6, max. 12) Research problems in drug disposition, drug targeting, and drug development. Prerequisite: cumulative GPA of 2.50 and permission of instructor.

PCEUT 501 Advanced Pharmacokinetics I (5) Lin, Prasad, Unadkat Drug absorption, distribution, excretion, metabolism, and pharmacological effects in mammalian systems. Compartmental and physiologically-based pharmacokinetic models as well as non-compartmental approaches examined. Drug disposition studied in a physiologically realistic context taking nonlinear events into account. Aimed at development of innovative methods for data analysis (including population pharmacokinetic and pharmacodynamic models) and evaluation in biological systems. Prerequisite: PCEUT 506 or permission of instructor. Offered: even years.

PCEUT 502 Pharmacokinetics of Drug Metabolism (4) Isoherranen, Thummel Advanced study of drug metabolism pharmacokinetics. Topics emphasize linear and nonlinear metabolic clearance kinetics, drug-drug interaction mechanisms and kinetics, metabolite kinetics, in vitro-in vivo predictions, pharmacogenetics and other sources of inter-individual variability. Prerequisite: PCEUT 506 or permission of instructor. Offered: even years.

PCEUT 503 Drug Transport and Delivery (5) Ho, Hu, Mao, Shen, Unadkat, Wang Provides advance knowledge of the physico-chemical and biological concepts underlying in vivo transport and delivery of drugs. Prerequisite: PCEUT 506.

PCEUT 506 Pharmacokinetic Principles (6) Lin Covers the fundamentals of pharmacokinetics. Includes lectures and laboratory exercises on the key concepts in pharmacoki-

netics, including compartmental kinetics, clearance, protein binding, bioavailability, pharmacodynamics, clinical pharmacokinetics, and Michaelis-Menten kinetics.

PCEUT 510 Drug Interactions (3) *Collins, Horn, Lin, Shen* Covers common pharmacokinetic mechanisms underlying clinically important interactions between drugs, and patient- and drug-related factors that predispose a patient to adverse drug effects. Includes case-based discussion of approaches to identification, clinical evaluation, and clinical management of drug-drug interaction risk. Prerequisite: PHARM 558; PHARM 559; PHARM 560; PHARM 561; PHARM 563; PHARM 564, and PHARM 565.

PCEUT 513 Basic Concepts in Pharmacogenetics and Toxicogenomics (3) Addresses current technologies for DNA sequencing, genotyping, RNA and epigenetic analysis and basic concepts of pharmacogenetics and toxicogenomics. Emphasis placed on applications of genomic technologies to the understanding of "gene-environment interactions" that cause variability in drug treatment responses, as well as diseases of public health importance, including cancer, chronic neurological diseases, and adverse drug reactions. Offered: jointly with ENV H 513/PHG 513; W.

PCEUT 520 Seminar (1, max. 30) A. NATH Graduate students attend seminars and make one formal presentation per year while in residence; maximum of three presentations. Credit/no-credit only. Offered: jointly with MEDCH 520.

PCEUT 531 P-Pharmaceutical Formulation: Principles and Dosage Forms (4) *Lee, Mao, Shen* Physicochemical principles involved in formulating stable dosage forms suitable for human administration. Hands-on laboratory experience with formulating extemporaneous preparations routinely encountered in community and hospital pharmacies. Routes of drug administration.

PCEUT 532 P-Clinical Pharmacokinetics (4) *Anderson, Isoherranen, Unadkat, Wang* Covers basic principles of pharmacokinetics and their application to the clinical setting, including: single-dose intravenous and oral kinetics, multiple dosing, nonlinear pharmacokinetics, metabolite kinetics, pharmacogenetics, and the role of disease in drug clearance and dose requirements, and kinetics of drug-drug interactions. Prerequisite: PCEUT 531.

PCEUT 533 P-Biopharmaceutics, Drug Delivery and Therapeutic Resonance (3) *R. HO, S. HU, K. THUMMEL* Provides basic principles of biopharmaceutics, drug delivery and therapeutic response, and their application to traditional and biotherapeutics, including oral and non-oral routes of drug administration. Discussion include fundamental principles related to assessment of bioavailability, bioequivalence, and genetic basis for drugs. Offered: Sp.

PCEUT 570 Advanced Research Topics (1, max. 15) Combines a discussion of the practical aspects and experimental techniques used to address the questions relating to drug disposition with comprehensive theoretical treatment of pharmacokinetic principles. Prerequisite: permission of the instructor. Credit/no-credit only.

PCEUT 583 Topics in Pharmaceutics (1, max. 30) *N. KLATT, K. THUMMEL* Discussion of pertinent articles from current literature and recent laboratory results. Credit/no-credit only.

PCEUT 584 Pharmacokinetic Discussion Group (2) *Lin* Student initiated discussions of pharmaceutics concepts in relation to current literature. Preparatory to departmental cumulative examinations. Credit/no-credit only.

PCEUT 586 Biotechnology and Biopharmaceutics (2-3) *Ho, Hu, Kelly, Thummel* Current topics in pharmaceuticals and biotechnology focusing on transforming small molecules, proteins, and genes into therapeutic products. Includes new drug therapies, drug design, pharmacogenomics, molecular modeling, high throughput screen, production and stability considerations, and delivery systems of protein and gene therapeutics in relation to pharmacokinetic and therapeutic responses.

PCEUT 587 Introduction to Biopharmaceutical Product Development (3) Provides a framework of the drug development process and its regulation. Prerequisite: ENV H 405 or ENV H 514, ENV H 515, and ENV H 516, or PCEUT 501, PCEUT 502, and PCEUT 503; or equivalent, or instructor permission. Offered: jointly with ENV H 587; A, even years.

PCEUT 598 Independent Research (*, max. 24) Basic and clinical research problems in drug disposition and effect. Prerequisite: minimum grade of 2.50 GPA and permission of instructor.

PCEUT 599 Cumulative Exams for Pharmaceutics (1-, max. 3) *Isoherranen* Quarterly cumulative examinations for graduate students.

PCEUT 600 Independent Study or Research (*-) Credit/no-credit only.

PCEUT 700 Master's Thesis (*-) Credit/no-credit only.

PCEUT 800 Doctoral Dissertation (*-) Credit/no-credit only.

Pharmacy

Graduate Program Coordinator

H375 Health Sciences, Box 357630

(206) 616-1383

The Department of Pharmacy offers graduate study leading to a PhD degree in pharmaceutical outcomes research and policy. Emphasis of this program is on the health and cost outcomes of pharmaceuticals and pharmaceutical services and policies. Graduate training in this program prepares students for career opportunities in teaching and research in universities, safety and economic evaluation of products in the pharmaceutical industry, policy analysis of governmental agencies, and drug use management within healthcare delivery and financing organizations.

Also offered is a track in the PharmD/MS program in pharmaceutical outcomes research and policy, which provides an opportunity for one-to-two students currently completing their PharmD training at the UW to enter the graduate program in their fourth year of training. The program requires completion of 64 credit hours, a written thesis, and a quarter of practicum in a managed care, government, industry, or other appropriate setting. At the end of this training, students may elect to receive a master's degree, or continue on toward a PhD degree.

The UW's biomedical regulatory affairs Master of Science program, offered by the UW School of Pharmacy in partnership with UW Educational Outreach, addresses a growing need for well-trained professionals in the regulatory field. The degree serves those who wish to advance their careers in the medical products industry or those entering the field from related areas.

Deadline for application for the PhD and the PharmD/MS programs is December 31. Applicants are notified of acceptance or rejection by March 30. Refer to the application deadline for the biomedical regulatory affairs master-of-science program posted at: www.biomedreg.uw.edu/admissions/deadlines.asp.

Application materials and additional information are available in the Department of Pharmacy or at program websites listed below:

- sop.washington.edu/porpp/graduate-program/phd-program27.html.
- sop.washington.edu/porpp/graduate-program/concurrent-pharmdms-degree-in-pharmaceutical-outcomes-research-a-policy.html.
- www.biomedreg.uw.edu.

Residency and Fellowship Programs

The Department of Pharmacy offers several postdoctoral fellowships in pharmacotherapeutics and pharmaceutical outcomes, and advanced community residency programs, primarily intended for PharmD graduates. Additional information is available on the department's website: sop.washington.edu/pharmacy/about/fellowship-a-residency-opportunities.html.

Clinical and Affiliate Faculty

In addition to the School of Pharmacy's full- and part-time faculty listed above, a large number of practicing pharmacists contribute to the School's academic programs. Over 500 pharmacists throughout the Pacific Northwest are members of the clinical and affiliate faculty, representing a variety of pharmacy practice settings such as community, hospital, nursing home, government, and industry. Information on the names, addresses and practice settings of these faculty members is available from the Office of Professional Pharmacy Education.

PROFESSIONAL PROGRAM

Doctor of Pharmacy

A four-year professional program leading to the Doctor of Pharmacy (PharmD) degree, the curriculum is designed to provide students the scientific background and clinical skills necessary to render pharmaceutical care in various healthcare settings. Individuals who wish to practice pharmacy in the United States must earn a Doctor of Pharmacy (PharmD) degree from an accredited college or school of pharmacy, complete required internship hours, pass licensing examinations, and meet other state-specific licensing requirements.

Admission Requirements

Consideration for admission to the professional program requires a minimum three years of pre-pharmacy training. An applicant who is admissible to the University is not assured admission to the School of Pharmacy. Admission is competitive, based on a number of factors. Academic preparedness, motivation, oral and written communication skills, critical-thinking ability, and decision-making skills are among the criteria used to determine a candidate's aptitude for the program. Following a preliminary assessment of the applicant pool, the most qualified applicants are selected for an interview in Seattle. A writing assessment is also conducted at that time. Further details on admission requirements, application procedures, and program content are available from the School's Office of Academic and Student Programs or its website.

1. Applicants to the UW School of Pharmacy PharmD program must both complete an on-line PharmCAS Application and submit a supplemental application to the UW School of Pharmacy, Office of Academic and Student Programs. Potential applicants should consult the School of Pharmacy website, sop.washington.edu/school-of-pharmacy/pharmd-admissions/applications-to-pharmd-program.html for additional admission requirements and the most current information regarding the PharmD program.
2. Please refer to the School's website for current entry-level Doctor of Pharmacy program information at sop.washington.edu/students/.
3. Pharmacy College Admission Test (PCAT) must be taken within two years of application. The UW School of Pharmacy accepts no other admission test (e.g., MCAT, GRE) in place of the PCAT.
4. Applicants who have completed all prerequisite (pre-pharmacy) coursework prior to application and those who have earned a prior bachelor's degree or higher are given preference in the process of screening for offer of

interview. The admissions committee has established minimum cumulative and prerequisite (pre-pharmacy) GPA thresholds and PCAT scores for screening for offer of interview. Applicants who meet or exceed these minimums are not guaranteed an interview. Offers of interview are dependent on the size and competitiveness of the applicant pool.

- Interview is required as part of the UW School's PharmD admission process. After a preliminary assessment of the applicant pool, the most-qualified applicants are invited for an interview in Seattle with members of the PharmD admissions committee. Admission preference is given to residents of Washington State and residents from states participating in the Western Interstate Commission for Higher Education (WICHE).
- It is important for applicants to research carefully the pharmacy profession and the attributes, skills, and abilities essential for pharmacists in the provision of care. Although relevant experience is not required, applicants are strongly encouraged to gain pharmacy experience, either as a volunteer or employee.
- Non-U.S. Citizens:* Applicants who hold "Permanent Resident" or "Refugee/Asylee" visa status and international students with F-1 Visa status are eligible to apply. F-1 Visa students must take the TOEFL within two years of application. Please refer to the School's website for more information at sop.washington.edu/school-of-pharmacy/pharmd-admissions/international-applicants-eligibility-to-apply.html.
- International Transcripts:* All transcripts for coursework completed at foreign colleges or universities must be translated and evaluated course-by-course by one of the following certified agencies: the Education Credential Evaluators, World Education Services, Inc, or Educational-Perspectives.

Degree Requirements

Current degree requirements for entering classes are reflected in the graduating class of 2015 and later. (Graduating classes of 2014 and earlier have different course sequences as a result of this revision.) Below are the current degree requirements:

- Year 1 (47 core, 5 elective credits):* CONJ 401, CONJ 402, CONJ 403; MEDCH 561, MEDCH 570; PCEUT 531, PCEUT 532, PCEUT 533; PHARM 500; PHARM 558; PHARM 584, PHARM 585, PHARM 586; PHARMP 511, PHARMP 512; 5 elective credits; MEDCH 400 is required for students who do not pass the MEDCH qualifying exam, which if taken, can be credited as a professional elective.
- Year 2 (46 core, 5 elective credits):* MEDCH 562, MEDCH 563, MEDCH 564; PHCOL 401, PHCOL 402; PHARM 509; PHARM 537; PHARM 539; PHARM 543, PHARM 543; PHARM 559; PHARM 563; PHARM 592, PHARM 593, PHARM 594; PHARMP 513, PHARMP 514; PHARMP 531; 5 elective credits
- Year 3 (33 core, 18 elective credits):* PCEUT 510 (3); PHARM 541; PHARM 560; PHARM 561, PHARM 562; PHARM 564, PHARM 565; PHARMP 532, PHARMP 533, PHARM 541; 18 elective credits
- Year 4:* Nine required clinical rotations (6 credits each) for a total of 54 credits

PharmD/PhD Concurrent Program

PharmD/PhD Program Coordinator

H272 Health Sciences, Box 357610

(206) 543-0819

The accelerated dual-degree program is intended for outstanding students committed to earning the PharmD degree and a PhD degree in either Pharmaceutics or Medicinal Chemistry. Students are equipped to enter academic

careers that require competence in clinical practice, teaching, and research. They will possess the breadth and depth of knowledge necessary to work with colleagues across multiple disciplines essential to performing integrated and translational medical and pharmaceutical research. Many of our trainees have worked in research and developed an interest in public health and pharmaceutical sciences through that experience.

Students admitted to the concurrent degree program are able to complete the requirements for both degrees in about eight academic years, rather than the nine years normally required to receive both degrees.

Admission to the PharmD/PhD program is based on the recommendation of the admission committees of the professional degree program, the graduate program, and the PharmD/PhD program. For additional admission criteria, see respective programs.

Admission Requirements

Applicants must complete admission requirements of both the PharmD and PhD programs. Consideration for the PharmD/PhD program is contingent upon completion of a PharmD application, Graduate School application, and PharmD/PhD application (available online at: sop.washington.edu/school-of-pharmacy/degree-programs/concurrent-degree-opportunities.html).

- PharmD program application is composed of (a) verified completion of all application materials by the deadline as stated on the school website, (b) PCAT scores, (c) prerequisite and cumulative GPA, (d) ability to complete prerequisite courses by the end of spring term prior to School of Pharmacy matriculation. For details, see PharmD admission requirements.
- Graduate School application for medicinal chemistry or pharmaceuticals includes (a) undergraduate degree in chemistry, biochemistry, pharmacy, biology, or a closely related field, (b) statement of purpose, (c) GRE scores, (d) prior research experience, (e) three letters of recommendation. Graduate School application deadline as stated on the school website.
- In addition, applicants are required to submit information requested in the PharmD/PhD concurrent program application checklist, available on the above stated website.

Financial Aid

Financial support in the form of research assistantships, teaching assistantships, and fellowships may be available to prospective and continuing students. Availability of financial aid is limited, typically to the first and second academic year. Prospective students should contact the Graduate Program Coordinator for more information on financial support.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

PHARM 301 Medications and Health: It's Not All About Drugs (3) I&S/NW Dawson, Odegard, Weber Covers personal health promotion, treatment of illness, and health care. Explores several medication-related topics, provides insight on drug development and efficacy, and serves as introduction to students contemplating careers in health sciences, especially in pharmacy. Credit/no-credit only.

PHARM 500 Profession of Pharmacy (1) Kedzierski, Weber Introduces the new student to the profession of pharmacy. Provides both an historical and a modern context that assists student pharmacists begin to participate in the profession. Provides an overview of career opportunities.

Prerequisite: professional PharmD class 1 student. Credit/no-credit only. Offered: A.

PHARM 501 P-Alternative and Complementary Medicines (2) Anderson Studies popular alternative and complementary medicines used in the United States. Focuses on herbal products with some coverage of other non-nutritional dietary supplements. Open to professional and graduate students in the Schools of Pharmacy, Nursing, Medicine, Dentistry, and Public Health, or by permission of instructor. Credit/no-credit only. Offered: AW.

PHARM 503 Senior Care Introductory Pharmacy Practice Experience (2) Murphy, Plein Under faculty supervision, provides clinical services for senior patients in various settings. Includes reviewing charts, interviewing patients, collaborating with other health care providers, and making recommendations on medication therapies to providers and patients. All students participate in an orientation/seminar workshop and in a weekly (for five weeks) clinical pearls workshop. Prerequisite: either successful completion of the first five quarters of the PharmD curriculum or permission of instructor. Credit/no-credit only. Offered: Sp.

PHARM 509 P-Principles of Evidence Based Medicine III: Critical Evaluation of Published Evidence (1) O'Sullivan Provides a critical evaluation of medical literature. Prerequisite: permission of School of Pharmacy.

PHARM 510 Contemporary Concepts in Clinical Nutrition Support (1) Chan Addresses current topics and concepts in clinical nutrition support. Topics include assessment and management of patients requiring specialized nutrition support, enteral nutrition, and parental nutrition. Prerequisite: biochemistry, anatomy and physiology, or permission of instructor; taken concurrently with NUTR 511. Offered: A.

PHARM 513 P-Medical Devices for Home Healthcare (3) Downing Study of medical devices commonly provided by pharmacists to their patients, including their selection and adaptation for specific patient needs. Lectures include display and demonstration of actual devices.

PHARM 514 Pharmacotherapeutics for Advanced Nursing Practice (3) Hertig Application of principles of pharmacology as foundation for clinical decision making by advanced practice nurses for individuals and populations. Incorporates pharmacotherapy into advanced nursing therapeutics by addressing pharmacokinetics, pharmacodynamics, pharmacogenetics as well as patient-related factors that support selection of commonly used drugs. Selected drugs within categories are compared/contrasted.

PHARM 515 Pharmacotherapeutics for Acute/Critical Illness (3) Coyne Analysis of issues that impact the assessment, prescription, and evaluation of pharmacotherapeutic regimens for patients who are acutely or critically ill. Current research, clinical contextual considerations, and pharmacotherapeutic principles are emphasized as the basis for decisions relevant to the management of pharmacotherapy in acute care clinical practice.

PHARM 516 Introduction to Biomedical Regulatory Affairs (3) Hazlet Surveys government oversight of drugs, devices, and biotechnology derived products; laws and regulations that apply to development, testing, and production; and responsibilities of a regulatory affairs specialist in the regulatory setting.

PHARM 517 Product Development and Manufacturing Systems (3) Hazlet Surveys government oversight of drugs, devices, and biotechnology derived products; laws and regulations that apply to development, testing, and production.

PHARM 518 Product Testing, Evaluation, and Post-Market Issues (3) Hazlet Medical product post-marketing requirements; reporting and enforcement actions; inspections (internal and by regulators) preparation, conduct, and follow-up actions; surveillance and studies, reimbursement, and economics.

PHARM 519 Pharmacotherapeutics for Infectious Disease and Infection (2) Black, Simpson Analysis of pharmaco-

therapeutics to control infection and manage infectious disease through seminar discussion of cases, critical analysis of a pharmacotherapeutic regimen, and development of references to enhance students' clinical expertise. Emphasis on principles of anti-infective therapy, problem solving clinical cases with complex medication regimens, and identifying judicious pharmacotherapeutic plans.

PHARM 520 P-Introduction to Pharmacoeconomics and Outcomes Research (2) *Veenstra* Provides an introduction to economic evaluation and outcomes research related to pharmaceuticals and other healthcare technologies. Covers the methods of cost-effectiveness analysis and quality of life evaluation, and their use in real-world decision-making.

PHARM 521 P-Pharmacy Teaching Practicum (1-3, max. 6) *Allen, Dawson, Hammer* Allows students the opportunity to apply learning about education in a mentored experiences. Students serve as assistant instructors in existing pharmacy courses or engage in other approved educational experiences. Prerequisite: PHARM 586, instructors permission. Credit/no-credit only. Offered: AWSp.

PHARM 522 P-The Nature of Scientific Truth (2) *Hansten* Drawing on the wisdom of scientists and philosophers, discussion of the nature and limitations of scientific truth, using examples from the practice of pharmacy whenever possible. Emphasizes reasoning errors that are common in science, particularly those that involve the application of scientific information to clinical practice. Credit/no-credit only.

PHARM 525 P-Advanced Compounding Skills (1) *Lawhorn, Needham* Prepares the student to create unique, patient-specific pharmaceutical dosage forms used in contemporary pharmacy practice. Includes pre-readings and assignments, a didactic session and a laboratory session, and is offered over a weekend. Prerequisite: PCEUT 531. Credit/no-credit only.

PHARM 529 Introduction to Systematic Reviews and Meta-Analysis of Evidence (3) *E. DEVINE, F. WOLF* Conceptual understanding of the quantitative methods used to synthesize evidence. Methods for pooling evidence across independent studies, pooling binary/continuous outcomes, differences between fixed and random effects models, and guidelines for appraising published systematic reviews/meta-analyses. Prerequisite: either introductory level courses in statistics, epidemiology, or biostatistics or permission of instructor. Offered: jointly with BIME 541/EPI 541/HSERV 529; Sp.

PHARM 532 Methods in Pharmaceutical Policy Analysis (4) *Garrison, Hazlet* Introduction to the tools used in and the framework and dominant contexts for pharmaceuticals policy development and analysis. Methods reviewed in a series of sessions presenting a specific method and case analyses involving pharmaceuticals development. Project and in-class presentation required.

PHARM 533 Pharmacoepidemiology (3) *Boudreau, Heckbert* Overview of pharmacoepidemiology including drug development and approval; application of epidemiologic methods to study drug safety and effectiveness; exploration of the interplay between research and public policy; introduction to resources for information about drugs; introduction to pharmacology principles pertinent to pharmacoepidemiology. Prerequisite: Health Sciences graduate student; either EPI 511 or both EPI 512 and EPI 513; or permission of instructor. Offered: jointly with EPI 533; Sp, even years.

PHARM 534 Economic Evaluation in Health and Medicine (3) *Garrison, Veenstra* Methods and techniques for evaluating costs and cost-effectiveness of health, medical, and pharmaceutical interventions. Emphasis on economic evaluation, decision analysis, and modeling techniques for resource allocation and decision making. Applications to technology assessment, health policy, clinical practice, and resource allocation. Prerequisite: permission of instructor. Offered: jointly with HSERV 583.

PHARM 535 Assessing Outcomes in Health and Medicine (3) *Devine, Edwards* Concepts and methods for developing and using patient-reported outcomes in health and medicine. Emphasis on patient self-reported health status and quality of life. Qualitative research and psychometric methods applied to health outcomes assessment and all applications. Prerequisite: permission of instructor. Offered: jointly with HSERV 584; W.

PHARM 536 Advanced Methods in Economic and Outcomes Evaluation in Health and Medicine (3) *Carlson* Covers advanced methods and techniques for evaluating costs, outcomes, and cost-effectiveness of health, medical, and pharmaceutical interventions. Topics include: network meta-analysis, Markov modeling, probabilistic sensitivity analysis, value of information analysis, utility mapping, conjoint analysis, and budget impact analysis. Prerequisite: either PHARM 534 and PHARM 535 or permission of instructor. Offered: Sp.

PHARM 537 P-Chemical Dependency Concepts (2) *Kedzierski* Examines the development of therapeutic frame for working with patients with addictions. Includes the genesis of addiction harm reduction strategies, legal and ethical considerations, medication management in the substance-abusing population, impaired pharmacist rehabilitation, detection and dealing with substance abuse issues in pharmacy practice, community resources. Course offered to professional PharmD, class 2. Credit/no-credit only. Offered: A.

PHARM 538 P-Chemical Dependency Issues in Practice (3) *Kedzierski* Emphasis on drug classes, pharmacologic management of abstinence and withdrawal, drug testing, drug use in pregnancy, treatment options and recovery, codependency and legal and ethical considerations. Prerequisite: PHARM 537. Credit/no-credit only. Offered: W.

PHARM 539 P-Principles of Professional Practice Management (3) *Downing, Somani* Emphasizes the major issues and barriers of providing pharmaceutical care in institutional and community pharmacies. Topics include evaluating workflow and facility design, complying with legal and safety standards, managing drug distribution services, payment for pharmacist services, human resource management and marketing pharmaceutical care services.

PHARM 541 Pharmacy, Healthcare, and Society (3) *Sullivan* Introduction to health services and pharmacy practice designed for future healthcare practitioners. Examines the history, organization, and effectiveness of the U.S. healthcare system. Stresses the student's ability to adopt a broad perspective across healthcare disciplines and traditional boundaries.

PHARM 542 P-Managed Care Pharmacy: Principles and Practice (3) *Fullerton, Penna* Surveys the activities, tactics, and strategies used by managed care to deliver pharmacy services to their members. Includes: formulary development, clinical improvement programs, quality improvement measures, regulatory activities, contracting with pharmaceutical manufacturers, network management, financial issues, sales and marketing, and provider relations. class 2, 3, and 4 PharmD students.

PHARM 543 Pharmacy Laws and Ethics ([2-3]-, max. 5) *Hazlet* Studies the laws governing the practice of pharmacy, approaches to legal, and ethical dilemmas in the delivery of pharmaceutical care, and methods of statutory and regulatory reform.

PHARM 544 Survey of Pharmacy Laws (1) *Hazlet* Prepare, discuss, and present responses to assigned questions developed by faculty regarding laws governing pharmacy practice in the course of reviewing for the Multistate Pharmacy Jurisprudence Examination. Class meets for two consecutive Saturdays in February and March. Email and web access required. Open to fourth-year PharmD students; non-matriculated students by permission only. Credit/no-credit only.

PHARM 549 Pharmacotherapeutics for Older Adults (3-4) *Murphy* Applies pharmacologic knowledge to the assessment, individualized selection of therapy, and monitoring of treatment in older adults with multiple comorbidities; and age-related changes in pharmacokinetics and pharmacodynamics with emphasis on problem solving, using case examples. Prerequisite: either PHARM 561; PHARM 565 or permission of the School of Pharmacy. Offered: Sp.

PHARM 550 Seminar in Geriatrics ([0-1]-, max. 1) *C. CATALANO, L. MIKE* Students facilitate a discussion with students/faculty about the management of an older adult with complex medication regimen. In addition, students critically review and appraise primary literature relevant to contemporary issues related to geriatric pharmacotherapy. Prerequisite: PHARM 549; permission of the instructor. Credit/no-credit only. Offered: AWSpS.

PHARM 552 Practice-Based Leadership and Project Development (2) *J. Arnold, N. Murphy* Strengthen skills necessary to develop, implement, and evaluate innovated programs that improve health, healthcare delivery, and the patient experience. In addition to actively participating in class discussions and group work, students are responsible for submitting weekly assignments, a final reflection paper, and a project proposal. Credit/no-credit only. Offered: W.

PHARM 557 Pharmacotherapeutics II (2) Discusses the integration of and applies epidemiology, pathophysiology, clinical diagnostics, and drug-related knowledge towards the management of common disease. Emphasizes problem-solving through the use of case examples. Prerequisite: permission of School of Pharmacy Offered: Sp.

PHARM 558 P-Pharmacotherapeutics I - Pharmacotherapy with Non-prescription (OTC) Drugs (3) *Ellsworth* Overview of common classes of nonprescription drug therapeutics with an emphasis on case examples, patient assessment, non-drug adjunct therapy, product selection, and patient advice. Oral presentation required. Computer (Internet) case discussion mandatory. Enrollment restricted to first-year PharmD students.

PHARM 559 Pharmacotherapeutics III (4) Discusses the integration of and applies epidemiology, pathophysiology, clinical diagnostics, and drug-related knowledge towards the management of common disease. Emphasizes problem-solving through the use of case examples. Prerequisite: permission of School of Pharmacy. Offered: Sp.

PHARM 560 Pharmacotherapeutics IV (6) Discusses the integration of and applies epidemiology, pathophysiology, clinical diagnostics, and drug-related knowledge towards the management of common disease. Emphasizes problem-solving through the use of case examples. Prerequisite: permission of School of Pharmacy Offered: A.

PHARM 561 Pharmacotherapeutics IV (7) *Gray, Mike* Discusses the integration of and applies epidemiology, pathophysiology, clinical diagnostics, and drug-related knowledge toward the management of common diseases. Emphasizes problem-solving through the use of case examples. Prerequisite: permission of School of Pharmacy. Offered: W.

PHARM 562 Pharmacotherapeutics V (6) *Chan, McCune* Discusses the integration of and applies epidemiology, pathophysiology, clinical diagnostics, and drug-related knowledge toward the management of common diseases. Emphasizes problem-solving through the use of case examples. Prerequisite: permission of School of Pharmacy. Offered: Sp.

PHARM 563 Applied Pharmacotherapeutics I (2) *C. CATALANO, L. MIKE* Develops a foundation of skills that enables a pharmacist to practice collaborative patient-specific care. Prerequisite: permission of School of Pharmacy. Offered: Sp.

PHARM 564 Applied Pharmacotherapeutics II (2) *C. CATALANO, L. MIKE* Develops a foundation of skills that enables

a pharmacist to practice collaborative patient specific care. Prerequisite: permission of School of Pharmacy. Offered: A.

PHARM 565 Applied Pharmacotherapeutics III (2) C. CATALANO, L. MIKE Develops a foundation of skills that enables a pharmacist to practice collaborative patient-specific care. Prerequisite: permission of School of Pharmacy. Offered: W.

PHARM 566 P-Applied Pharmacokinetics (2) Bauer Pharmacokinetics of specific drugs. Influence of age, weight, sex, and disease states on patient-specific dosage regimens emphasized. Advanced kinetic concepts are discussed and put into applied context. Prerequisite: PCEUT 532.

PHARM 567 P-Cancer Pharmacotherapeutics (2) Gibson, Kwok, McQuary, Vincent Pharmacotherapy of cancer, covering supportive care therapeutics (antibiotics, antiemetics, analgesics,) to the antineoplastic agents. The pathophysiology, staging, and treatment of different cancers is discussed. Specialists from the different oncology practice areas serve as guest lecturers. Prerequisite: either PHARM 561; PHARM 565, or permission of the School of Pharmacy. Offered: Sp.

PHARM 568 Health Economics (3/4) Garrison Applies microeconomics principles and models to understand the nature of healthcare markets and systems. Includes a wide range of health sector activities and policy issues studied by applying rigorous economic analytical tools coupled with review of key econometric and empirical analysis. Prerequisite: introductory coursework in microeconomic principles and basic statistics. Offered: W.

PHARM 569 P-Fluid and Electrolytes and Parenteral Nutrition (2) Chan Focuses on the principles of fluid electrolyte and nutritional management in patients requiring parenteral nutrition (PN) and infusion therapy. Topics include acid-base balance, macro- and micro-nutrient requirements, nutritional assessment, complications of PN and compounding and compatibility of PN solutions. Discusses consideration in special populations (e.g., ICU). Prerequisite: either PHARM 561; PHARM 565, or permission of the School of Pharmacy.

PHARM 570 P-Critical Care Pharmacotherapeutics (2) Mike Overviews pharmacotherapeutic topics for patients in the critical care setting. Discusses principles in hemodynamic monitoring, respiratory management, concepts in pathophysiology related to critical illnesses, and other timely topics reflecting current clinical practice. Prerequisite: third-year PharmD student, or approval of instructor.

PHARM 571 P-Current Topics in Acute Care Pharmacotherapy (1) Chan Increases understanding and stimulates discussion in current topics related to acute care pharmacotherapy. Reviews the management of patients in the acute care setting through current cases presented by instructors. May be taken alone or concurrently with PHARM 570. Prerequisite: either PHARM 561 ;PHARM 565, or permission of the School of Pharmacy.

PHARM 572 Pharmacist Advocacy I: Legislative and Grassroots Affairs (1) Downing Increases student awareness and knowledge of local, state, and national healthcare issues that affect pharmacists and their patients. Prepares pharmacy students to knowledgeably represent their school, profession, and their patients during individual and organized-group pharmacy legislative and other advocacy activities. Offered: A.

PHARM 573 Pharmacist Advocacy II: Legislative and Grassroots Affairs (1) Downing Prepares pharmacy students to knowledgeably represent their school, profession, and their patients during individual and organized-group pharmacy legislative and other advocacy activities. Students actively participate in off-campus legislative and advocacy activities while the Washington State legislature is in session. Offered: W.

PHARM 579 Current Topics in Pharmacy (1, max. 3) Black, Murphy Provides a forum for discussing late-breaking top-

ics that impact current and future pharmacy research and practice. Credit/no-credit only. Offered: AW.

PHARM 581 P-Global Health Pharmacy: Medicines, Practice, and Policy (2) J. BABIGUMIRA, A. STERGACHIS Introduces the critical role of pharmaceutical in addressing major diseases (such as HIV/AIDS, malaria, tuberculosis) affecting persons in resource-limited settings. Addresses the wide range of relevant issues, including burden of disease, human resource capacity, regulation, drug safety/pharmacovigilance, drug distribution, pharmacoeconomics, financing, intellectual property, and drug trade policies. Prerequisite: satisfactory completion of the 1-credit lecture/discussion component.

PHARM 582 P-Special Topics in Global Health Pharmacy and Medical Products ([1-3]-, max. 6) Babigumira, Garrison Provides in-depth instruction on selected special topics relating to the use, access to, and impact of pharmaceuticals, vaccines, and diagnostics/medical devices in global health. Credit/no-credit only.

PHARM 584 Pharmacy Practice I - Introduction to Community Pharmacy Practice I (3) Allen, Hammer Introduction to development and practice of skills in drug information resources; prescription processing and problem solving; pharmaceutical calculations and compounding; patient information and counseling on over-the-counter and compounded medications. Offered: A.

PHARM 585 Pharmacy Practice II (3) Allen, Hammer Continued development and practice of skills in drug information resources; prescription problem solving; pharmaceutical calculations; and patient information and counseling. Emphasizes use of commonly prescribed prescription medication as well as patient-specific characteristics that impact their care. Prerequisite: PHARM 584. Offered: W.

PHARM 586 Pharmacy Practice III: Applications of Public Health Practice (3) Catalano, Hammer Develops skills that enable public health screening and health promotion in community-based settings: administration of vaccines to adults and adolescents; practical application of community-based health screenings, counseling, and referral; and teaching self-monitoring techniques to patients. Emphasizes communication with members of special populations. Prerequisite: PHARM 585. Offered: Sp.

PHARM 587 Diabetes Prevention (2) Danielson, McKennon, Odegard Provides students with knowledge/skills to serve as Diabetes Prevention lifestyle coaches. The knowledge/skills developed can be applied to promote health/wellness in the community. Prerequisite: PHARM 563. Credit/no-credit only. Offered: A.

PHARM 588 Diabetes Care (2) Danielson, Odegard Further develops foundations in the principles of diabetes management and provides practice in application of diabetes-care principles. Develops knowledge and ability to assess, manage, educate, and monitor patients with diabetes. Prerequisite: either PHARM 560; PHARM 564, or permission of the School of Pharmacy. Credit/no-credit only.

PHARM 591 Community Collaborations in Healthcare Practicum (2, max. 8) Kedzierski Collaboration with representatives from the Salvation Army Adult Rehabilitation Center and other community sites to improve health literacy and health outcomes of men and women beneficiaries (residents) in addition treatment and recovery. Prerequisite: permission of instructor. Credit/no-credit only. Offered: ASP.

PHARM 592 Pharmacy Practice IV: Design and Analysis of Medical Studies (3) Devine Introduces the basic biostatistical concepts used in the medical literature, and the various study designs. Develops students' skills in critically evaluating the medical literature, with the goal of applying these skills to clinical practice. Prerequisite: PHARM 584; PHARM 585; PHARM 586. Offered: A.

PHARM 593 Pharmacy Practice V: Institutional Pharmacy Practice (3) Somani Includes discussion and skill development related to contemporary institutional pharmacy

practice. Focuses on health information technology, the quality improvement process, MUE and cost management, medication order processing, counseling and medication reconciliation, interpersonal teamwork, and patient-oriented services. Students create and present mock proposals for new guidelines and practice protocols. Prerequisite: PHARM 592. Offered: W.

PHARM 594 Pharmacy Practice VI: Medication Quality and Safety (2) Introduces topics related to medication safety and quality improvement. Describes the role of information technology and the importance of organizational leadership and teamwork in improving safety. Introduces topics of collaborative drug therapy management and managed care pharmacy practice. Prerequisite: PHARM 593. Offered: Sp.

PHARM 595 Special Studies in Pharmacy (1-6, max. 24) Special studies of professional topics in pharmacy. An opportunity to expand the breadth and depth of understanding in specific pharmaceutical areas. Students may undertake independent study under the individual direction of a faculty member.

PHARM 596 Seminars in Pediatric Pharmacotherapy (2) Harvey Explores therapeutic topics pertinent to the pediatric population. Emphasizes ambulatory pediatrics. Prerequisite: third-year PharmD student or permission of instructor. Credit/no-credit only. Offered: W.

PHARM 597 Graduate Seminar (1, max. 24) Interactive discussion of topical issues, methods, or analytic techniques. Topics vary. Prerequisite: graduate program student. Credit/no-credit only.

PHARM 599 Independent Study/Research (1-6, max. 24) Applied pharmaceutical research problems. Credit/no-credit only.

PHARM 600 Independent Study or Research (*-) Credit/no-credit only.

PHARM 700 Master's Thesis (*-) Credit/no-credit only.

PHARM 800 Doctoral Dissertation (*-) Credit/no-credit only.

Pharmacy Practice

PHARMP 511 Introductory Pharmacy Practice Experience in Community Pharmacy I (1) Introduces student to community pharmacy practice. Students process prescriptions, begin to manage drug therapy, communicate with patients, and provide public health activities in the patient care setting. Seminars allow for orientation, discussion/reflection, and progress assessment. Orients students to community practice, fulfills requirements for entering patient care, and sets expectations for the course series. First in a series of four. Prerequisite: PHARM 584. Credit/no-credit only. Offered: W.

PHARMP 512 Introductory Pharmacy Practice Experience in Community Pharmacy II (1) Introduces student to community pharmacy practice. Students process prescriptions, begin to manage drug therapy, communicate with patients, and provide public health activities in the patient care setting. Seminars allow for orientation, discussion/reflection, and progress assessment. Emphasizes legal requirements for practice, fulfills requirements for entering patient care, and exposes student to leaders in community pharmacy practice. Second in a series of four. Prerequisite: PHARMP 511. Credit/no-credit only. Offered: Sp.

PHARMP 513 Introductory Pharmacy Practice Experience in Community Pharmacy III (1) Introduces student to community pharmacy practice. Students process prescriptions, begin to manage drug therapy, communicate with patients, and provide public health activities in the patient care setting. Seminars allow for orientation, discussion/reflection, and progress assessment. Emphasizes patient safety, involvement in health/wellness screening, and exposes students to leaders in community pharmacy. Third in a series of four. Prerequisite: PHARMP 512. Credit/no-credit only. Offered: A.

PHARMP 514 Introductory Pharmacy Practice Experience in Community Pharmacy IV (2) Introduces student to community pharmacy practice. Students process prescriptions, begin to manage drug therapy, communicate with patients, and provide public health activities in the patient care setting. Seminars allow for orientation, discussion/reflection, and progress assessment. Emphasizes reflection on and documentations of professional competency. Fourth in a series of four. Prerequisite: PHARMP 513. Credit/no-credit only. Offered: W.

PHARMP 522 Foundations of Interprofessional Practice ([0-1]-, max. 1) J. DANIELSON, P. ODEGARD Team-based training and experiential immersion in healthcare team functioning for PY3 pharmacy students. Work with medical, nursing, physician assistant, social work, dental, and dietetic students in patient care situations to apply evidence-based practice and quality improvement principles. Focuses on development of intra and interprofessional roles and professional identity. Credit/no-credit only. Offered: AWSp.

PHARMP 531 Introductory Pharmacy Practice Experience in Institutional Pharmacy I (1) Introduces students to institutional pharmacy practice. Students learn about the role of pharmacists in the inpatient settings, participate in product distribution, provide drug information, and gain exposure to quality assurance activities in hospitals. Seminars allow for orientation, discussion/reflection, and progress assessment. Orients students to institutional practice, exposes student to leaders in hospital practice, and introduces expectations for quality assurance activities. First in a series of three. Prerequisite: PHARMP 514. Credit/no-credit only. Offered: AWSpS.

PHARMP 532 Introductory Pharmacy Practice Experience in Institutional Pharmacy II (1) Introduces students to institutional pharmacy practice. Students learn about the role of pharmacists in the inpatient settings, participate in product distribution, provide drug information, and gain exposure to quality assurance activities in hospitals. Seminars allow for orientation, discussion/reflection, and progress assessment. Emphasizes quality assurance in hospital practice, reflects on medication reconciliation, and orients students to subsequent IPPE coursework. Second in a series of three. Prerequisite: PHARMP 531. Credit/no-credit only. Offered: AWSpS.

PHARMP 533 Introductory Pharmacy Practice Experience in Institutional Pharmacy III (1) J. DANIELSON Introduces students to institutional pharmacy practice. Students learn about the role of pharmacists in the inpatient setting, participate in product distribution, provide drug information, and gain exposure to quality assurance activities in hospitals. Seminars allow for orientation, discussion, and progress assessment. Third in a three-part series. Prerequisite: PHARMP 532. Credit/no-credit only. Offered: AWSpS.

PHARMP 541 Introductory Pharmacy Practice Experience in Clinical Skills (1) O'Sullivan Students interview and assess a patient in the practice setting, present the patient case and an oral seminar in a small group setting, and complete other requirements for beginning advanced pharmacy practice experience. Prerequisite: PHARMP 533. Credit/no-credit only. Offered: Sp.

PHARMP 571 Advanced Pharmacy Practice Experience in Inpatient/Acute Care General Medicine (6, max. 36) O'Sullivan Advanced pharmacy practice experience focusing on providing patient-centered care to patients in a general medicine care setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Credit/no-credit only. Offered: AWSpS.

PHARMP 572 Advanced Pharmacy Practice Experience in Hospital or Health-System Pharmacy (6, max. 36) O'Sullivan Advanced pharmacy practice experience focusing on providing patient-centered care to patients in an acute care or other inpatient setting. Applies therapeutic

knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Credit/no-credit only. Offered: AWSpS.

PHARMP 573 Advanced Pharmacy Practice Experience in Ambulatory Care (6, max. 36) O'Sullivan Advanced pharmacy practice experience focusing on providing patient-centered care to patients in a clinic-based setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and provide drug information to professionals and patients. Credit/no-credit only. Offered: AWSpS.

PHARMP 574 Advanced Pharmacy Practice Experience in Community Pharmacy (6, max. 36) O'Sullivan Advanced pharmacy practice experience focusing on providing patient-centered care to patients in a community-based setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Credit/no-credit only. Offered: AWSpS.

PHARMP 575 Advanced Pharmacy Practice Experience in Patient Care (6, max. 30) O'Sullivan Advanced pharmacy practice experience focusing on providing patient-centered care to patients in a non-required setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Credit/no-credit only. Offered: AWSpS.

PHARMP 576 Advanced Pharmacy Practice Experience in Non-Patient Care (6, max. 24) O'Sullivan Advanced pharmacy practice experience focusing on providing pharmacy services in a variety of non-patient care settings. Credit/no-credit only. Offered: AWSpS.

PHARMP 577 Advanced Pharmacy Practice Experience in Senior Care (6, max. 12) O'Sullivan Advanced pharmacy practice experience focusing on providing patient-centered care to patients in a senior or geriatric care setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Offered: AWSpS.

PHARMP 578 Advanced Pharmacy Practice Experience Elective (1-6, max. 12) O'Sullivan Advanced pharmacy practice experience in patient or non-patient care settings. Credit/no-credit only. Offered: AWSpS.

PHARMP 581 Advanced Pharmacy Practice Experience in Inpatient/Acute Care General Medicine (9, max. 36) O'Sullivan Six week advanced pharmacy practice experience focusing on providing patient-centered care to patients in a general medicine care setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Offered: AWSpS.

PHARMP 582 Advanced Pharmacy Practice Experience in Hospital or Health-System Pharmacy (9, max. 36) O'Sullivan Six week advanced pharmacy practice experience focusing on providing patient-centered care to patients in an acute care or other inpatient setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Offered: AWSpS.

PHARMP 583 Advanced Pharmacy Practice Experience in Ambulatory Care (9, max. 36) O'Sullivan Six week ad-

vanced pharmacy practice experience focusing on providing patient-centered care in a clinic-based setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Offered: AWSpS.

PHARMP 584 Advanced Pharmacy Practice Experience in Community Pharmacy (9, max. 36) O'Sullivan Six week advanced pharmacy practice experience focusing on providing patient-centered care to patients in community-based setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Offered: AWSpS.

PHARMP 585 Advanced Pharmacy Practice Experience in Patient Care (9, max. 27) O'Sullivan Six week advanced pharmacy practice experience focusing on providing patient-centered care to patients in a non-required setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Offered: AWSpS.

PHARMP 586 Advanced Pharmacy Practice Experience in Non-Patient Care Settings (9, max. 18) O'Sullivan Six week advanced pharmacy practice experience focusing on providing pharmacy services in a variety of non-patient care settings. Offered: AWSpS.

PHARMP 587 Advanced Pharmacy Practice Experience in Senior Care (9, max. 18) O'Sullivan Six week advanced pharmacy practice experience focusing on providing patient-centered care to patients in a senior or geriatric care setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Offered: AWSpS.

Pharmacy Regulatory Affairs

PHRMRA 524 Introduction to Clinical Trials (3) Hammond, Hayashi, Jonlin Introduces the major concepts under which clinical trials are designed to run. Focuses on the phases of clinical trials, the role of the Food and Drug Administration, Institutional Review Boards, the Code of Federal Regulations and ethical principles. Addresses study design and statistical concepts. Offered: A.

PHRMRA 525 Implementation and Conduct of Clinical Trials (3) Hammond, Hayashi, Jonlin Outlines the work of carrying out a clinical trial including the complex work of study initiation, issues of site and data managements, preparation of the final report and study close out, as well as the details that control the study conduct. Offered: W.

PHRMRA 526 Project Management and the Business of Clinical Trials (3) Hammon, Hayashi, Jonlin Addresses the business dimension of clinical trials, including the principles of project management, planning, analysis, contingency and follow-up within the context of clinical trials that involve a large number of tasks and people responsible for parts of the overall study. Offered: Sp.

PHRMRA 527 International Regulatory Affairs (3) Hammond Develops an understanding of international differences in the regulation of design, manufacture, and post-marketing surveillance of medical products relative to U.S. Food and Drug Administration requirements. Prerequisite: PHARM 504. Offered: A.

PHRMRA 528 Medical Risk Analysis and Management (3) Karp Examines the principles and application of risk management methods in the design, manufacture, and marketing of medical products. Offered: W.

PHRMRA 536 Skills for the Regulatory Affairs Professional (2) Rose Covers essential skills in regulatory affairs and

includes an overview of local medical products companies. Offered: A.

PHRMRA 545 Data Essentials and Analysis for Regulatory Professionals (3) *Magee* Applies statistical methods to medical products design, clinical evaluation, manufacturing, and post-marketing surveillance. Prerequisite: introductory statistics. Offered: W.

PHRMRA 546 Technical Writing for the Medical Products Industries (3) *Teal* Presents up-to-date information and strategies for effective technical communication within the medical product industries. Addresses the appropriate and correct use of the English language, information design, and the use of computer technology in producing professional documents. Emphasizes communicating technical information to a variety of stakeholders. Offered: A.

PHRMRA 547 Advanced Topics in Medical Products Regulation (2, max. 6) *Feagin* Addresses essential topics in medical products regulation. Employs a combination of lecture presentations, case studies, and participants' small group discussion to achieve practical outcomes for regulatory professionals. Offered: W.

PHRMRA 548 Biomedical Regulatory Affairs Practicum ([1-9]-, max. 9) *Feagin* Provides a practical experience to ensure that participants are able to shepherd new medical products (drug, device, biologic) through regulatory, clinical, and quality assurance aspects. Includes a project and final report. Offered: AWSpS.

PHRMRA 550 Advanced Technical Writing for Biomedical Regulatory Affairs (2) *Teal* Further examines communications with attention to best written practices. Provides an intensive review of common editing and advanced strategies for crafting highly reliable and effective documentation. Prerequisite: PHRMRA 546 or permission of instructor. Credit/no-credit only. Offered: Sp.

PHRMRA 554 Advanced Medical Products Regulation I (2) *Hammond* Provides an in-depth exploration of regulatory issues primarily related to non-clinical and clinical aspects of medical product development. Offered: A.

PHRMRA 555 Advanced Medical Products Regulation II (2) *Feagin* Provides an in-depth exploration of regulatory issues primarily related to manufacturing, post-marketing concerns, and FDA interactions. Offered: W.

PHRMRA 560 Short Course in Multinational Biomedical Regulatory Affairs (2, max. 30) *Hazlet* Presents three medical products registration countries or groupings (for instance, European Union, World Health Organization). Locale based on program impact, unique features, or recent or controversial regulatory issues.

PHRMRA 595 Special Topics in Regulation (1-6, max. 24) Offered: AWSpS.

Daniel J. Evans School of Public Affairs

Dean

Sandra O. Archibald
208E Parrington Hall

Associate Deans

Leigh Anderson
Joaquin Herranz
Robert Plotnick

The Daniel J. Evans School of Public Affairs is a graduate professional school providing education and research for current and future leaders in pursuing challenging public-service careers in government, nonprofit, or private-sector organizations. To address the educational needs and professional interests of individuals at different stages of their careers, the school offers the Master of Public Administration (MPA), the Executive Master of Public Administration (Executive MPA), Peace Corps Master's International (PCMI), and the PhD in Public Policy and Management.

Master's-level programs enable students to acquire the policy analysis techniques, management knowledge, problem-solving skills, and political acumen required for effective leadership across sector boundaries and in regional, national, and international policy. MPA graduates hold leadership positions such as mayors and city managers; local and regional government administrators; foreign service officers; senior military and public safety positions; assistants to elected officials; analysts with budget offices, legislative staff units, and city councils; directors of social service agencies; leaders and managers of nonprofit organizations; and administrators of arts organizations. In addition, a number of alumni are employed in private sector positions involving substantial contact with public agencies.

The PhD program focuses on research that prepares students with a strong interdisciplinary perspective and a solid foundation of theory and methodology in policy analysis and management. The PhD program prepares students for successful careers as faculty in university programs in public policy and management, and in research positions in the public and nonprofit sectors.

GRADUATE PROGRAM

Graduate Program Coordinator
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Master of Public Administration

Evans School MPA Program

Evans School MPA is designed for present and future leaders of the public, private, and nonprofit sectors, emphasizing broad-based public policy analysis and management knowledge. Degree requirements for the program are flexible and can be tailored for students who are early in their careers, as well as those who have additional years of progressively responsible work experience. While most students enroll full-time and generally take two years to complete their degree, flexible evening and part-time options are also available.

Degree Requirements

72 credits, with a minimum 60 credits from within the Evans School, as follows:

1. Core Curriculum (36 credits):

- Managing Politics and the Policy Process (PB AF 511)
 - Managing Organizational Performance (PB AF 512)
 - Public Policy Analysis (PB AF 513)
 - Microeconomics (PB AF 516, PB AF 517)
 - Public Budgeting and Financial Management (PB AF 522)
 - Program Evaluation (PB AF 526)
 - Quantitative Analysis (PB AF 527, PB AF 528)
- Concentrated study in a field of specialization, three courses minimum (12 credits)
 - Public affairs electives, two-course minimum (8 credits)
 - An internship (minimum 400 non-credit work hours)
 - 8-credit degree project (PB AF 608) or Public Service Clinics (PB AF 606, PB AF 607)

For full program details, visit evans.washington.edu/courses-degrees/mpa/

Executive MPA Program

The Executive MPA program is a cohort-based, modular program designed to meet the needs of senior-level managers and executives with 10 or more years of progressively responsible, professional experience (typically directors, senior managers in or near leadership positions, and high-level technical staff). Students must successfully complete 45 credits of coursework within a specially designed curriculum combining one intensive week, several weekend modules and numerous online assignments. Intensive learning emphasizes a variety of critical concepts in executive leadership, including: performance management and accountability; change management; communication skills; ethics and leadership; executive decision making; human resource management; strategic financial management; and strategic leadership. Emphasis is on decision making, practical application, and integration of learning with experience. The program relies on a cohort model, so entering students must begin their studies with a seven-day residential retreat. Students complete the program in approximately 18 months.

Degree Requirements

45 credits, as follows:

- One "Foundation Week" in Strategic Leadership and Performance Challenges: PA EX 501
- Twelve three-day weekend core modules in Executive Decision Making (PA EX 502), Strategic Financial Management (PA EX 503, PA EX 505), Executive Economics (PA EX 504), Mission Integrity (PA EX 506), Values and Personal Integrity (PA EX 507), Leading for Human Development (PA EX 508), Leading Across Boundaries (PA EX 509), Negotiation and Mediation (PA EX 510), and Strategic Communication (PA EX 511), Strategic Policy Making (PA EX 512), and Leading for a Legacy (PA EX 513)
- Online assignments
- Degree project not required

For full program details, visit evans.washington.edu/executive-education/mpa.

Peace Corps Master's International

Peace Corps Master's International (PCMI) students must successfully complete 51 credits of coursework along with two years of Peace Corps service in international nongovernmental organization development and a degree project. PCMI students generally complete all core courses in three quarters prior to leaving for Peace Corps service; upon returning to UW, students complete their coursework and a final degree project in one or two quarters. While on assignment overseas, students remain in touch with their faculty adviser and a returned volunteer from the Evans School. PCMI students generally create a plan of study focused on international nongovernmental management or other inter-

national management and policy issues, such as environmental or health policy. Students complete the program in approximately three to three-and-a-half years.

Degree Requirements

51 credits, as follows:

1. Core Curriculum:

- Managing Politics and the Policy Process (PB AF 511)
- Managing Organizational Performance (PB AF 512)
- Public Policy Analysis (PB AF 513)
- Microeconomics (PB AF 516, PB AF 517)
- Public Budgeting and Financial Management (PB AF 522)
- Program Evaluation (PB AF 526 or PB AF 536)
- Quantitative Analysis (PB AF 527, PB AF 528)

2. Electives (including 9 credits of restricted electives: 3 credits each in economics, analysis, and values) (17 credits)

3. Two years of Peace Corps service

4. 6-credit degree project related to Peace Corps fieldwork

For full program details, visit evans.washington.edu/courses-degrees/mpa/peace-corps.

Doctor of Philosophy

The PhD in public policy and management is a research program that prepares its graduates for careers as faculty in university programs in public policy and management, and for research positions in the public and non-profit sectors. The interdisciplinary curriculum draws broadly on theoretical and methodological foundations in policy analysis and management. Substantive policy areas reflect such diverse faculty research agendas as education and social policy, environmental policy, international development, nonprofit management, and urban policy.

This highly competitive and selective program admits three to five excellent applicants each year, and provides funding and mentoring to help them succeed. The program aims to be one of the top programs in the field of public policy and management, serving not only the Pacific Northwest, but the national and the global market for scholars in this field.

Degree Requirements

90 credits, as follows:

Two years, or six full-time academic quarters, of coursework and examinations, research, and the writing of a dissertation beyond the two years.

The first-year core curriculum prepares doctoral students to undertake independent scholarship in public policy and management: Research Design (PPM 502), Institutional Perspectives on Management and Leadership (PPM 504), Microeconomics (PPM 506), Public Policy Processes (PPM 508), Policy Analysis and Evaluation (PPM 510), Quantitative Methods Sequence (SOC 505 and SOC 506 or ECON 580 and ECON 581), and a qualifying examination.

Second year doctoral students increase their analytic and methodological skills. Requirements include Data Analysis Practicum (PPM 512) at least one qualitative methods and one additional quantitative methods course, proposed by the student and approved by the PhD Program Coordinator. Students are encouraged to consider obtaining a statistics certificate from CSSS. At least three courses in a substantive policy field or in management studies are required.

Beyond the second year, requirements include: a general examination/dissertation proposal (advancing to candidacy), preparation of a dissertation of original research, and a final examination (dissertation defense).

Students are expected to complete the degree in four to five years, depending on the individual student. Prior coursework in calculus is expected before matriculation.

For full program details, visit: evans.washington.edu/courses-degrees/phd

Concurrent Degree Programs

The Evans School offers the MPA degree concurrently with the following five programs: Master of Urban Planning (MUP), Master of Arts in International Studies (MAIS), Master of Public Health (MPH), Master of Science in Forest Resources (MS), Juris Doctor (JD). Concurrent degree applicants must apply through, and be accepted into, both programs. Admission criteria are those of each individual program.

Admission Requirements

Admission to the Evans School is highly competitive and selective, and is based primarily on the applicant's demonstrated ability to complete the graduate program while sustaining a high level of achievement. The School's Admissions Committee reviews previous undergraduate or graduate (if applicable) coursework, grades and GRE test scores, and gives considerable weight to professional experience, previous academic awards or scholarships, volunteer work, letters of recommendation, and the applicant's writing skills as demonstrated in a personal essay. The School admits students annually for autumn quarter.

General Requirements

Applicants must hold a baccalaureate degree from an accredited college or university in the United States, or its equivalent from a foreign institution, and have achieved a minimum 3.0 GPA in the last 90-quarter (or 60 semester) credits of undergraduate work.

Graduate Record Examination (GRE) general test scores are required for admission to all programs except the Executive Master of Public Administration. TOEFL scores are required for international students only.

Visit evans.washington.edu/courses-degrees/mpa/concurrent for specific requirements of each program.

Application Deadlines

Because of class-size limitations in the competitive programs, applicants are encouraged to submit applications as early as possible.

Application materials to the MPA program and to the Peace Corps Master's International program must be received online and postmarked by January 15 for priority consideration. Applications received after this date are accepted for review on a space available basis until March 1.

Application materials for the Executive MPA degree program must be received online and postmarked by May 1. Applications received after this date are accepted for review on a space-available basis until July 1.

Application materials for the PhD program in public policy and management must be submitted and postmarked by February 1. Applications postmarked after February 1st are not reviewed.

Applicants to all programs must also apply to the UW Graduate School by the specific program deadlines above.

Financial Aid

For further information, visit: evans.washington.edu/prospective-students/financial-aid.

Evans School Fellowships

The Evans School offers several fellowships to entering students each year from the School's endowed fellowship funds. These typically consist of \$4000-\$5000 stipends awarded primarily on the basis of academic achievement and/or excellence in public service. Applicants interested in school fellowships must submit the Evans School Financial Aid Form with their Evans School application.

- *Daniel J. Evans Endowment for Excellence in Public Service:* Fellowships support students aspiring to excellence in public service.
- *Nancy Bell Evans Endowment for Excellence in Nonprofit Service:* Fellowships support students who aspire to excellence in nonprofit service and philanthropy.
- *Jon Brock Endowed Fellowship:* Supports outstanding master's students studying conflict resolution and management in public and nonprofit sectors.
- *Elaine Chang Endowed Fellowship:* Provides support to outstanding students pursuing studies in international peace and development.
- *Brewster C. Denny Endowed Fellowship:* Supports students committed to excellence in public service.
- *Robert J. and Micki E. Flowers Endowed Fellowship:* Provides support to outstanding students from diverse backgrounds pursuing careers in public and nonprofit service.
- *Margaret T. Gordon Endowed Fellowship:* Supports outstanding Evans School students.
- *Henry M. Jackson Endowed Fellowship:* Supports students pursuing careers in environmental policy and natural resources management.
- *Morton Kroll Endowed Fellowship:* Provides support to top students pursuing arts management internships.
- *Robert J. Lavoie Fellowship:* Provides funds to outstanding students preparing to work in public service.
- *Governor Gary Locke Endowed Fellowship:* Supports Asian/Pacific Islander students pursuing studies in public service and politics.
- *Hubert G. Locke Endowed Fellowship:* Provides support for students pursuing internships in nonprofit organizations devoted to social justice issues.
- *George A. Shipman Endowed Fellowship:* Supports outstanding students pursuing careers in public service.
- *Evans School Alumni Endowed Fellowship:* Supports recruiting of outstanding students.
- *Home Street Bank Fellowship:* Supports an outstanding graduate student pursuing a career in public affairs.
- *Scottish Rite Scholarship Foundation of Washington PCMI Fellowship:* Provides a stipend to an entering student accepted to the Peace Corps Master's International degree program.
- *William Shelton Fellowships:* Funded by the Scottish Rite Scholarship Foundation of Washington to promote better government through education.

Assistantships

The Evans School offers many research, teaching, and staff assistantship positions each year. Typically 10 to 20 hours per week, these positions include a monthly stipend, benefits, paid tuition, and health insurance. Hiring is competitive. Most announcements are posted in the spring, or as positions become available, on the Evans School Intranet.

Research assistantships are open to first- and second-year MPA students and to PhD students. First-year MPA students are eligible to apply upon acceptance. Students typically work on grant-funded studies, special conferences, and public policy colloquia series sponsored by the school's research centers. Research assistants are exposed to a wide range of policy issues, including regional growth management, international trade, state and federal entitlement programs, health-and-human-services delivery, and education reform. In addition, some research fellowships are offered each year to highly qualified applicants during the admission process. These fellowships guarantee a paid research assistantship for the first year of study and tuition support.

Teaching and staff assistantships are reserved for second year students and PhD students. Teaching assistants are

hired for most core courses. Staff assistantships include such positions as coordinators for international programs, peer advisers, public service clinic/career services coordinators, and computer lab managers.

Work-Study Status

When hiring for hourly positions, the school often gives preference to students possessing work-study status. Work-study positions have included research assistance for faculty and grants, and staff support for the school's centers. Work-study status is one of several forms of aid granted by the University of Washington Financial Aid Office.

FACILITIES

Research Facilities

The school promotes the application of research to real-world policy contexts and its integration with the teaching enterprise. In addition to supporting the independent research of faculty members, the school houses several research and policy centers focusing on regional development, family and child welfare, poverty alleviation, nonprofit management and leadership, international development, consensus building and conflict resolution, and education reform.

These centers shape students' educational experiences by offering research assistantships, special events, career networking, degree-project advising, teaching, and guest lecturing in classes taught by center faculty. The availability of research assistantships is based on current projects.

Human Services Policy Center (HSPC)

The center pairs applied analytic research, preventive approaches, and promotion of comprehensive policies to improve the lives of children, families, and communities, especially those who are disadvantaged. Public communications and strategic partnerships ensure that the HSPC's research affects policy. Core programs include educating and caring for young children; communicating about policies for children and families; and profiling child well being (Washington Kids Count).

Marc Lindenberg Center for Humanitarian Action, International Development, and Global Citizenship

The Lindenberg Center prepares students and faculty for life and work in a global society through partnerships that expand teaching, research, and service opportunities in humanitarian action, international development, and global citizenship. The center's programs enable students to understand connections between poverty, hunger, health, and human security, and equip them with the skills and knowledge to create a better, more humane world. In partnership with international organizations, the center conducts research and multi-disciplinary academic training programs that prepare students for work in emergency and humanitarian relief and international development. The center also promotes responsible global citizenship through exchanges with developing countries, internationalization of curriculum, and collaboration with K-12 schools to change the way students see the world and think about global issues.

Nancy Bell Evans Center on Nonprofit Leadership and Philanthropy

The center enhances the understanding and vitality of the nonprofit sector through research, education, and community engagement. The center conducts research of importance to scholars, policy-makers, and practitioners. It also strives to connect scholars doing research with practitioners in the field. A special research focus is the changing service and policy roles of nonprofit organizations, particularly in the context of devolution, privatization, and globalization. The center serves as the hub of nonprofit studies across the UW campus and, in conjunction with the Cascade Center for Public Service, provides growth and learn-

ing opportunities for senior-level nonprofit professionals in the Pacific Northwest.

The William D. Ruckelshaus Center

The William D. Ruckelshaus Center, formerly known as the Policy Consensus Center, is a joint venture between the UW and WSU. The center draws together representatives from a wide network of agencies, advocacy groups, businesses, agribusiness, tribal governments, university researchers, and others to find long-term solutions to policy conflicts in Washington State, enhancing the region's capacity for effective, sustainable policy making and problem solving. Policy areas range from natural resources and economic development to labor issues in the business community and elsewhere. The center's activities focus on four major areas: providing an objective forum for conflict resolution or policy enhancement; building capacities through assessment, training, and consulting to broaden stakeholders' perspectives and improve collaboration; researching and disseminating best practices in conflict resolution and policy problem solving; and closing the gap between science and policy.

West Coast Poverty Center

This center serves as a regional hub for research, education, and policy analysis on the causes and consequences of poverty in the west coast states. At the UW, the center is a collaborative venture of the Evans School, the School of Social Work, and the College of Arts and Sciences, and is the newest of three regional poverty centers funded by the U.S. Department of Health and Human Services. The center fosters opportunities for cross-disciplinary exchanges and collaboration among poverty researchers and practitioners. It supports research on a broad range of poverty-related topics, such as labor market changes and consequences for economic security and social well-being; new patterns of work and family life, including transformations in family formation, employment, and care-giving arrangements for parents and children; and demographic trends and implications for poverty and public policy. Key activities include awarding grants to established and emerging poverty scholars and doctoral students; hosting seminars and research conferences on poverty and public policy; conducting outreach, dissemination, and dialogue with policymakers and practitioners; and mentoring the next generation of poverty scholars and practitioners.

Executive Training, Civic Engagement, and Outreach

Cascade Center for Public Service and Leadership

The Cascade Center, a public and nonprofit leadership training unit, provides executive and mid-level public and nonprofit sector leaders professional development opportunities to strengthen their management skills. A diverse complement of two-day, three-day, and five-day management courses, as well as a two-week executive program, helps meet a wide range of management training needs in the Northwest and the United States.

Cascade Center courses are offered at the UW campus in Seattle. With prior permission, traditional and mid-career MPA students may apply for a maximum of 12 elective credits to be waived from their degree requirements upon completion of Cascade courses, with approval from their adviser. Executive MPA students may apply for up to nine elective credits to be waived from their degree program, with approval from their adviser. Cascade courses are not graded and participants do not earn academic credits. Rather, the Evans School may accept completed Cascade coursework in lieu of required elective credit hours.

Civic Engagement

An important convener of public policy deliberations in the Puget Sound region, the Evans School provides a neutral forum in which leading scholars and practitioners can talk about practical solutions to emerging policy issues. Groups wanting a university partner in public events often turn to

the Evans School. Through strategic alliances, the school attracts many people to engage in dialogue with faculty, students, and the greater policy community. Public lectures, conference, symposia, and panel discussions help students enrich their policy studies beyond the classroom. These include the Daniel J. Evans Lessons in Leadership Seminars, the Dael L. Wolfe Memorial Lecture in Science and Public Policy, the Betty Jane Narver Lecture on Women in Public Policy, the Civic Engagement for the Twenty-First Century Seminar Series, the Forum at the Evans School, and the quarterly Dean's Forum.

In addition, through service on commissions, organizational boards, and other means, Evans School professors and students actively assist governments, NGOs, nonprofits, community organizations, and companies to improve society in the United States and abroad. Whether through public service clinics or internships, trainings, or volunteer service projects, students can actively engage their knowledge in serving the public good.

Electronic Hallway

The Electronic Hallway, hallway.evans.washington.edu, is an internationally recognized, online resource for public affairs teaching and curriculum development. It supports the Evans School teaching mission and distributes cases and skill exercises to educators in public policy and management.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

PB AF 355 Special Topics in Nonprofits (3-4, max. 12) Covers various topics regarding nonprofit essentials.

PB AF 403 Professional Leadership (4) Cultivates practical skills required to lead within various organizational contexts: managerial strategies for public, nonprofit, and business organizations are developed through case studies and guest speakers. Focuses on analytical and ethical approaches to problem solving and the communication skills needed for effective leadership in any career.

PB AF 499 Topics in Public Policy (3-5, max. 6) I&S Examines selected issues of importance in all areas of public policy. Focus on in-depth analysis of vital public policy issues and the integration of economic, political, and administrative perspectives on them. Offered: jointly with POL S 404.

PB AF 501 Legislative Relations (3/4) Studies role of legislative bodies in American public policy making. Builds on case studies and focuses on tactics, constraints, and options involved in working within a legislative process to achieve public policy goals.

PB AF 503 Executive Leadership (3/4) Nature of executive life in the public sector, the function of leadership in implementing, making, and changing policy. Leadership styles, the relation of leadership to its constituencies and communities.

PB AF 504 Leadership Ethics in the Public Interest (3/4) Addresses the moral challenges facing leaders in the public and nonprofit sectors. Examines the values and virtues important to sustained ethical leadership as well as strategies to build strong institutional cultures and support ethical practices in institutions.

PB AF 505 The Law of Public Administration (3) Legal framework of public administrative action in the United States, emphasizing constitutional requirements; operation of the administrative process; management of personnel, funds, and contracts; and judicial review of administrative activity.

PB AF 506 Ethics and Public Policy (3/4) Teaches students to identify moral issues in public life. Special focus on the integration of moral concerns into public discussion in a

manner which contributes to good policy and does not polarize issues. Discusses moral and political theory by focusing on contemporary cases and issues.

PB AF 507 Mediation and Negotiation as Instruments of Public Management and Policy-Making (3/4) Possibilities offered by mediation and negotiation methods using a mixture of cases, readings, discussions, lectures, and guest speakers. Use of negotiation and mediation techniques to resolve disputes and disagreements over public-policy issues.

PB AF 508 Management Approaches to Service Delivery (3-4)

PB AF 509 Managing People in Public and Nonprofit Agencies (3/4) Emphasizes the role of the program manager rather than that of the personnel officer. Managing people within a variety of programmatic, bureaucratic, and political settings. Case studies form basis of class discussion, assignments.

PB AF 510 Foundations of American Democracy (4) Examines the fundamental values such as equality, liberty, dignity, freedom, and autonomy that individuals justify and shape American political culture and institutions. Focuses upon the philosophical and religious foundations of these values and examines the relations among them as well as how they influence American political culture, institutions, and conflict.

PB AF 511 Managing Politics and the Policy Process (4) Examines broad aspects of organizational life and orients students to key internal and external challenges and opportunities of managing public and nonprofit organizations. Main topics include organizational mission, values, communication, culture, organizational environment and the policy process, legislative-executive relations, interest group advocacy, and media relations.

PB AF 512 Managing Organizational Performance (4) Addresses questions of organizational design, personnel, and operations management to equip students with skills to perform effectively in mission-driven organizations. Core topics include organizational design, inter-organizational networks, human resources and staff management, improving service delivery and production flows, measuring and managing for performance, and ethical leadership.

PB AF 513 Public Policy Analysis (4) Production and use of analysis to support public policy decisions. Defining problems, devising alternative solutions, clarifying stakes in choices, predicting impacts of choices. Skills developed by working on specific policy problems. Assumes familiarity with statistics, microeconomic theory, and institutions and processes of American government. Prerequisite: PB AF 516 or permission of instructor.

PB AF 514 Psychology for Policy Analysis (3/4) Examines basic concepts in social psychology, judgment and decision making, and behavioral economics. Explores how these concepts can be applied to the design, implementation, and evaluation of successful policy.

PB AF 515 Decision Making for Public Managers (3) Considers decision making from normative, prescriptive, and descriptive perspectives. Emphasizes individual decision making, with some discussion of organizational decision practice. Focuses on decision analysis; presents tools for structuring decisions; and considers the role of analysis as a basis for negotiation.

PB AF 516 Economics for Policy Analysis and Management I (4) Ways in which microeconomic analysis can contribute to the analysis of public sector issues. Supply and demand, consumer and firm behavior, competitive and monopoly markets, income distribution, market failure, government intervention. Policy applications of theory. Prerequisite: elementary economics.

PB AF 517 Economics for Policy Analysis and Management II (4) Serves to deepen student understanding of microeconomic theory and develop skills in applying it to public policy and management issues. Prerequisite: PB AF 516.

PB AF 518 Applied Cost Benefit Analysis (3/4) Develops familiarity through problems and applications. Stresses techniques of use.

PBAF 519 Law and Economics (2-4, max. 4) Offered: jointly with LAW A 561.

PB AF 520 Intergovernmental Relations (3) Comparative study of the issues involved in implementing government programs across multiple jurisdictions. Issues of accountability, feasibility, politics, and constitutional limits are examined by focusing upon various methods used to implement programs across federal, state, regional, and international jurisdictions.

PBAF 522 Financial Management and Budgeting (4) An introduction to financial and management accounting, and an overview of public and nonprofit budgeting systems. Covers tools and techniques for budget analysis and the use of financial information in managerial decision making.

PB AF 523 Advanced Budgeting in the Public Sector (3-4) Covers more advanced topics in governmental budgeting. Provides an overview of the functions, expenditures, and revenues of federal, state, and local governments. Prerequisite: PB AF 522.

PB AF 524 Public Sector Financing (3-4) *Dively* Covers financial management in public agencies, with the primary focus on state and local government. Prerequisite: PB AF 522.

PB AF 525 Qualitative Field Methods and Analysis (3-4) Provides a review of qualitative field research methods, exposure to writing from the field, and opportunities to try practicing fieldwork. Emphasizes study design, case selection, and field notes. Addresses coding, analysis, writing, and presenting findings.

PB AF 526 Program Evaluation (3/4) Theory, practice, and politics of evaluation, from simple feedback mechanisms to evaluation of large-scale ongoing programs and social experiments. Emphasis on applications of experimental and quasi-experimental evaluation. Case studies illustrate various types of evaluation. Prerequisite: PB AF 527

PB AF 527 Quantitative Analysis I (4) Two-quarter sequence explores how to formulate research questions, gain experience with conducting research, and learn how to assess which statistical tools or research methods are appropriate to answer different types of policy or management questions. Covers probability, descriptive statistics, hypothesis testing, and confidence intervals. Prerequisite: graduate status in School of Public Affairs or permission of instructor.

PB AF 528 Quantitative Analysis II (4) Second quarter of a two-quarter sequence aimed at helping students become informed users and critical consumers of research and statistical analysis. Combines material on research design and data collection methods with tools for multivariate analysis. The multivariate analysis methods include correlation and an introduction to multivariate regression. Prerequisite: PB AF 527.

PB AF 530 International Affairs (3) Provides a broad understanding of international issues and United States policy. Students explore U.S. foreign policy and theories of major international actors in international trade, security, and strategic concerns, refugee policy, conflict resolution, development assistance, and the environment. Offered: jointly with JSIS B 534/POL S 534.

PB AF 531 Development Management in the Twenty-First Century (3/4) Addresses organization, administration and evaluation in governmental and non-governmental agencies involved in development efforts. Students examine development strategies, alternative management approaches, and management skills such as budgeting, finance, human resource development and program evaluation. Other topics include communication, expatriate/local power imbalances, decentralization, community involvement, culture, and personnel issues.

PB AF 532 International Development Capstone (2/4) Examines different policy environments leaders must address to achieve policy in comparative and international settings. Includes strategies, tactics, and frameworks needed to initiate and sustain policy dealing with authoritarian, democratic, liberal, and one-party states. Focuses on pressures from the international system and issues such as globalization.

PB AF 533 Economics of International Development (3/4) Introduction to sustainable international development and its physical, human, social, and natural capital components. Students examine the new growth theories and evidence, and their relationship to democracy, trade, and other policies and institutions. Topics include income distribution, poverty, and the environment.

PB AF 534 Food and Agricultural Policy in Developing Countries (4) Provides an understanding of the role of agriculture in economic development. Examines frontier policy issues in developing countries related to food security and agricultural production. Emphasizes developing a nuanced understanding of contemporary food and agricultural policy issues, with a firm grounding in theory and history.

PB AF 535 Seminar in American Foreign Policy (3-) Examines how the U.S. foreign policy process works, emphasizing formation, content, and implementation of post-Cold War U.S. foreign and national security policy, with emphasis on current foreign and national security policy.

PB AF 536 Program Evaluation in the Developing World (-[3/4]) *Gugerty* Provides an overview of issues in the analysis and evaluation of development projects focusing on the developing world with three themes: understanding and analyzing development programs; understanding and using the logic of impact assessment; identifying practical, field-based tools for monitoring and evaluation in low resource environments.

PBAF 537 Topics in International Affairs (3-5, max. 12) Examines topics of interest and import in foreign policy and international affairs. Focuses on the in-depth analysis of issues and the integration of economic, institutional, and political dimensions.

PB AF 538 International Organizations and Ocean Management (3) *Dolsak* Survey of the manner in which international regimes and organizations attempt to manage and regulate the uses of the ocean. Primary emphasis is on the analysis of the effectiveness of regimes and of processes that support or constrain these organizations. Prerequisite: SMEA 500 or permission of instructor. Offered: jointly with SMEA 507.

PB AF 539 Values in International Development (4) Examines and clarifies international development values, including underlying theories of justice on which they seem to be built, the ways in which they are justified to stakeholders, the general public, and impacts they have upon people, especially the poorest and most vulnerable.

PB AF 540 African Development Challenges (3) Provides an introduction to the political economy of development in sub-Saharan Africa. Focuses on understanding various theories about the underlying causes of current African development challenges and on analyzing and evaluating various proposals and policies for addressing these challenges.

PB AF 541 The Role of Nongovernmental Organizations in International Development (3) Explores some of the major issues faced by nongovernmental organizations (NGOs) working on development issues worldwide. Examines organizational forms, NGO-state relationships, inter-organizational relationships, and the relationship of NGOs to beneficiaries.

PB AF 542 The Law and Economics of Regulation (3/4) Examines the principles and practices of regulatory environments.

PB AF 544 Land Use and Transportation Policy (3/4) Provides an historical and theoretical context for a fuller un-

derstanding of federal and local policies regarding land use and transportation as well as a range of public policy options which influence how metropolitan areas grow and how people move around.

PB AF 545 Public Leadership Seminars (3) Provides a forum to reflect on the major dimensions of modern managerial leadership. Includes a team project working with outside clients or organizations.

PBAF 546 Professional Development: Hubert H. Humphrey Seminar (1, max. 3) Engages students as global citizens, discussing global issues affecting students' home environments. Utilizes the diversity in professional backgrounds and regional experiences of participants. Provides an introduction to U.S. government at the federal, state, and local levels, designed to enhance students' ability to participate and to create appropriate professional affiliations. Credit/no-credit only.

PB AF 547 Water Resource Economics (4) Explores the economics of water resources, including static and dynamic efficiency for consumers and producers and other topics concerned with water quality. Explores effects of climate change on water resources, and economic approaches to mitigate these effects.

PB AF 548 Management and Public Capital Markets (4) Explores the new debt management environment for financial managers of public organizations, and the meaning and value of active public debt management, including the analytical tools and accountability issues that characterize responsible management.

PB AF 550 Management of Nonprofit Organizations (3/4) Focuses upon the roles played by nonprofit organizations in meeting the public good. Examines internal management issues such as structure, budget, and operations; and external issues such as board functions, legal status, marketing, media relations, and fund-raising.

PB AF 551 Nonprofit Management Capstone (3/4) Explores the means through which nonprofit organizations establish strategies to expand their impact, sustain their organizations, and shape the future, and the steps through which they develop effective new programs to implement those strategies.

PB AF 552 Philanthropy and Society (4) Provides students a holistic background of the philanthropic sector. Begins with an in-depth analysis of history and context and ends with a discussion of current strategies and approaches to giving by foundations. Builds in sequence: history, context, sub-sectors, accountability, and results.

PB AF 553 Nonprofit Financial Management (3/4) Provides an understanding of the financial framework on nonprofit organizations. Focuses on the financial principles of management of nonprofits, with an emphasis on financial reporting, strategic financial planning, managerial decision-making and budgeting.

PB AF 554 Nonprofit Organizations and Public Policy (3) Examines the changing role of nonprofit organizations in American society. Selected policy topics include privatization, for-profit/nonprofit competition, public-private partnerships, tax policy, and new sources of revenues.

PBAF 555 Topics in Nonprofit Management (3-5, max. 12) Examines various topics of public importance in nonprofit management. Integrates the political, managerial, and economic dimensions of these issues.

PB AF 556 Public-Private Partnerships (3-4) Provides a comprehensive overview and examination of partnerships and their implications for public policy and nonprofit and public management. Examines the diverse array of partnerships in the UW and abroad and the management challenges involved in the development and implementation of different partnership strategies.

PB AF 557 Management and Public Capital Markets (4) *Marlowe* Covers the institutions and dynamics of the public capital market; how the structure of that market shapes

managers' choices about how to design, sell, and manage debt obligations; and the analytical tools managers and investors use to evaluate those choices and their potential consequences.

PB AF 558 Collaboration and Management Across Sectors (4) Organizations from different sectors (public, business, nonprofit) increasingly work together to achieve unique, collaborative outcomes. Managing cross-sector relationships presents dynamic process and governance challenges that go well beyond the difficulties of managing within an organization. Explores the opportunities and risks involved in working across organizational boundaries.

PB AF 560 Inequality, Governance, and Policy in the Metropolitan Region (3/4) Explores national/local urban policy concerning the major problems confronting cities and metropolitan regions today. Economic globalization, income inequality, and metropolitan decentralization shape the urban agenda, the context for urban policy, and the analytic focus of the course. A project allows the exploration of strategies for intervention. Offered: jointly with URBPD 560.

PB AF 561 Urban Economics and Public Policy (3/4, max. 12) Examines the rationale for and consequences of public intervention in urban land, housing, and transportation markets through land use regulations such as zoning and urban growth boundaries, infrastructure investments, and fiscal policies to manage urban development and traffic. Prerequisite: PB AF 516 or equivalent. Offered: jointly with URBPD 561.

PB AF 562 Introduction to Neighborhood Planning and Community Development (3) Provides introduction to basic practices in neighborhood planning and community development, including theoretical/historical bases; developing neighborhood plans/projects; indicators and evaluation of neighborhood quality; community participation; institutional framework, ethical dilemmas, and professional roles. Addresses current issues, including Seattle's experience, NIMBYism, security, neighborhood character, housing segregation, environmental racism. Offered: jointly with URBPD 562.

PB AF 563 Intergroup Relations and Public Policy (4) Explores how social psychological research on intergroup relations is pertinent to various aspects of public policy. Includes historical and current perspectives. Examines how the literature describes how individuals perceive, judge, and feel about individuals from various social groups. The groups discussed ranges from minimal groups to classic social groups.

PB AF 564 Housing and Social Policy (4) Focuses on the problem of affordable housing and its interrelationships with social problems in the United States.

PB AF 565 Topics in Urban Affairs (3-5, max. 12) Examines various topics of public importance in urban policy. Integrates the political, managerial, and economic dimensions of these issues.

PB AF 566 Community Economic Development (3/4) Explores the relationship between local community economic development, environmental sustainability, cultural vitality, and trend in regional and national economics, with specific focus on how to make community and economic investments that yield development outcomes that contribute to economic, equitable, environmental, and cultural vitality.

PB AF 567 Community Engagement and Urban Governance (3/4) Investigates interactions between citizen participation and efforts to measure and improve policy and program performance in large cities. Develops analytic frameworks and practical strategies for sustaining and enhancing participation and performance.

PB AF 568 Social Justice and Public Policy (3/4) Examines the values of social justice that motivate action in the public arena; thinks about how those values create concerns and solutions; and explores issues of equity and liberty, of

balancing the rights of the individual, the common good, and redistribution.

PB AF 569 Race and Public Policy (3-4) Analyzes the way in which the persistent problem of race is expressed in the formation and implementation of social and public policy.

PB AF 570 Foundations of Social Policy (3) Examines major institutions and programs in social policy including: income maintenance, social services, education, and healthcare. Focuses on American social policy with some attention to comparative welfare state development. Includes extensive discussion of different policy strategies to address social policy problems.

PB AF 571 Education, The Workforce, and Public Policy (3, max. 6) W. ZUMETA Examination of policy issues involving education, training, the economy, and the development of the nation's human resources. Relationship between education, training, and work, underutilized workers, race and gender discrimination issues, and the role of education and training in economic development. Offered: jointly with EDLPS 563.

PB AF 572 Higher Education and Public Policy (3) Explores the nature of public policies affecting higher education, how these policies are made and influenced at both the federal and state levels, and the role of policy research and analysis, and several of the major current public policy problems and policy responses.

PB AF 573 Topics in Education and Social Policy (3-5, max. 12) Examines various issues of public importance in the areas of education and social policy. Focuses on in-depth analysis of relevant issues and the integration of the economic, administrative, and political dimensions of these issues.

PB AF 574 Economics of Race and Inequality in the United States (3/4) Covers the history of racial inequality over the past century, theories of the causes, wage determination and discrimination in employment and pay, inequalities in education and human capital development, and residential segregation and its consequences. Discusses the effectiveness and limitations of policy response to racial inequality.

PB AF 575 Economics of Education Policy (4) Introduces economic theory applications and econometric analysis to educational policy issues. Covers supply and demand, consumer behavior, and production theory. Discusses educational investment incentives, school behavior, and governmental intervention. Uses econometric methods to infer education policies' effects and make predictions. Addresses educational attainment, school resources, teacher labor markets, and accountability.

PB AF 576 Poverty and Anti-Poverty in the United States (3/4) Examines the nature and extent of poverty in the United States, its causes and consequences, and the anti-poverty effects of public policies.

PB AF 577 Topics in Microfinance (3) Provides an overview of the basic issues and debates around microfinance. Students gain an analytical understanding of the opportunities and motivation for small scale financial services, and the limitations.

PB AF 578 Asset Building for Low Income Families (3/4) Explores assets and finances for low income families primarily in the United States. Identifies programs and policies targeted toward asset building and looks at evidence of their efficacy. Uses a multi-disciplinary perspective to examine the economic, social, and political contexts for these policies.

PB AF 579 Topics in Health Policy (4) McCann Introduces students to the ways in which the public health and healthcare systems are organized, financed, and delivered in the U.S. in concert with how national and state political institutions influence and reflect these systems leveraging current challenges to analyze past, present, and potential policy solutions. Offered: AWS.

PB AF 581 Information Technology and the Policy-Making Process (3) Demystifies information base for policy making in democracies. Examines theoretical and practical issues associated with information processing in the public sector. Considers role of new technologies in collecting, analyzing, and disseminating information with special attention to the relationship between these technologies and effective government service, public participation, and organizational accountability.

PB AF 582 Communicating Climate Change (4) Surveys climate change communications and the role in achieving climate change policy goals. Assesses climate change communication in light of scientific evidence as well as student reactions. Explores theories and frameworks to evaluate and improve climate change communications. Examines the role of climate change communication as a policy tool.

PB AF 583 Science, Technology, and Public Policy (4) Examines the relationship between the advancement of technical knowledge, the pace of technological change, and public policies designed to induce or respond to these development. Issues of policy formulation, administrative design, and future trends; applications include biotechnology, energy, information technology, global warming, robotics, national security, homeland security, and space exploration.

PB AF 585 Topics in Science, Technology, and Public Policy (3-5, max. 12) Examines relationship between advancement of technical knowledge and pace of technological change, and public policies to induce or respond to these trends. Generic issues of government research, development, and personnel training programs are addressed. Applications of policy issues involving biomedical, communications, energy, environmental, transportation, and weapons technologies.

PB AF 586 International Science and Technology Policy (3) Seminar is designed: first, to analyze the relationships between research and development policy, capabilities, and national technological strategies for advanced industrial and less-developed countries; second, to deal with the international implications of particular technologies as countries try to make policy for them in regional and global organizations. Examples of specific technologies are chosen from such fields as space telecommunication, weather and climate modification, airline transportation, nuclear energy, and seabed exploitation.

PB AF 587 Water and Sanitation Policy in Economically Developing Countries (3/4) Examines the policy dimensions of providing water supply and sanitation services in developing countries.

PB AF 588 Environmental Risk Analysis (4) Examines a variety of frameworks and models of risk with respect to regulation, policy, and decision-making.

PB AF 589 Risk Assessment for Environmental Health Hazards (3/4) Examines context, methodologies, data, uncertainties, and institutional arrangements for risk assessment. Qualitative and quantitative approaches to identification, characterization, and control of environmental hazards to health emphasized through didactic and case studies. Offered: jointly with CEE 560/ENV H 577; A.

PB AF 590 Environmental Policy Processes (3-4) Presents background to establish the need for environmental policy. Explores in a comparative manner, examining both successes and failures, various strategies that have been used or proposed to protect the environment. Offered: jointly with SEFS 592.

PB AF 591 Seminar in Resource Policy and Management (1) Introduction and orientation for concurrent degree program between the Evans School of Public Affairs and the School of Environmental and Forest Sciences. Examines research and literature on contemporary issues related to the integration of natural resource science, policy, and management, through discussion among faculty, students, and invited speakers. Offered: jointly with SEFS 591.

PB AF 592 Resource Policy and Administration (4) Study based on understanding of the actors, arenas, issues, and policy communities that form the context for policy development and implementation. Exploration of approaches to policy inquiry. Consideration of implications for both policy and management. Students develop a study design for course project. Offered: jointly with SEFS 571.

PB AF 593 Climate Change and Energy Policy (3-4) Energy policy formulation and implementation with emphasis on post-1973 developments. Energy conservation programs; changing roles of oil, coal, gas, nuclear, and solar energy; institutional, environmental, and equity considerations; government research and development programs.

PB AF 594 Economic Approaches to Environmental Management (3/4) *Layton* Examines the economic tools relevant to natural resource and environmental management. Tools are developed in the context of a series of resource problems, with an eye towards building intuition useful for addressing complex policy problems that do not fit neatly into textbook examples.

PB AF 595 Topics in Environmental Policy and Management (3-5, max. 12) Examines various topics of public importance in environmental policy and management. Integrates the political, managerial, and economic dimensions of these issues.

PB AF 596 Ethics and Values in Environmental and Natural Resource Policy (3) Explores environmental values and ethics and their relationship to the policy process. Includes content on value foundation of economic efficiency and its relationship to fairness, legal entitlements, duty to other creatures, and incommensurabilities in valuing goods. Current policy controversies are addressed.

PB AF 597 Role of Scientific Information in Environmental Decisions (3/4) *Cullen* Examines how science contributes to decisions that involve the natural environment; how science and scientists help frame debates and decisions; how scientific findings are incorporated into decision-making processes; how scientists and non-scientists deal with uncertainty about scientific questions.

PB AF 598 Administrative and Policy Skills Workshop (1-3, max. 6) Teaches practical administrative, leadership, and analytic skills commonly required of managers and analysts in the public and nonprofit sectors. The workshops emphasize hands-on problem resolution, simulations, and actual practice. Credit/no-credit only.

PB AF 599 Special Topics (1-6, max. 15) Study and analysis of special topics in public affairs. Topics vary each quarter depending on curricular needs and interests of students and faculty.

PB AF 600 Independent Study or Research (*-)

PB AF 605 Degree Project ([1-8]-, max. 8)

PB AF 606 Public Service Clinic ([3/4]-) *Carlson* Serves to meet the degree project requirement as part of the Evans School curriculum. Students work in a supportive environment facilitated by peer and faculty to connect the research, organizational change, and capacity-building needs of community organizations and public agencies.

PB AF 607 Public Service Clinic (-[3/4]) *Carlson* Serves to meet the degree project requirement as part of the Evans School curriculum. Students work in a supportive environment facilitated by peer and faculty to connect the research, organizational change, and capacity-building needs of community organizations and public agencies.

PB AF 608 Capstone Project Seminar ([3-4]-, max. 9) Meets the degree project requirements as part of the Evans School curriculum. Students work in a supportive environment facilitated by peer and faculty to complete individual degree projects.

School of Public Health

Dean

Howard Frumkin

F350 Health Sciences

The UW School of Public Health provides education to prepare outstanding, innovative, and diverse public health leaders and scientists; research to advance public health science and policies; and service to promote the health and well-being of communities locally, nationally, and globally. The School of Public Health emphasizes strong discipline-oriented academic programs, as well as programs that emphasize interdisciplinary collaboration.

The School has five departments: Biostatistics, Environmental and Occupational Health Sciences, Epidemiology, Global Health, and Health Services -- plus interdisciplinary programs that include health services administration, maternal and child health, nutritional sciences, pathobiology, and public health genetics.

Within these departments and program, the school offers the following degrees: Master of Public Health (MPH); Master of Science (MS); Master of Health Administration (MHA); Doctor of Philosophy (PhD); and bachelor's degrees in public health, environmental health (also a minor), and health informatics and health information management (HIHIM).

Concurrent degree programs with Anthropology, Dentistry, Foster School of Business, International Studies, Law, Medicine, Molecular and Cellular Biology, Nursing, Public Administration, and Social Work are also available.

Graduate certificate programs are offered in basic or advanced clinical research methods (Epidemiology), emergency preparedness and response (Health Services), global health (Global Health), health management (Health Services), health policy (Health Services), HIV and STIs (Global Health), maternal and child health (Health Services), public health practice (Health Services Executive MPH program), public health genetics (Public Health Genetics), and statistical genetics (Biostatistics).

For more information, see the school's academic catalog at sph.washington.edu/publications/catalog.asp or visit the homepage at sph.washington.edu.

UNDERGRADUATE PROGRAM

Adviser

F-332 Health Sciences, Box 357230

(206) 221-4561

phmajor@uw.edu

The School of Public Health offers a Bachelor of Science or a Bachelor of Arts with a Major in Public Health.

The Department of Environmental and Occupational Health Sciences offers a minor and a Bachelor of Science with a Major in Environmental Health. The Department of Health Services offers a Bachelor of Science degree in Health Informatics and Health Information Management, as well as a baccalaureate certificate, through the UW Evening Degree Program. A minor in global health is offered by the Department of Global Health. A minor in Nutritional Sciences is offered by the Nutritional Sciences Program.

General Education

The School of Public Health general education requirements, which apply to all degree programs mentioned above, are as follows:

Basic Skills

- English Composition (C) – 5 credits
- Additional Writing (W) – 10 credits
- Quantitative and Symbolic Reasoning (QSR) – One course (minimum 4 credits)

Areas of Knowledge

- Visual, Literary, & Performing Arts (VLPA) – 10 credits*
- Individuals & Societies (I&S) – 10 credits
- Natural World (NW) – 20 credits
- Additional Areas of Knowledge – 25 credits

*Although School of Public Health students are not required to study a foreign language, they are encouraged to do so by substituting first-year language courses for the VLPA requirement. Completion through the third quarter is required for VLPA credit.

Suggested First and Second-Year Courses: Anthropology, political science, psychology, sociology; distribution of general education and Areas of Knowledge courses as well as coursework that develops critical and analytical thinking, communication skills, and an understanding of public health.

Admission Requirements

Admission to the major is competitive. Applicants must complete prerequisite coursework (see below) and an application to be considered. Completing the prerequisites and submitting an application do not guarantee admission.

Admission is offered twice a year for autumn and winter quarters. Applications for autumn are due the third Friday of spring quarter and applications for winter are due the third Friday of autumn quarter. The application is available from the public health major website at sph.washington.edu/uph. Transfer students must also apply for admission to the UW for autumn or winter quarter, following the admission process, policies, and deadlines found at admit.washington.edu.

The program evaluates applications based on overall academic record, grades in major relevant coursework, selection of and preparation for appropriate BA or BS path, ability to make satisfactory progress toward the degree, and understanding of and potential fit with the major as demonstrated in the personal statement.

Applicants are strongly encouraged to attend an information session before submitting an application.

Transfer students may use any transferable equivalent course(s) for prerequisite coursework. Consult the UW Equivalency Guide or a UW adviser to verify transferability of coursework.

Early Admission

The early admission option is for a select group of students, already enrolled at the UW, who have discovered the major early in their academic career and want to begin developing stronger connections to the school and related opportunities. Students apply to the early admission option during spring of their first year for entry in autumn of their second year or during autumn of their second year for entry in winter of their second year.

Applicants must complete the following by the application deadline to be considered for admission:

1. Minimum 30 college credits
2. Minimum 3.00 cumulative GPA
3. English composition (5 credits)
4. Minimum 3.0 grade in one introductory public health course from the following: ENV H 111, EPI 201, G H 101, HSERV 100, NUTR 300, PHG 200
5. Minimum 3.0 grade in one introductory science from the following: BIOL 118, BIOL 180, CHEM 120, CHEM 142, CHEM 145, or MICROM 301/MICROM 302

Upper Division Admission

The upper division admission option is typical for most students both at the UW and transferring from other institutions.

Applicants must complete the following by the application deadline to be considered for admission:

1. Minimum 60 college credits
2. Minimum 2.50 cumulative GPA
3. English composition (5 credits)
4. Minimum 2.5 grade in one introductory public health course from the following: ENV H 111, EPI 201, G H 101, HSERV 100, NUTR 300, PHG 200, or one 5-credit course from anthropology (ANTH only), geography (GEOG), political science (POL S), psychology (PSYCH), or sociology (SOC)
5. For BA path students, minimum 2.5 grade in one introductory science from the following: BIOL 118, BIOL 180, CHEM 120, CHEM 142, CHEM 145, or MICROM 301/MICROM 302
6. For BS path students, minimum 2.5 grades in at least two courses of a year-long sequence in introductory science, with laboratories, or mathematics, chosen from: biology (BIOL 180, BIOL 200, BIOL 220); chemistry (CHEM 142, CHEM 152, CHEM 162); organic chemistry (CHEM 237, CHEM 238, CHEM 239, CHEM 241, CHEM 242); physics (PHYS 114/PHYS 117, PHYS 115/PHYS 118, PHYS 116/PHYS 119, or PHYS 121, PHYS 122, PHYS 123); or mathematics (MATH 124, MATH 125, MATH 126)

Bachelor of Arts

Major Requirements

108-109 credits, as follows:

1. *Integrated Core (20 credits):* Minimum 2.00 cumulative GPA with no grade below 1.7 in SPH 380, SPH 381, SPH 480, SPH 481
2. *Public Health Foundation (8-9 credits):* Statistics (4-5 credits) from BIOST 310 (preferred), Q METH 201, STAT 220, STAT 221, STAT 311, or Q SCI 381; epidemiology (3 credits), EPI 320
3. *Social and Behavioral Sciences Breadth (25 credits):* One 5-credit course from each of the following departments: Anthropology (ANTH only), Geography, Political Science, Psychology, and Sociology; minimum 20 credits at the 200 level or above
4. *Social and Behavioral Sciences (20 credits):* One 5-credit course from each of the following departments: Anthropology (ANTH only), Political Science, Psychology, and Sociology; minimum 15 credits at the 200 level or above.
5. *Natural Science (10 credits):*
 - a. 5 credits from BIOL 118, BIOL 180, MICROM 301/MICROM 302.
 - b. 5 credits from CHEM 120, CHEM 142, CHEM 145
6. *Bachelor of Arts (BA) Selectives (20 credits):* Courses identified to address competency areas in advocacy, community dynamics, communication, economics, education, ethics, health promotion, law, policy, social justice, and writing. See website or adviser for approved list. Any course not on the list must be approved by the public health adviser.
7. *Public Health Electives (20 credits):* 300- and 400-level courses to build competency areas in public health. See website or adviser for approved list. Any course not on the list must be approved by the public health adviser.
8. *Public Health Capstone (5 credits):* Minimum 2.0 grade in each of SPH 491 and SPH 492 (minimum 2.0 grade)
9. Minimum 2.00 cumulative GPA for courses applied to the major

In addition to the major requirements shown above, students must complete the general education requirements for the School of Public Health.

Bachelor of Science

Major Requirements

108-120 credits, as follows:

1. *Integrated Core (20 credits)*: Minimum 2.00 cumulative GPA with no grade below 1.7 in SPH 380, SPH 381, SPH 480, SPH 481
2. *Public Health Foundation (8-9 credits)*: Statistics (4-5 credits) from BIOST 310 (preferred), Q METH 201, STAT 220, STAT 221, STAT 311, or Q SCI 381; epidemiology (3 credits), EPI 320
3. *Social and Behavioral Sciences Breadth (25 credits)*: One 5-credit course from each of the following departments: Anthropology (ANTH only), Geography, Political Science, Psychology, and Sociology; minimum 20 credits at the 200 level or above
4. *Social and Behavioral Sciences (20 credits)*: One 5-credit course from each of the following departments: Anthropology (ANTH only), Political Science, Psychology, and Sociology; minimum 15 credits at the 200 level or above.
5. *Natural Science (10 credits)*:
 - a. 5 credits from BIOL 118, BIOL 180, MICROM 301/MICROM 302.
 - b. 5 credits from CHEM 120, CHEM 142, CHEM 145
6. *Bachelor of Science (BS) Selectives (30-32 credits)*: Two year-long sequences of introductory science, with laboratories, or mathematics, chosen from biology (BIOL 180, BIOL 200, BIOL 220); chemistry (CHEM 142, CHEM 152, CHEM 162); organic chemistry (CHEM 237, CHEM 238, CHEM 239, CHEM 241 CHEM 242); physics (PHYS 114/PHYS 117, PHYS 115/PHYS 118, PHYS 116/PHYS 119, or PHYS 121, PHYS 122, PHYS 123); or mathematics (MATH 124, MATH 125, MATH 126)
7. *Public Health Electives (20 credits)*: 300- and 400-level courses to build competency areas in public health. See website or adviser for approved list. Any course not on the list must be approved by the public health adviser.
8. *Public Health Capstone (5 credits)*: Minimum 2.0 grade in SPH 491 and SPH 492
9. Minimum 2.00 cumulative GPA for courses applied to the major

In addition to the major requirements shown above, students must complete the general education requirements for the school of Public Health.

Continuation Policy

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

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: Public Health is a school-wide liberal arts major, leading to a Bachelor of Arts or Bachelor of Science, which uses public health questions, concepts, and tools to teach critical thinking skills. Students learn to ask questions, challenge assumptions, and explore answers to promote the health and well-being of communities, locally, nationally, and globally. By integrating the diverse areas of public health, students are introduced to the determinants of health, emerging diseases, access to health care and modes of health care delivery, the geography of health, and the effects of environment on health and disease. The major provides undergraduates with competen-

cies in Health, Ethics & Social Justice, Social Science, Natural Science, Policy & Politics, and Environment with particular emphasis on collaboration, communication, and critical thinking across these domains. An undergraduate degree in public health provides a grounding in science, values, passion, and commitment which is valuable for a range of career and educational options across multiple disciplines.

- *Instructional and Research Facilities*: The School of Public Health has five departments -- Biostatistics, Environmental and Occupational Health Sciences, Epidemiology, Global Health, and Health Services -- as well as interdisciplinary programs such as the Public Health major, Maternal and Child Health, Nutritional Sciences, Pathobiology, and Public Health Genetics. The School has over 30 research centers, including Institute for Public Health Genetics, Northwest Center for Public Health Practice, Center for Public Health Nutrition, Institute for Health Metrics and Evaluation, and the Health Promotion Research Center. Administration and teaching are primarily in the Magnuson Health Sciences Center.
- *Honors Options Available*: With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning*: Majors are encouraged to engage in experiential learning. See adviser for details.
- *Department Scholarships*: See adviser for details.
- *Student Organizations/Associations*: Undergraduate Student Public Health Association (USPHA). Public Health Dawgs (PhDs).

GRADUATE PROGRAM

The School of Public Health (SPH) offers graduate programs leading to the degrees of Master of Public Health (MPH), Master of Health Administration (MHA), Master of Science (MS), and Doctor of Philosophy (PhD). Admission requirements vary by degree and field and are described in the sections for each department.

Master of Public Health Degree: The MPH is a professional degree that provides broad training in public health. Each program provides additional training in a particular area. Graduates pursue careers in public health practice settings, academia, or research. The MPH degree is offered in all SPH departments. Students earning the MPH may choose from several areas including biostatistics; community-oriented public health practice; environmental and occupational health; epidemiology; Executive MPH program; health metrics and evaluation; health services; health systems and policy; global health (in Epidemiology or Global Health); leadership, policy, and management; maternal and child health (in Epidemiology or Health Services); nutritional sciences; occupational and environmental medicine; public health genetics; or Peace Corps Master's International. The Executive MPH degree program is a three-year, part-time program that allows mid-career public health professionals to pursue the MPH degree in community practice, environmental health, global health, health education, or maternal and child health while continuing their employment.

Master of Health Administration Degree: The MHA degree is offered by the interdisciplinary Graduate Programs in Health Services Administration in the Department of Health Services under the auspices of the Graduate School, either as a full-time, in-residence program or a part-time executive program. The MHA program prepares students for careers in management, planning, and policy analysis in a variety of settings in the healthcare field. The purpose of the curriculum is to integrate the knowledge, skills, and experience that encompass health services

management, planning, and policy analysis. Students develop knowledge and skills that enable them to better understand and manage change, analyze information and make decisions, and manage organizations and the people in them. The Executive MHA program is a part-time program designed for mid-career health services professionals, including physicians and other experienced clinicians, who wish to continue their employment while pursuing the MHA degree. Both programs provide a balance of theory and practical management skills.

Master of Science and Doctor of Philosophy Degrees: The MS and PhD programs in the departments of Biostatistics, Environmental and Occupational Health Sciences, Epidemiology, and Health Services prepare students for academic or research careers. The MS and PhD in the Nutritional Sciences and the Pathobiology programs, and the PhD program in the Institute for Public Health Genetics are administered in the school, although the degrees are awarded through the Graduate School's interdisciplinary group structure.

The MS programs in biostatistics, environmental health (general, occupational and environmental exposure sciences, and toxicology tracks), epidemiology (general, global, or clinical research tracks), health services (healthcare and population health), nutrition, pathobiology, and genetic epidemiology offer focused research training in specific disciplines. Graduates of these programs often assume positions as senior technical staff in laboratories or other organizations and as research project coordinators, or pursue further graduate training. The MS program differs from the PhD program in that more of the courses emphasize the concepts underlying methodological approaches rather than the ability to independently design a major research program.

The PhD programs in biostatistics (general or statistical genetics tracks), environmental and occupational health sciences (environmental & occupational hygiene and toxicology tracks), epidemiology, health services, nutritional sciences, pathobiology, and public health genetics, train future academicians as highly qualified independent investigators and teachers, and as well-trained practitioners. The doctoral programs are distinct from the MS programs by the addition of advanced coursework and the nature and scope of the dissertation research project.

Concurrent Degree Programs: The School of Public Health MPH program encourages students to take full advantage of the University's unique position as a leading education, research, and service institution and to consider one of the many concurrent degree programs available with the MPH. Enrollment in a concurrent degree program at the University permits a student to proceed in a coordinated way towards sequential completion of both degrees in a shortened period of time. Some of the options available are not formal concurrent programs, but the degrees listed can be pursued in parallel with the Global Health MPH. In some cases, agreements are reached between the two programs to allow for sharing of some credits and/or projects. Most concurrent degrees begin with a successful application to the other school, followed by an application to the MPH during the first year of study in the first program.

Residency Programs: The SPH offers a residency in occupational and environmental medicine (MPH). Physicians may apply to any of the school's other graduate programs.

Certificate and Graduate Certificate Programs: The SPH offers several graduate certificate programs, including: Basic or Advanced Clinical Research Methods (Epidemiology); Emergency Preparedness and Response (Health Services); Global Health (Global Health); Global Health of Women, Adolescents, and Children (Global Health); Global Injury and Violence Prevention (Global Health); Health Economics and Outcomes Research (with the School of Pharmacy); Health Management (Health Services); Health Policy (Health Services); HIV and STIs (Global Health); Maternal and Child Health (Health Services); Public Health Practice

(Health Services Executive MPH Program); Public Health Genetics (Public Health Genetics) and Statistical Genetics (Biostatistics).

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/.

SPH 380 History and Practice of Public Health (5) T. KWAN-GETT, S. PAK-GORSTEIN Provides a historical overview of public health as a framework to understand organization of contemporary public health and key issues faced today. Offered: AW.

SPH 381 Science and Public Health (5) M. AVERILL, D. LEHMAN, J. LINGAPPA, G. ONSTAD Provide an overview and introduction to the ways different scientific disciplines are used to address public health goals. Prerequisite: minimum grade of 1.7 in SPH 380; either BIOL 118, BIOL 180, CHEM 120, CHEM 142, CHEM 145, or both MICROM 301 and MICROM 302. Offered: WSP.

SPH 480 Research Methods in Public Health (5) J. BASEMAN, L. NELSON Applies concepts and research methods to real public health problems. Prerequisite: EPI 320; minimum grade of 1.7 in SPH 381. Offered: AW.

SPH 481 Ethics, Social Justice, and Policy in Public Health (5) S. MACKENZIE Integration of prior learning and consideration of public health decision from an ethics and justice perspective. Prerequisite: minimum grade of 1.7 in SPH 480. Offered: WSP.

SPH 490 Selected Topics in Public Health (1-5, max. 15) In depth study of current public health topics. Offered: AWSpS.

SPH 491 Public Health Capstone I (2-) Part one of integrative experience bringing together students' knowledge and skills acquired in the public health major.

SPH 492 Public Health Capstone II (-3) Part two of integrative experience bringing together students' knowledge and skills acquired in the public health major. Prerequisite: SPH 491.

SPH 493 Public Health Capstone (5) Students complete a final self-directed paper on public health topic of interest integrating the knowledge and skills acquired during their time in the public health major. Offered: AWSpS.

SPH 494 Honors Seminar in Public Health (1, max. 5) D. HINCHEY Skill-building, discussion-based seminar designed to challenge ability to analyze issues in public health using topics raised in current media. Credit/no-credit only. Offered: AWSpS.

SPH 495 Public Health Internship (1-5, max. 15) D. HINCHEY Internship in public health related area. Credit/no-credit only. Offered: AWSpS.

SPH 497 Public Health Special Electives (1-5, max. 15) Independent study of a current public health topic. Offered: AWSpS.

SPH 499 Undergraduate Research (1-5, max. 15) Individual research on a specific topic in public health. Offered: AWSpS.

Biostatistics

Founded in 1970, the Department of Biostatistics is a leader in statistical sciences. Its 83 faculty include a member of the United States National Academy of Sciences, two members of the Institute of Medicine, and 20 Fellows of the American Statistical Association. Five hundred and sixty alumni hold leadership roles in academia, government, and industry worldwide. The department is a center for development and application of statistical methodology

across the health sciences, and has collaborative partnerships with Fred Hutchinson Cancer Research Center, Seattle Children's Hospital Research Institute, Group Health Cooperative, and the Veterans' Administration. To complement research, the department recently established the Center for Biomedical Statistics to provide consulting and collaborative services.

GRADUATE PROGRAM

Graduate Program Coordinator

H655 Health Sciences, Box 357232

(206) 543-1044

bioadmit@uw.edu

The Department of Biostatistics offers Master of Science, Master of Public Health, and Doctor of Philosophy degrees in quantitative methods applied to the medical and biological sciences. Biology, medicine, and health sciences are undergoing major changes in their development as quantitative sciences. As technological advances generate huge quantities of information, biostatistical tools and concepts are critical for the analysis of these data. The techniques and viewpoints of mathematics and statistics, traditionally peripheral to biology and medicine, are now woven into the fabric of the life sciences, thereby providing new opportunities in research and teaching.

Many universities have instituted programs relating mathematics or statistics to one particular biological field. The goal of the biostatistics graduate program is to equip students to develop and apply the quantitative techniques of mathematics, statistics, and computing appropriate to medicine, biology, and other health science disciplines.

Because of faculty involvement in diverse statistical applications, the department produces graduates at all levels. Students are recruited from programs in mathematics, statistics, and biology and are selected on the basis of quantitative ability.

Master of Public Health

Combines broad training in public health with specific training in biostatistics. Includes core courses in biostatistics, environmental health, epidemiology, health services, and social and behavioral sciences. In addition, successful candidates are required to complete a public health practicum and write a research-based master's thesis. The degree is designed for individuals who anticipate careers as data analysts in public health research or practice and for individuals who plan doctoral work in public health or biomedical field, but who want more methodological training than those PhD programs offer.

Admission Requirements

Although all acceptance decisions are made within the Biostatistics Department, the Graduate School imposes certain minimum admission requirements. Applicants must therefore submit both a general application directly to the Graduate School and a specific application to the Biostatistics Department.

To be considered for admission to the Biostatistics MPH pathway, a candidate must hold a doctoral-level degree in another field (e.g., MD, PhD, JD) or be currently working on such a doctoral degree. Candidates who have not yet been awarded a doctoral degree are not awarded the Biostatistics-pathway MPH until they are awarded their doctoral degree. All other prerequisites and required materials are the same for MS, MPH, and PhD applicants.

Degree Requirements

63 credits, as follows:

1. *Biostatistics Core Courses*: BIOST 514, BIOST 515; BIOST 524; BIOST 536, BIOST 537; BIOST 580; BIOST

590. BIOST 514, BIOST 515, BIOST 524, BIOST 536, and BIOST 537 must be taken for a numerical grade, with a 3.0 minimum grade in each course.

2. *Non-biostatistics Core Courses*: EPI 512, EPI 513; HSERV 510, HSERV 511; ENV H 511; G H 515. All non-biostatistics core courses must be taken for a numerical grade, with a minimum grade of 2.7 in each non-biostatistics core course and a minimum 3.00 cumulative GPA.
3. *Biostatistics Elective Courses*: 6 credits of any approved biostatistics MS elective, or STAT 512 or STAT 513
4. *Biostatistics MPH Practicum*: BIOST 595 (3). Three credits in an organization or agency that provides planning or services relevant to public health.
5. *Master's Thesis*: 9 credits of BIOST 700.

See department website for further information on degree requirements.

Master of Science

The Master of Science program offers advanced training in biostatistics. The program includes coursework in biostatistics, statistics, and one or more biomedical fields. In addition, successful candidates are required to pass a master's theory examination and write a research-based master's thesis. The degree is designed for individuals who anticipate a career as a data analyst in public health or biomedical research or practice and for individuals who plan doctoral work in a public health or biomedical field, but want more methodological training than those PhD programs offer.

Admission Requirements

Although all acceptance decisions are made within the Biostatistics Department, the Graduate School imposes certain minimum admission requirements. Applicants therefore submit both a general application directly to the Graduate School and a specific application to the Biostatistics Department.

Potential MS students may enter the graduate program in biostatistics from an undergraduate major in mathematics, statistics, or a biological field. Students are occasionally admitted with backgrounds in other fields; however, all applicants must have 30 or more quarter credits in mathematics and statistics to include two years of calculus (to include multivariate calculus), one course in linear algebra, and one course in probability theory.

Degree Requirements

63 credits minimum, as follows:

1. *Required Courses*: BIOST 514, BIOST 515, BIOST 536, BIOST 537, BIOST 580, BIOST 590, STAT 512, STAT 513. Students must earn a minimum 3.0 grade in each of the required courses (except BIOST 580 and BIOST 590). At faculty discretion, required courses may be waived based on prior coursework, and faculty may also waive the requirement for obtaining a grade of 3.0 in selected courses when subsequent performance on a relevant qualifying examination is excellent.
2. *Elective Credits*: 12 elective credits, including at least 6 credits with a methodology emphasis, and 6 credits with a biology or public health emphasis (See department for elective-credit lists.)
3. *Examinations*: Students who enroll in STAT 512 and STAT 513 must take and pass the MS theory examination the following summer. If this examination is failed, it must be passed the following year.
4. *Master's Thesis*: 18 credits of BIOST 700. The master's thesis can be waived for students who have taken and passed all the PhD qualifying examinations at a level appropriate for PhD students. In place of the 18 credits of BIOST 700 and the 8 credits of BIOST 536 and BIOST 537, the student must take and pass all required

coursework for the PhD degree, including BIOST 533, BIOST 570, STAT 581, STAT 582, STAT 583 and, depending on the pathway, BIOST 571 and BIOST 572, or BIOST 550, BIOST 551, and BIOST 552.

See department website for further information on degree requirements.

Doctor of Philosophy

The doctoral program in biostatistics trains future leaders, highly qualified as independent investigators and teachers, who are well trained practitioners of biostatistics. The program includes coursework in biostatistics, statistics, and one or more public health or biomedical fields. In addition, successful candidates are required to pass PhD applied and theory examinations, complete a biology project, and write a dissertation that reports the results of new biostatistical research undertaken by the candidate.

Admission Requirements

Although all acceptance decisions are made within the Biostatistics Department, the Graduate School imposes certain minimum admission requirements. Applicants must therefore submit both a general application directly to the Graduate School and a specific application to the Biostatistics Department.

Potential PhD students may enter the graduate program in biostatistics from programs in mathematics, statistics, or a biological field. Students are occasionally admitted with backgrounds in other fields; however, all applicants must have 30 or more quarter credits in mathematics and statistics to include two years of calculus (including multivariate calculus), one course in linear algebra, and one course in probability theory. The two pathways to the PhD (standard or statistical genetics) are shown below.

Degree Requirements

Minimum 103 credits, as follows:

Standard Pathway

- Required Courses:** BIOST 514; BIOST 515; BIOST 533; BIOST 570; BIOST 571; BIOST 572; BIOST 580, BIOST 590, BIOST 800; MATH 576, or equivalent; STAT 512, STAT 513; STAT 581, STAT 582, STAT 583
- Students must earn a minimum 3.0 grade in each required course (except BIOST 580, BIOST 590, or BIOST 800). A placement examination may be taken to waive STAT 512 and STAT 513. At faculty discretion, required courses may be waived based on prior coursework, and faculty may also waive the requirement for obtaining a 3.0 grade in selected courses when subsequent performance on a relevant qualifying examination is excellent.
- Elective Credits:** 15 elective credits, consisting of at least 6 credits with a methodology emphasis and 9 credits with a biology or public health emphasis. (See department for elective-credit lists.) The minimum grade requirement for elective courses is 2.7.
- Examinations:** If a PhD student enrolls in STAT 512 and STAT 513, he or she must take the MS theory examination the following summer for advisory purposes. PhD students must also take and pass the PhD statistical theory examination within two years following first-time completion of STAT 581, STAT 582, STAT 583; take and pass the PhD applied examination within two years following first-time completion of BIOST 570; and pass the general and final examinations.
- Teaching Assistant:** PhD students must serve as a TA for at least one quarter.

Statistical Genetics Pathway

- Prerequisites:** Familiarization with the statistical genetics program; GENOME 371 (or equivalent course from another institution); GENOME 372, GENOME 453, or GENOME 465 (or equivalent class from another institution)

- Required Courses:** BIOST 514, BIOST 515, BIOST 533, BIOST 550, BIOST 551, BIOST 552, BIOST 570, BIOST 581, BIOST 590, BIOST 800; STAT 512, STAT 513, STAT 581, STAT 582, STAT 583; MATH 576 (or equivalent); GENOME 540 or GENOME 541; GENOME 562
- Students must earn a minimum 3.0 grade in each of the required courses (except BIOST 581, BIOST 590, or BIOST 800). A placement examination may be taken to waive STAT 512 and STAT 513. At faculty discretion, required courses may be waived based on prior coursework, and faculty may also waive the requirement for obtaining a grade of 3.0 in selected courses when subsequent performance on a relevant qualifying examination is excellent.
- Elective Credits:** At least 4 credits of elective courses with a methodology emphasis. (See department for elective-course list.) Minimum 2.7 grade required.
- Examinations:** If a PhD student enrolls in STAT 512 and STAT 513, he or she must take the MS theory examination the following summer for advisory purposes. PhD students must also take and pass the PhD statistical theory examination within two years following first-time completion of STAT 581, STAT 582, STAT 583; take and pass the PhD applied examination within two years following first-time completion of BIOST 570; and pass the general and final examinations.
- Teaching Assistant:** PhD students must serve as a TA for at least one quarter.

See the department website for further information on degree requirements.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

BIOST 111 Lectures in Applied Statistics (1) NW Weekly lectures illustrating the importance of statisticians in a variety of fields, including medicine and the biological, physical, and social sciences. Credit/no-credit only. Offered: jointly with STAT 111; Sp.

BIOST 290 Introduction to Biomedical Research: Study Design and Interpretation (3) NW Introduces biostatistical concepts necessary for the interpretation, evaluation, and communication of biomedical research. Includes biomedical study design, randomization, graphical data displays, control bias, variability, confounding, interaction, and ethics of human experimentation. Students participate in group and individual projects, group discussions, and oral presentations. Offered: AWSp.

BIOST 302 Forensic Genetics (3) I&S/NW, QSR B. WEIR Introduces the field of forensic genetics through discussion of genetic and statistical issues emerging since the introduction of DNA profiling. Students develop the skills to interpret the evidence of matching genetic profiles; to perform calculations relevant for parentage determination; the identification of remains; and to consider the implications of familial searching of DNA databases. Prerequisite: either BIOST 310, STAT 220, STAT 221/CS&SS 221/SOC 221, STAT 311, Q SCI 381, or Q METH 201. Offered: jointly with PHG 302; W.

BIOST 310 Biostatistics for the Health Sciences (4) QSR Hughes Introduction to statistical methods for students panning on majoring in health sciences. Uses case studies and examples from popular and scientific literature to introduce topics such as data description, study design, screening, estimation hypothesis testing, categorical data analysis, and regression. Emphasizes concepts and interpretation rather than computation or theory. Offered: AWSp.

BIOST 425 Introduction to Nonparametric Statistics (3) NW Overview of nonparametric methods, such as rank

tests, goodness of fit tests, 2 x 2 tables, nonparametric estimation. Useful for students with only a statistical methods course background. Prerequisite: STAT 390/MATH 390. Offered: jointly with STAT 425.

BIOST 499 Undergraduate Research (1-10, max. 30) Supervised reading programs; library and field research; special projects.

BIOST 502 Introduction to Statistics in Health Sciences (4) Description and examples of common concepts in biostatistics. Probability, point and confidence interval estimation, hypothesis testing including two-sample and paired t and chi-square tests, introduction to simple linear regression. Emphasizes applications in health sciences. Offered: W.

BIOST 503 Application of Statistics to Health Sciences ([0-3], max. 3) Standard statistical techniques presented with examples drawn from the health sciences literature. Critical interpretation of research results, and introduction to the computer for data processing and statistical analysis. Prerequisite: BIOST 502 or equivalent. Offered: A.

BIOST 510 Biostatistics in Dentistry (3) Spiekerman Introduction to concepts and methods of descriptive and inferential statistics with applications in dentistry emphasized. Topics include comparison of means and proportions, hypothesis testing, confidence intervals, non-parametric methods, linear regression, and correlation. Prerequisite: enrollment in School of Dentistry or permission of instructor. Offered: jointly with DPHS 568; S.

BIOST 511 Medical Biometry I (4) Presentation of the principles and methods of data description and elementary parametric and nonparametric statistical analysis. Examples are drawn from the biomedical literature, and real data sets are analyzed by the students after a brief introduction to the use of standard statistical computer packages. Statistical techniques covered include description of samples, comparison of two sample means and proportions, simple linear regression and correlation. Offered: A.

BIOST 512 Medical Biometry II (4) Multiple regression, analysis of covariance, and an introduction to one-way and two-way analyses of variance: including assumptions, transformations, outlier detection, dummy variables, and variable selection procedures. Examples drawn from the biomedical literature with computer assignments using standard statistical computer packages. Prerequisite: either BIOST 511 or BIOST 517, or equivalent. Offered: W.

BIOST 513 Medical Biometry III (4) Analysis of categorical data including two sample methods, sets of 2 x 2 tables, R x C tables, and logistic regression. Classification and discrimination techniques. Survival analysis including product limit estimates and the Cox proportional hazards model. Prerequisite: BIOST 512 or permission of instructor. Offered: Sp.

BIOST 514 Biostatistics I (4) Presentation of principles and methods of data description; graphics; point, confidence interval estimation; hypothesis testing; relative risk; odds ratio; Mantel-Haenszel; chi-square test. Examples drawn from biomedical literature; real-data sets analyzed using statistical computer packages. Prerequisite: biostatistics majors or permission of instructor. Offered: A.

BIOST 515 Biostatistics II (4) Introduction to linear models; multiple regression, correlation; residual analysis; dummy variables; analysis of covariance; one-, two-way analysis of variance; randomized blocks; fixed, random effects (repeated measure, factorial designs); multiple comparisons. Real biomedical data sets analyzed. Prerequisite: BIOST 514, biostatistics major, or permission of instructor. Offered: W.

BIOST 516 Statistical Methods in Genetic Epidemiology (3) Theory and application of statistical techniques used in genetic epidemiology. Includes discussion of association studies, linkages and segregation analyses. Examples stressed with reference to assumptions and limitations. Prerequisite: either BIOST 513 or BIOST 518; PHG 511/EPI

517; or permission of instructor. Offered: jointly with EPI 516/PHG 519.

BIOST 517 Applied Biostatistics I (4) Introduction to the analysis of biomedical data. Descriptive and inferential statistical analysis for discrete, continuous, and right-censored random variables. Analytic methods based on elementary parametric and non-parametric models for one sample; two sample (independent and paired), stratified sample, and simple regression problems. Offered: A.

BIOST 518 Applied Biostatistics II (4) Multiple regression for continuous, discrete, and right-censored response variables, including dummy variables, transformations, and interactions. Introduction to regression with correlated outcome data. Model and case diagnostics. Computer assignments using real data and standard statistical computer packages. Prerequisite: BIOST 517 or permission of instructor. Offered: W.

BIOST 519 Advanced Epidemiologic Methods (4) *Guthrie, Phipps* Introduces advanced epidemiologic methods, including causal inference, inverse probability weighting, propensity scores, imputation for missing data, approaches to multiple comparisons, Bayesian inference, meta-analysis, mediation analysis, and marginal structural models. Prerequisite: EPI 512; EPI 513; EPI 514; EPI 536/BIOST 536. Offered: jointly with EPI 515; Sp.

BIOST 524 Design of Medical Studies (3) Design of medical studies, with emphasis on randomized controlled clinical trials. Bias elimination, controls, treatment assignment and randomization, precision, replication, power and sample size calculations, stratification, and ethics. Suitable for graduate students in biostatistics and for research-oriented graduate students in other scientific fields. Prerequisite: BIOST 511 or equivalent, and one of BIOST 513, BIOST 518, STAT 421, STAT 423, STAT 512, or EPI 512; or permission of instructor. Offered: jointly with STAT 524; Sp.

BIOST 527 Nonparametric Regression and Classification (3) *Minin, Raftery, Richardson, Wakefield* Covers techniques for smoothing and classification including spline models, kernel methods, generalized additive models, and the averaging of multiple models. Describes measures of predictive performance, along with methods for balancing bias and variance. Prerequisite: either STAT 502 and STAT 504 or BIOST 514 and BIOST 515. Offered: jointly with STAT 527; Sp.

BIOST 529 Sample Survey Techniques (3) Design and implementation of selection and estimation procedures. Emphasis on human populations. Simple, stratified, and cluster sampling; multistage and two-phase procedures; optimal allocation of resources; estimation theory; replicated designs; variance estimation; national samples and census materials. Prerequisite: either STAT 421, STAT 423, STAT 504, QMETH 500, BIOST 511, or BIOST 517, or equivalent; or permission of instructor. Offered: jointly with CS&SS 529/STAT 529.

BIOST 531 Statistical Methods for Analysis with Missing Data (3) *Chan* Covers statistical methods for the analysis of missing data, including likelihood-based, weighted GEE, multiple imputation, and Bayesian approaches. Uses computational tools such as EM algorithm and Gibbs' sampler. Covers both ignorable and non-ignorable missing-data mechanisms as well as cross-sectional and longitudinal study designs. Primarily uses data arising from epidemiologic studies. Offered: jointly with EPI 531; W.

BIOST 532 Ethical Issues for Biostatisticians (2) Exposes students to ethical issues in the conduct of biomedical research, particularly the computation, interpretation, and communication of statistics. Provides the knowledge and resources needed to practice statistics ethically in this domain. Helps students formulate justified responses to ethical challenges, and nurtures a sense of professional responsibility to take action. Credit/no-credit only.

BIOST 533 Theory of Linear Models (3) Examines model structure; least squares estimation; Gauss-Markov theo-

rem; central limit theorems for linear regression; weighted and generalized least squares; fixed and random effects; analysis of variance; blocking and stratification; and applications in experimental design. Prerequisite: STAT 421 or STAT 423; and STAT 513, BIOST 515, and a course in matrix algebra. Offered: jointly with STAT 533; Sp.

BIOST 534 Statistical Computing (3) Introduction to scientific computing. Includes programming tools, modern programming methodologies, (modularization, object oriented design), design of data structures and algorithms, numerical computing and graphics. Uses C++ for several substantial scientific programming projects. Prerequisite: experience with programming in a high level language. Offered: jointly with STAT 534; Sp.

BIOST 536 Categorical Data Analysis in Epidemiology (4) Summary of univariate categorical data analysis; introduction to multivariate analysis of categorical epidemiologic and health sciences data using multiplicative models. Experience at interpretation; familiarity with available software programs gained by analysis of bona fide data and critiques of published analyses appearing in literature. Prerequisite: BIOST 515; EPI 513 and either BIOST 513 or BIOST 518; or permission of instructor. Offered: jointly with EPI 536; A.

BIOST 537 Survival Data Analysis in Epidemiology (4) Introduction to multivariate analysis of survival data using multiplicative models. Application to epidemiologic and health sciences studies. Familiarity with interpretation and available software programs gained by analysis of bona fide sets of data and critiques of published analyses appearing in the literature. Prerequisite: BIOST 536 or permission of instructor. Offered: jointly with EPI 537; W.

BIOST 540 Correlated Data Regression (3) Introduction to regression modeling of longitudinal and clustered data from epidemiology and health sciences. Interpretation and familiarity with software gained by analysis of data and critiques of published analyses. Prerequisite: Either BIOST 513, BIOST 515, BIOST 518, BIOST 536, or permission of instructor. Offered: Sp.

BIOST 550 Statistical Genetics I: Mendelian Traits (3) Mendelian genetic traits. Population genetics; Hardy-Weinberg, allelic variation, subdivision. Likelihood inference, information and power; latent variables and EM algorithm. Pedigree relationships and gene identity. Meiosis and recombination. Linkage detection. Multipoint linkage analysis. Prerequisite: STAT 390 and STAT 394, or permission of instructor. Offered: jointly with STAT 550; Sp.

BIOST 551 Statistical Genetics II: Quantitative Traits (3) Statistical basis for describing variation in quantitative traits. Decomposition of trait variation into components representing genes, environment and gene-environment interaction. Methods of mapping and characterizing quantitative trait loci. Prerequisite: STAT/BIOST 550; STAT 423 or BIOST 515; or permission of instructor. Offered: jointly with STAT 551; A.

BIOST 552 Statistical Genetics III: Design and Analysis (3) Overview of probability models, inheritance models, penetrance. Association and linkage. The lod score method. Affected sib method. Fitting complex inheritance models. Design mapping studies; multipoint, disequilibrium, and fine-scale mapping. Ascertainment. Prerequisite: STAT/BIOST 551; GENOME 371; or permission of instructor. Offered: jointly with STAT 552; W.

BIOST 555 Statistical Methods for Spatial Epidemiology (3) Motivates the need for, and describes methods for the analysis of spatially indexed epidemiological data. Covers four major topics: clustering and cluster detection, disease mapping, spatial regression, and an introduction to geographical information systems. Considers both point-references and spatially aggregated data. Offered: jointly with EPI 555; Sp.

BIOST 561 Computational Skills for Biostatistics I (1) Provides an introduction to statistical computing with R.

Emphasizes good programming techniques useful in statistical analysis. Prerequisite: biostatistics and statistics graduate student. Credit/no-credit only. Offered: A.

BIOST 562 Computational Skills for Biostatistics II (1) Provides an introduction to statistical computing with R. Emphasizes good programming techniques useful in statistical analysis. Prerequisite: either BIOST 561 or permission of instructor. Credit/no-credit only. Offered: W.

BIOST 563 Computing and Research (2) Provides an introduction to statistical computing with R. Emphasizes good programming techniques useful in statistical analysis. Prerequisite: either BIOST 562 or permission of instructor. Credit/no-credit only. Offered: S.

BIOST 570 Advanced Regression Methods for Independent Data (3) Covers linear models, generalized linear and non-linear regression, and models. Includes interpretation of parameters, including collapsibility and non-collapsibility, estimating equations; likelihood; sandwich estimations; the bootstrap; Bayesian inference: prior specification, hypothesis testing, and computation; comparison of approaches; and diagnostics. Prerequisite: STAT 512 and STAT 513; BIOST/STAT 533 or STAT 421/STAT 502 and STAT 423/STAT 504; a course in matrix algebra. Offered: jointly with STAT 570; A.

BIOST 571 Advanced Regression Methods for Dependent Data (3) Covers longitudinal data models, generalized linear and non-linear mixed models; marginal versus conditional models; generalized estimating equations, likelihood-based inference, REML, BLUP, and computation of integrals; Bayesian inference: Markov chain Monte Carlo; covariance models, including models for split plot designs; comparison of approaches; and diagnostics. Prerequisite: BIOST570/STAT 570. Offered: jointly with STAT 571; W.

BIOST 572 Advanced Regression Methods: Project (3) Student presentations and discussion on selected methodological research articles focusing on regression modeling. Prerequisite: STAT 571. Offered: jointly with STAT 572; Sp.

BIOST 576 Statistical Methods for Survival Data (3) Statistical methods for censored survival data arising from follow-up studies on human or animal populations. Parametric and nonparametric methods, Kaplan-Meier survival curve estimator, comparison of survival curves, log-rank test, regression models including the Cox proportional hazards model, competing risks. Prerequisite: STAT 581 and either BIOST 515, STAT 473, or equivalent. Offered: jointly with STAT 576.

BIOST 578 Special Topics in Advanced Biostatistics (*, max. 30) Advanced-level topics in biostatistics offered by regular and visiting faculty. Prerequisite: permission of instructor. Offered: jointly with STAT 578; AWSps.

BIOST 579 Data Analysis and Reporting (2, max. 8) Analysis of real data to answer scientific questions. Common data-analytic problems. Sensible approaches to complex data. Graphical and tabular presentation of results. Writing reports for scientific journals, research collaborators, consulting clients. Graduate standing in statistics or biostatistics or permission of instructor. Offered: jointly with STAT 579; AWSp.

BIOST 580 Seminar in Biostatistics (*, max. 30) Presentation and discussion of special topics and research results in biostatistics. Speakers include resident faculty, visiting scientists, and advanced graduate students. Offered: AWSp.

BIOST 581 Statistical Genetics Seminar (1, max. 30) Presentations and discussion of special topics and research results in statistical genetics. Students, posdocs, and faculty present their work and papers from the literature. Credit/no-credit only. Offered: AWSp.

BIOST 582 Student Seminar (1, max. 30) Student seminar series for collaboration, exchange of ideas, and exposure to different stages of performing independent research. Encourages both students and faculty to give presentations including RA work, extended class projects, master's

theses, dissertation progress, data analysis, practice talks, and journal articles. Credit/no-credit only. Offered: AWSpS.

BIOST 590 Biostatistical Consulting (3, max. 6) Training in consulting on the biostatistical aspect of research problems arising in the biomedical field. Students, initially under the close supervision of a faculty member, participate in discussions with investigators leading to the design and/or the analysis of a quantitative investigation of a problem. With experience, independent associations of student and research worker are encouraged, with subsequent review by faculty of resulting design and analysis. Prerequisite: permission of instructor. Offered: AWSpS.

BIOST 595 Biostatistics Master's Practicum (1-12, max. 12) Supervised practice experience providing students an opportunity to learn how biostatistics is applied in a public health setting and in the formation of public health policy. Prerequisite: BIOST 514; BIOST 515; BIOST 536; BIOST 537.

BIOST 598 Techniques of Statistical Consulting (1) Seminar series covering technical and non-technical aspects of statistical consulting, including skills for effective communication with clients, report writing, statistical tips and rules of thumb, issues in survey sampling, and issues in working as a statistical consultant in academic, industrial, and private-practice settings. Prerequisite: entry code. Offered: jointly with STAT 598; ASP.

BIOST 600 Independent Study or Research (*-) Offered: AWSpS.

BIOST 700 Master's Thesis (*-) Offered: AWSpS.

BIOST 800 Doctoral Dissertation (*-) Offered: AWSpS.

Environmental and Occupational Health Sciences

F461 Health Sciences

Environmental health focuses on identifying, evaluating, and controlling environmental conditions that may have an adverse impact on human health. Examples of problem areas requiring environmental health expertise are assuring adequate quality and quantity of food and drinking water, safe treatment and disposal of domestic and industrial waste materials, limiting or reducing air and noise pollution, limiting occupational exposure to hazardous substances and unsafe conditions, assuring safe and healthful housing, controlling the spread of insect- and rodent-borne illness, proper selection and use of pesticides, and understanding the effects of global changes in climate and the atmosphere on human health.

UNDERGRADUATE PROGRAM

Adviser

F461D Health Sciences, Box 357234

(206) 543-4207

ehug@uw.edu

The Department of Environmental and Occupational Health Sciences offers the following programs of study:

- The Bachelor of Science degree with a major in environmental health
- A minor in environmental health

Bachelor of Science

Suggested First- and Second-Year College Courses: Chemistry, organic chemistry, biology, calculus, statistics, English composition

Department Admission Requirements

1. Admission to the major is competitive. Applicants must complete prerequisite coursework and an application to be considered. Completing the prerequisites and submitting an application do not guarantee admission. Applicants are admitted in two groups: Early Admission and Upper-Division Admission.
2. Applications are due the third Friday of autumn, winter, spring, and summer quarters. Applications can be downloaded from the Environmental Health undergraduate program website at depts.washington.edu/ehug.
3. Prospective students should apply during the quarter they plan to complete prerequisites for entry the following quarter. Ideally, students enter the major by or before the beginning of their junior year.
4. Applications are evaluated on overall grades; performance in math, science, and composition courses; demonstrated writing ability; and understanding of and potential fit with the major.
5. Applicants are strongly encouraged to meet with the program manager before submitting an application.
6. Transfer students may use any transferable equivalent course(s) for prerequisite coursework. Consult UW Equivalency Guide or UW adviser to verify transferability of coursework.

Early Admission

Applicants must complete the following, with a minimum 2.0 grade in each course, to be considered for early admission:

1. Minimum cumulative 3.00 GPA
2. Minimum 30 college credits
3. 5 credits of English composition
4. CHEM 142, CHEM 152, CHEM 162
5. Either MATH 124 or MATH 144 or Q SCI 291 (MATH 112 does not satisfy this requirement)

Upper-Division Admission

Applicants must complete the following, with a minimum grade of 2.0 in each course, to be considered for admission:

1. Minimum cumulative 2.50 GPA
2. 5 credits of English composition
3. BIOL 180, BIOL 200, BIOL 220
4. CHEM 142, CHEM 152, CHEM 162; CHEM 237, CHEM 238, CHEM 239 or CHEM 223, CHEM 224
5. Either MATH 124 or MATH 144 or Q SCI 291 (MATH 112 does not satisfy this requirement)

Degree Requirements

180 credits, as follows:

General Education and Basic Skills

93 credits as follows. Many of these courses overlap with major requirements shown below.

1. *Written and Oral Communications (12 credits):* One 5-credit English composition course from the University list; HCDE 333; 3 credits of additional W-designated coursework.
2. *Quantitative and Symbolic Reasoning (QSR) (10 credits):* Either MATH 124, MATH 144, or Q SCI 291 (MATH 112 does not satisfy this requirement); either STAT 311 (recommended), STAT 220, or Q SCI 381
3. *Visual, Literary, and Performing Arts (VLPA) and Individuals & Societies (I&S) (20 credits):* Minimum 10 credits required in each area

4. Natural World (NW) (51 credits)

- a. *Biology (15 credits):* BIOL 180, BIOL 200, BIOL 220
- b. *Chemistry (26 credits):* CHEM 142, CHEM 152, CHEM 162, and CHEM 237, CHEM 238, CHEM 239 (or CHEM 223, CHEM 224)
- c. *Physics (10 credits):* PHYS 114, PHYS 115, PHYS 117, PHYS 118 (or PHYS 121 and PHYS 122)

Major Requirements

72-74 credits, as follows:

1. *Environmental Health Core (minimum 36 credits):* ENV H 311, ENV H 405, ENV H 431, ENV H 432, ENV H 433, ENV H 472, ENV H 482 (2 credits minimum), EPI 320, MICROM 301, MICROM 302.
2. *Environmental Health Electives (9-11 credits):* Minimum three courses chosen from ENV H 440, ENV H 441, ENV H 442, ENV H 445 (or ENV H 446), ENV H 448, ENV H 453, ENV H 460, and ENV H 473.
3. 27 additional credits of approved electives
4. Minimum 2.0 grade in each course required for the major
5. Sufficient elective credits to reach total of 180 credits.

Minor

Minor Requirements: 29 credits as follows:

1. *Core Courses:* 17 credits of the following: ENV H 311, ENV H 405, ENV H 431, EPI 320; STAT 220 or STAT 311.
2. *Approved Electives:* 12 credits of electives from the approved departmental list. See website or adviser for details.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Learning Objectives and Expected Outcomes: In the Bachelor of Science program in Environmental Health, students learn to utilize tools of scientific inquiry to identify, prevent, and control environmental factors that can damage human health. As part of their training, students are introduced to basic principles of risk assessment, microbiology, epidemiology, sampling, and toxicology, and can choose to focus in one of three interest areas: biomedical sciences, health and environmental science, and environmental public health practice.
- *Instructional and Research Facilities:* The department houses thirteen centers and institutes and twenty labs.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* The department operates an internship program in cooperation with government agencies and private employers throughout the state. Each student intern works under the supervision of an experienced employee, with guidance from a faculty member. Internship placements are available throughout the year for variable amounts of academic credit.
- *Department Scholarships:* None offered.
- *Student Organizations/Associations:* UW Student Environmental Health Association

GRADUATE PROGRAM

Graduate Program Coordinator

F461 Health Sciences, Box 357234

(206) 543-3199

The Department of Environmental & Occupational Health Sciences offers three graduate degrees: Master of Science, Master of Public Health, and Doctor of Philosophy. The areas of emphasis are environmental and occupational hygiene (PhD), industrial hygiene and safety/occupational and environmental exposure sciences (MS), environmental toxicology (PhD/MS), environmental health (MS), and occupational and environmental medicine or environmental and occupational health (MPH).

The PhD in environmental and occupational hygiene option focuses on the assessment of exposures, health effects, and control strategies in community and work environments. The program emphasizes expertise in exposure assessment to evaluate human health risks from chemical, physical, and biological agents. Research opportunities include: laboratory and field investigations of environmental exposures and health outcomes; air, soil and water pollution monitoring; ambient, indoor, and personal exposure modeling; evaluation of biomechanical stress factors and organization of the work environment; development of new instruments, biomarkers, and novel methods for assessing human exposures; and evaluation of effective control strategies for the prevention or reduction of illness and injury.

The MPH in environmental and occupational health provides an opportunity for students to focus on the recognition, assessment, and control of environmental and occupational hazards, the impact of these hazards on health and society, and approaches to regulations, enforcement, and policy development. It emphasizes development of skills essential to science-based public health practice. In addition to coursework, students complete a field practicum and research in any of the department's research facilities or in a field setting.

The MPH in occupational and environmental medicine is for individuals with an earned doctorate. The goal of the program is to provide training in the public health sciences with a focus on occupational and environmental health. The program provides didactic instruction and participation in field studies. Research efforts focus on understanding, preventing, and managing environmental and occupational disease, injury, and disability. Physicians also have the option of applying for a concurrent fellowship or residency in occupational and environmental medicine.

The concurrent MPH/MPA or MS/MPA degree programs with the Daniel J. Evans School of Public Affairs seek to educate students who bring substantive public health knowledge and a strong policy and management orientation to their professional careers. With several courses that satisfy degree requirements in both programs, students are able to earn the two degrees in a shorter period of time than if the degrees were taken separately. Applicants must apply to both programs.

Admission Requirements for All Degrees

Prerequisites for admission to the MS occupational and environmental exposure sciences, environmental toxicology, and environmental health programs and the MPH environmental and occupational health program include a bachelor's degree in science or engineering with coursework in biology, chemistry, calculus, and physics. Applicants with non-science majors are considered if the prerequisite courses have been completed. Competitive applicants typically have strong grades and Graduate Record Examination scores, a statement of personal goals consistent with the program, and supportive letters of reference.

Prerequisites for admission to the MPH occupational and environmental medicine program include a doctoral degree (MD, DO or equivalent) with prior coursework in physics, chemistry, calculus, and biology. Concurrent UW residency applicants must satisfy additional prerequisites including graduation from a Class A medical school (United States, Canada, or equivalent) and completion of one year of approved internship. Three years in primary care specialty is also encouraged.

Prerequisites for admission to the PhD environmental and occupational hygiene and environmental toxicology programs include a bachelor's degree in science or engineering with coursework in biology, chemistry, calculus, and physics. A master's degree in a related field is recommended for Ph.D. environmental and occupational hygiene applicants. Selection of an applicant is also based upon an honors-level GPA, a statement of personal goals consistent with the program, supportive letters of reference, and high scores on the Graduate Record Examination.

International applicants are also required to submit official scores for the Test of English as a Foreign Language (TOEFL). TOEFL scores of 580 (237 computer) or higher are required for admission to the MS, MPH, and PhD programs.

Master of Public Health, Environmental and Occupational Health

Focuses on the recognition, assessment, and control of environmental and occupational hazards; the impact of these hazards on public health and society; and approaches to regulations, enforcement, and policy development. Nurses with a BN can opt for a special emphasis MPH track to train in the delivery of health and safety services to worker populations and communities.

Degree Requirements

63 credits, as follows:

- Core Requirements:** EPI 511 (or EPI 512, EPI 513), BIOST 511 (or BIOST 517). MPH/MPA students are also required to take BIOST 512 (or BIOST 518), HSERV 510, and HSERV 511.
- Required Courses:** ENV H 505 (or ENV H 514, ENV H 515, and ENV H 516), ENV H 453 (or ENV H 553 or ENV H 551), ENV H 570, ENV H 577 (or ENV H 572 or ENV H 543), ENV H 446 (or ENV H 490, or ENV H 541, or ENV H 545, or ENV H 552, or ENV H 548). Courses in environmental health not chosen can be taken as electives to satisfy course requirements. Students have a choice of either completing a thesis (ENV H 700) or a project (ENV H 598B).
- Electives (varies by track)**
 - Thesis Track:** At least two additional 400- or 500-level departmental courses (minimum 6 credits) required to fulfill elective requirements.
 - Project Track:** Students who take 6-8 credits of ENV H 598A must take 3 additional 400-500 classes. Students who take 9 or more ENV H 598A credits must take two additional 400-500 level elective credits.
- Practicum:** ENV H 599 (at least 120 hours)

Master of Public Health, Occupational and Environmental Medicine

Gives physicians a better understanding of the clinical and scientific principles in environmental and occupational health. Training focuses on epidemiology, occupational and environmental hygiene, biostatistics, health services and environmental toxicology. A concurrent residency/fellowship program is available.

Degree Requirements

64 credits

Master of Science, Environmental Health

Students learn to identify sources of contamination in air, water, food, and soil, and on surfaces; how contamination is spread; strategies to prevent or control effects on human health or environmental quality; and the means of communicating risk information to the public and health professionals.

Degree Requirements

64 credits, as follows:

- Core Courses:** ENV H 580, ENV H 581, ENV H 583, ENV H 700, BIOST 511 (or BIOST 517 or higher), EPI 511
- Required Courses:** ENV H 505, ENV H 453, ENV H 541, ENV H 543 (or ENV H 577), ENV H 552, ENV H 594, ENV H 445 (or ENV H 446), ENV H 548, ENV H 545
- Representative Electives:** 9 graded elective credits, approved by the student's academic adviser.

Master of Science, Occupational and Environmental Exposure Sciences

Students learn to quantify and manage human exposures to chemicals, air pollutants, aerosols, and physical agents found in a wide variety of community and occupational settings. The program emphasizes rigorous academic training, internships, career guidance, and practical skills needed for graduates to establish long-term careers as environmental health and safety professionals. A flexible curriculum offers options for either a thesis or professional portfolio alternative.

Degree Requirements

63 credits, as follows:

- Core Courses:** ENV H 580, ENV H 581, ENV H 583, ENV H 700 (or appropriate section of ENV H 598, and ENV H 559, and appropriate section of ENV H 599) BIOST 512 (or BIOST 518, or higher), EPI 511. Higher level biostatistics and epidemiology courses can be substituted for BIOST 511 or BIOST 517, and for EPI 511. Students completing a project are required to take only BIOST 511 and are not required to take ENV H 583, but are required to complete an internship (ENV H 599).
- Required Courses:** ENV H 551, ENV H 553, ENV H 557
- Learning Emphasis Required Courses:**
 - Occupational Hygiene:** ENV H 505, ENV H 555, ENV H 557, ENV H 560, ENV H 570
 - Ergonomics and Human Factors:** ENV H 537, ENV H 549, ENV H 560, ENV H 566, ENV H 596
 - Health and Safety Management and Policy:** ENV H 560, ENV H 577, ENV H 584, ENV H 599
 - Exposure Biomarkers:** ENV H 505, ENV H 506, ENV H 554, ENV H 570, P BIO 506
- Electives:** Electives must be taken to satisfy the degree requirement of 63 total credits.

Master of Science, Environmental Toxicology

Focuses on understanding the mechanisms of action of environmental chemicals and their effects on human health and in the environment. Research areas include chemical effects on organ systems (neurological, hepatic, renal, cardiovascular, reproductive, and respiratory) and also developmental toxicology, environmental carcinogenesis, and dietary chemoprotection. The program also offers a strong focus on human risk assessment as well as in toxicological issues that cross ecological and human health disciplines.

Degree Requirements

63 credits, as follows:

- Core Courses:** ENV H 580, ENV H 581, ENV H 583, ENV H 700, BIOST 511 (or BIOST 517, or higher), EPI 511.
- Required Courses:** ENV H 514, ENV H 515, ENV H 516, ENV H 552, ENV H 577, BIOIC 405, BIOIC 406 (or BIOIC 440, BIOIC 441, BIOIC 442), ENV H course in industrial hygiene or occupational medicine.
- Representative Electives:** Toxicology students who take the two-quarter biochemistry series (BIOIC 405, BIOIC 406) must have an additional 9 graded elective credits. Students who choose the three-quarter biochemis-

try series (BIOC 440, BIOC 441, BIOC 442) must have an additional 3 graded elective credits. Electives must be approved by the student's academic adviser. Electives may include ENV H 511, ENV H 512, ENV H 531, ENV H 532, ENV H 533, ENV H 550, ENV H 553, ENV H 555, ENV H 567, ENV H 570, ENV H 584, ENV H 591, BIOL 411, BIOST 521, C MED 407, C MED 590, MICROM 441, MICROM 442, MICROM 518, PATH 444, PATH 544, PATH 555, P BIO 500-level courses, P BIO 505, P BIO 506, P BIO 507, PHCOL 401, PHCOL 402.

Doctor of Philosophy, Environmental and Occupational Hygiene

Students in this program learn to identify, evaluate, and manage health risks found in a wide variety of community and occupational settings, obtaining advanced research training in exposure assessment and control methods.

Degree Requirements

92 credits minimum, as follows:

1. **Core Sciences (11-12 credits):** Sequence of three courses in one area, to be approved by adviser. Typical core choices are biochemistry, chemistry, engineering, applied mathematics, epidemiology, microbiology, or physiology.
2. **Biostatistics (3 credits):** BIOST 512 (or BIOST 518 or higher)
3. **Epidemiology (4 credits):** EPI 511 (or higher)
4. **Environmental and Occupational Health Seminar (6 credits):** ENV H 580
5. **Dissertation (27 credits):** ENV H 800
6. **Laboratory Rotations (6-9 credits):** ENV H 595
7. **Required Courses:**
 - a. **Industrial Hygiene (6 credits):** ENV H 553 and ENV H 555
 - b. **Toxicology (3 credits):** ENV H 405 (or more advanced)
 - c. **Environmental Chemistry (3 credits):** ENV H 552
 - d. **Occupational and Environmental Epidemiology (3 credits):** ENV H 570
 - e. **Electives (20 credits):** 10 elective credits are unspecified and 10 must be in courses taught by occupational and exposure sciences or environmental health program faculty.

Doctor of Philosophy, Environmental Toxicology

Focuses on understanding the mechanisms of the action of environmental chemicals and their effects on human health and in the environment. Research areas include chemical effects on organ systems (neurological, hepatic, renal, cardiovascular, reproductive, and respiratory) as well as developmental toxicology, environmental carcinogenesis, and dietary chemoprotection. The program also offers a strong focus on human risk assessment and toxicological issues that cross ecological and human health disciplines.

Degree Requirements

104 credits minimum, as follows:

1. **Core Sciences (11-12 credits):** Sequence of three courses in biochemistry.
2. **Biostatistics (3 credits):** BIOST 512 (or BIOST 518 or higher)
3. **Epidemiology (4 credits):** EPI 511 (or higher)
4. **Environmental and Occupational Health Seminar (6 credits):** ENV H 580
5. **Dissertation (27 credits):** ENV H 800
6. **Laboratory Rotations (6-9 credits):** ENV H 595
7. **Required Courses:**

- a. **Toxicology (9 credits):** ENV H 514, ENV H 515, ENV H 516
- b. **Toxicology Seminar (9 credits):** Of the 9 credits (minimum) of current topics courses, at least six credits must be in ENV H 591. The other credits can be chosen among other current topics courses offered by the Department of Environmental Health or other departments, with approval of student's advisory committee.
- c. **Advanced Toxicology:** 6 credits from approved list
- d. **Physiology:** 3 credits from approved list
- e. **Electives (20 credits):** Of the four (minimum) required electives, two must be departmental courses and two may be taken outside the department. The two departmental courses must be from two different non-toxicology programs. All elective credits must be approved by the student's advisory committee.

Financial Aid

Support is available for many students in the form of traineeships or research assistantships, which include tuition. This support comes from federal and private sources awarded to the department or School.

Research Facilities

Specialized laboratories exist for research in industrial hygiene chemistry, optical remote sensing of chemicals, industrial ventilation, ergonomics, trace organics and heavy metals, environmental microbiology, electron microscopy, controlled exposure to environmental agents, and toxicology (including toxicogenomics and analytical cytology). Field research is facilitated through an extensive consultation-service program conducted by this department for labor and industry in Washington State.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscaat/.

ENV H 111 Exploring Environment and Health Connections (3) I&S Introduction to environmental health concepts. Examines current events to illustrate and better appreciate the relationship between environment and health and to explore whether an environmental condition is or is not an important threat to health. Emphasizes the roles of environmental scientists and related professionals. Offered: A.

ENV H 205 Environmental Health in Media (2) I&S Explores how the perspective of filmmakers and documentaries can influence the public's interpretation of environmental health issues, and examines the science and cultural norms that support both sides of the argument. Offered: Sp.

ENV H 310 Green Chemicals, Green Products, Green Processes: Crafting a Less Toxic World (3) I&S/NW D. KALMAN Presents green chemistry in the context of social impact and public health. Focuses on the relationship between the science and application of chemistry, and the conditions of life that affect everyone's health, particularly in the developed world. Prerequisite: either CHEM 220 or CHEM 237; recommended: either one ENV H or SPH course.

ENV H 311 Introduction to Environmental Health (3) I&S/NW Relationship of people to their environment, how it affects their physical well-being and what they can do to influence the quality of the environment and to enhance the protection of their health. Emphasis on environmental factors involved in transmission of communicable diseases and hazards due to exposure to chemical and physical materials in our environment. Offered: ASP.

ENV H 320 Introduction to Technical Communication in Environmental Health (5) Written and oral communication for

environmental health professionals. Principles of effective writing for technical articles, proposals, and reports with attention to structure, clarity, style, and language usage. Students learn to translate complex technical information for broader audiences. Offered: W.

ENV H 405 Toxic Chemicals and Human Health ([0-3], max. 3) Examines the basic principles of toxicology and the effects of chemicals on human health. Includes mechanisms; dose/response relationships; toxicity testing, disposition in the body; modifiers of response; chemicals and cancer; birth defects; exposures in the home, workplace, and environment; and risk assessment and government regulation. Prerequisite: minimum grade of 2.0 in BIOL 220; either 2.0 in CHEM 224, 2.0 in CHEM 239, or 2.0 in CHEM 337. Offered: Sp.

ENV H 417 Case Studies in Children's Environmental Health Disparities (3) DIV Introduces students to the ways in which children are disproportionately affected by environmental health hazards. Through a series of engaging case studies, student learn the core scientific concepts of children's environmental health while exploring the social, cultural, regulatory, political, and economic factors that lead to children's health disparities. Offered: Sp.

ENV H 431 Environmental and Occupational Sampling and Analysis I (3) NW Laboratory and lecture on sampling. Field and laboratory analysis of chemical and physical agents found in the occupational and ambient environments. Prerequisite: minimum grade of 2.0 in each of the following: either CHEM 162 or CHEM 164; PHYS 114, which may be taken concurrently; ENV H 311. Offered: A.

ENV H 432 Environmental and Occupational Sampling and Analysis II (4) NW Laboratory and lecture on sampling. Field and laboratory analysis of chemical and physical agents found in the occupational and ambient environments. Prerequisite: ENV H 431. Offered: W.

ENV H 433 Environmental and Occupational Sampling and Analysis III (4) NW Laboratory and lecture related to the evaluation of water quality. The identification and analysis of microorganisms in water, food, and air. Prerequisite: ENV H 431; MICROM 301; MICROM 302. Offered: Sp.

ENV H 440 Water, Wastewater, and Health (3) Review of water supply, water quality, and water/wastewater treatment as they relate to human health. Includes water law and regulations, source water protection, basic treatment technologies for water and waste, chemical and microbial contaminants, and recreational water. Offered: A.

ENV H 441 Food Protection (3) Study of identification and characteristics of chemicals and biological agents implicated in foodborne disease outbreaks and conditions or circumstances by which food contamination occurs. Examination of food protection activities conducted by local and state government at the retail level. Prerequisite: either 2.0 in CHEM 155, or 2.0 in CHEM 162, or 2.0 in CHEM 164; 2.0 in MICROM 302. Offered: W.

ENV H 442 Zoonotic Diseases and Their Control (3) Examines the transmission and control of zoonotic and vector-borne diseases of public health importance in the United States and globally. Pays attention to identification, surveillance, and control methods. Prerequisite: minimum grade of 2.0 in BIOL 220. Offered: W.

ENV H 444 Antibiotic Resistant Bacteria/Genes Impact on the Environment and Public Health (4) M. ROBERTS Explores how the global use and abuse of antibiotics has profound consequences on the health of humans, animals, and the environment. Addresses issues of antibiotic resistant bacteria and genes through an interdisciplinary "One Health" approach that integrates human, animal, and environmental health. Prerequisite: either EPI 320, BIOL 220, or MICROM 301. Offered: A.

ENV H 445 Solid Waste Management (3) Examination of the public health, environmental, economic, and materials conservation aspects of solid wastes management; amounts and sources of solid wastes, waste reduction and

recycling, methods of storage, transportation and disposal, integrated waste management, identification of present problems and future needs. Prerequisite: minimum grade of 2.0 in CHEM 155, 2.0 in CHEM 162, or 2.0 in CHEM 164; either 2.0 in MATH 124, 2.0 in MATH 127, 2.0 in MATH 134, or 2.0 in MATH 144. Offered: Sp.

ENV H 446 Hazardous Waste Management (3) Characterization of hazardous wastes and introduction to pertinent federal and state regulations. Discussion of exposure pathways and description of management options at pre-generation, pre-release, and post-release stages. Emphasis on public health significance. Supplemented with case studies. Prerequisite: CHEM 162; MATH 124. Offered: W.

ENV H 447 Environmental Change and Infectious Disease (3) G. CANGELOSI Uses multidisciplinary approach to address the impacts of environmental change (including climate change) on infectious disease. Concepts include categories of environmental change; infectious disease emergence/re-emergence; environmental aspects of infectious disease exposure, acquisition, and progression; pathogen growth/survival in the environment; historical and societal perspectives; surveillance; and strategies for control. Offered: Sp.

ENV H 448 Community Air Pollution (3) Offers a comprehensive overview of community air pollution including: air pollution sources, chemistry, and meteorology; human health and environmental effects; global warming; air quality standards, monitoring, control, and management; indoor air; and local air quality management. Offered: Sp.

ENV H 451 Ecology of Environmentally Transmitted Microbiological Hazards (3) Focuses on the transmission of infectious microorganisms by air, food, water, and other environmental media. Provides an introduction to environmentally transmitted pathogens, and discusses factors affecting their environmental fate, transport, and persistence. Offered: A.

ENV H 452 Detection and Control of Environmentally Transmitted Microbiological Hazards (3) Focuses on the detection and control of infectious microorganisms in air, food, water, and other environmental media. Provides a discussion on sample collection, processing, and detection for infectious microorganisms. Provides coverage of engineered controls and disinfection/decontamination processes for infectious microorganisms. Offered: W.

ENV H 453 Industrial Hygiene (3) Introduction to the principles and scientific foundation of industrial hygiene. Examines the anticipation, recognition, evaluation, and control of work place hazards to health and safety. Focuses on the first three functions, but includes some consideration of control methods. Prerequisite: BIOL 200; CHEM 224; either PHYS 115 or PHYS 122. Offered: A.

ENV H 460 Occupational Safety Management (3) Explores industrial organization and methods of integrating safety and industrial hygiene programs with industrial operations. Investigates issues related to industrial safety and health such as responsibility for safety, dependency on safe practice, and hierarchy of prevention. Offered: Sp.

ENV H 461 Air-Pollution Control (4) Fundamental concepts of air pollution Control including emission sources, atmospheric dispersion, ambient concentrations, and emission standards, with emphasis on processes and equipment for controlling emissions. Offered: jointly with CEE 490; ASP.

ENV H 462 Technical Aspects of Occupational Safety (3) Reviews federal OSHA (Occupational Safety and Health Administration) and state WISHA (Washington Industrial Safety and Health Act) standards. Explores the impact of these regulations on industry, particularly construction. Upon completion of the course, students receive an OSHA 510 30-hour Construction Safety and Health certification. Offered: W.

ENV H 472 Environmental Risk and Society (3) I&S Examines scientific determinations of environmental risks and explores how such determinations are evaluated by af-

ected communities and society. Employs risk analysis to integrate technical knowledge in hazard identification and exposure assessment to provide a more rational basis for environmental policies. Role of public participation in risk-based decision making discussed. Offered: W.

ENV H 473 Environmental Health Policy and Practice (3) I&S Explores how environmental health problems are controlled in the United States. Examines both the policies and practices of environmental health. Looks at how various government programs are established, organized, and operated to prevent or control hazards in the community. Also examines the legal and regulatory framework. Offered: Sp.

ENV H 480 Undergraduate Seminar (1, max. 6) Covers career exploration and planning within the environmental health major through presentation of current environmental and occupational health issues. Offered: A.

ENV H 482 Environmental Health Internship (2-15, max. 15) Assignment to an environmental health or environmental protection agency for supervised observation and experience in environmental health technology, program planning, and utilization of community resources. Prerequisite: minimum grade of 2.5 in ENV H 311. Credit/no-credit only. Offered: AWSpS.

ENV H 490 Selected Topics in Environmental Health (1-6, max. 20) In-depth study of a current environmental health topic. Offered: Sp.

ENV H 497 Environmental Health Special Electives (*, max. 35) Offered: Sp.

ENV H 499 Undergraduate Research (*, max. 35) Individual research on a specific topic in environmental health upon which specific conclusions, judgments, or evaluation can be made or upon which facts can be presented. Offered: AWSpS.

ENV H 505 Fundamentals of Environmental and Occupational Toxicology (4) Basic principles governing the behavior and effects of toxic chemicals on biological systems. Focuses on human health impacts of chemicals in the context of public health. Designed for non-toxicology majors. Prerequisite: 2 quarters of biology; 2 quarters of chemistry, or permission of instructor. Offered: Sp.

ENV H 510 Global Environmental and Occupational Health (4) Provides an overview of environmental and occupational health, with major focus on developing countries. Examines a variety of environmental hazards and influential factors, interactions with human health and well-being, and relevance to public health. Considers workplace, community, home, regional, and global problems. Offered: W.

ENV H 511 Environmental and Occupational Health ([1-3], max. 3) Effects of exposure to chemical, physical, and biological agents, embracing the community and workplace environments. Current issues, using specific cases from recent literature as basis for classroom discussion and written assignments. Offered: W.

ENV H 513 Basic Concepts in Pharmacogenetics and Toxicogenomics (3) Addresses current technologies for DNA sequencing, genotyping, RNA and epigenetic analysis and basic concepts of pharmacogenetics and toxicogenomics. Emphasis placed on applications of genomic technologies to the understanding of "gene-environment interactions" that cause variability in drug treatment responses, as well as diseases of public health importance, including cancer, chronic neurological diseases, and adverse drug reactions. Offered: jointly with PCEUT 513/PHG 513; W.

ENV H 514 Fundamentals of Toxicology (3) Covers major fundamentals and core areas of toxicology, including dose response, absorption, distribution, metabolism, and excretion of toxicants, toxicity testing, interpretation of toxicological data; and biochemical, cellular, and physiological mechanisms by which chemicals produce toxic responses. Also explores mechanisms and fate of chemical interaction with biological systems. Prerequisite: BIOL 212, BIOC 405, or permission of instructor. Offered: A.

ENV H 515 Organ System Toxicology (3) T. KAVANAGH Focuses on organ system toxicology. Emphasizes the pathophysiology of toxicant-induced organ injury, including adaptive responses to toxicant exposure, inflammation, and tissue repair pathways. Prerequisite: ENV H 514 or permission of instructor. Offered: W.

ENV H 516 Toxic Agents: Effects and Mechanisms (3) Focuses on the toxic effects and the underlying mechanisms of the principal classes of toxicants: pesticides, metals, solvents, air pollutants, persistent organic pollutants, radiation, as well as on food safety and occupational/clinical/eco toxicology. Prerequisite: ENV H 515 or permission of instructor. Offered: Sp.

ENV H 517 Children's Environmental Health (3) Discussion of environmental health issues as they pertain to children's health. Topics include historical perspective of public health research and policies directed at protecting children's health and emerging scientific and public health issues such as the risks and benefits of seafood consumption during pregnancy; the use of pesticides on food and in the home; air pollution and childhood asthma, and childhood injuries and the built environment. Offered: Sp.

ENV H 520 Advanced Technical Communication in Public Health (3) Covers written and oral communication for environmental health and public health professionals, with particular emphasis on three main areas: conveying information more effectively to technical audiences, translating that information for general audiences in the public arena, and crafting effective commentary relating to topics of professional interest.

ENV H 530 Research Proposal Preparation for Biological Sciences (3) Provides first-hand experience for doctoral students in the biological sciences on proposal writing and the review process. Focuses on hypothesis-driven, laboratory bench-work based research following the NIH predoctoral fellowship format, and aims to prepare students for their pre-doctoral fellowship submissions and general qualifying exams. Offered: A.

ENV H 531 Neurotoxicology (3) Advanced discussions of the principles and methodological approaches to neurotoxicology (including behavioral toxicology), classes of neurotoxic agents, types and mechanisms of neurotoxic effects, as well as the role of neurotoxicology in toxicology and public health. Prerequisite: ENV H 514, ENV H 515, ENV H 516 or ENV H 405 or permission of instructor. Offered: W, even years.

ENV H 532 Reproductive and Developmental Toxicology (3) Investigates chemicals that can induce adverse reproductive and developmental outcomes. Discussion topics include identification and characterization of specific classes of toxic agents, mechanisms of action of these agents at the molecular and cellular level, and risk assessment and regulatory issues. Prerequisite: ENV H 514 and ENV H 515 or ENV H 405 or permission of instructor. Offered: S, even years.

ENV H 533 Molecular Toxicology (3) Advanced discussion of molecular mechanisms whereby chemical and biological agents produce their harmful effects on biological tissues. Topics include the role of xenobiotic biotransformation enzyme expression in chemical susceptibility, toxicogenomics, chemical-induced oxidative stress, alternative models, species differences, and dietary anti-carcinogens. Prerequisite: prior coursework in toxicology and biochemistry, or permission of instructor. Offered: Sp, odd years.

ENV H 534 Biochemical Toxicology of the Puget Sound (3) Advanced discussion of effects of pollutants on aquatic organisms at the molecular, biochemical, and physiological levels, and in the context of Puget Sound case studies. Topics include assessing toxicant-induced cell injury in aquatic organisms, biotransformation and detoxification pathways, toxicogenomics, assessing chemical diseases in fish, biomarkers, and zebrafish models. Prerequisite: prior coursework in toxicology and biochemistry or permission of instructor. Offered: W, even years.

ENV H 536 Health Impact Assessment (2) Examines the use of Health Impact Assessment as a public health tool for informing decision-makers about the potential health impacts of proposed projects and policies. Students learn the steps for conducting HIAs, review case studies, and conduct an HIA of a current local proposed project. Offered: jointly with URBPD 536.

ENV H 537 Introduction to Manufacturing Systems (3) Description of manufacturing systems. Includes discussion of current trends in manufacturing, especially lean principles. Introduces process flow analysis, manufacturing organizations including job-shop, assembly lines, and group technology, manufacturing inventory philosophies (just-in-time, MRP, OPT), work environment, and work simplification. Offered: jointly with IND E 537; A.

ENV H 538 Public Health and the Built Environment (2) Examines how the design of communities and land use and transportation decision have positive and adverse effects on health. Considers built environment impacts on physical activity, obesity, air quality, injuries, mental health, social capital, and environmental justice; and explores interventions to promote healthy community design. Offered: jointly with URBPD 538.

ENV H 540 Food Safety and Health (3) Presentation of emerging issues in food safety, sustainable agriculture, and biotechnology. Examines both domestic and global pressures on the food supply. Examines international policies that promote regional solutions for a safe food supply and access to nutritious foods. Offered: jointly with NUTR 545; W.

ENV H 541 Ecology of Environmentally Transmitted Microbial Hazards (3) Focuses on the transmission of infectious microorganisms by air, food, water, and other environmental media. Provides an introduction to environmentally transmitted pathogens, and discusses factors affecting their environmental fate, transport, and persistence. Offered: A.

ENV H 542 Detection and Control of Environmentally Transmitted Microbial Hazards (3) Focuses on the detection and control of infectious microorganisms in air, food, water, and other environmental media. Provides a discussion on sample collection, processing, and diction for infectious microorganisms. Provides coverage of engineered controls and disinfection/decontamination processes for infectious organisms. Offered: W.

ENV H 543 Quantitative Microbial Risk Assessment (3) Focuses on the principles of quantitative risk assessment as applied to infectious microorganisms. Covers hazard identification, exposure assessment, health effects assessment, risk characterization, and risk communication. Offered: Sp, even years.

ENV H 544 Antibiotic Resistant Bacteria/Genes Impact on the Environment and Public Health (4) *M. ROBERTS* Explores how the global use and abuse of antibiotics has profound consequences on the health of humans, animals, and the environment. Addresses issues of antibiotic resistant bacteria and genes through an interdisciplinary "One Health" approach that integrates human, animal, and environmental health. Prerequisite: either EPI 320, BIOL 220, or MICROM 301. Offered: A.

ENV H 545 Water, Wastewater, and Health (4) Review of water supply, water quality, and water/wastewater treatment as they relate to human health. Includes water law and regulations, source water protection, basic treatment technologies for water and waste, chemical and microbial contaminants, and recreational water. Offered: A.

ENV H 546 Pesticides and Public Health (3) Examines health risks and benefits associated with pesticide use in the United States and internationally; reviews exposure, toxicity, epidemiology, and regulation of pesticides, focusing on populations such as workers and children; discusses benefits derived from vector control, food production, and food preservation. Offered: W, odd years.

ENV H 547 Environmental Change and Infectious Disease (3) *G. CANGELOSI* Uses multidisciplinary approach to address the impacts of environmental change (including climate change) on infectious disease. Concepts include categories of environmental change; infectious disease emergence/re-emergence; environmental aspects of infectious disease exposure, acquisition, and progression; pathogen growth/survival in the environment; historical and societal perspectives; surveillance; and strategies for control. Offered: Sp.

ENV H 548 Community Air Pollution (3) Offers a comprehensive overview of community air pollution including: air pollution sources, chemistry, and meteorology; human health and environmental effects; global warming; air quality standards, monitoring, control, and management; indoor air; and local air quality management. Prerequisite: SPH graduate student or permission. Offered: Sp.

ENV H 549 Human Factors in Engineering Design (3) Engineering considerations of the abilities and limitations of the human aspect in the design of operational systems and components. Functional, psychological, physiological, and environmental considerations. Covers traditional human factors material with a project-based focus/emphasis. Offered: jointly with IND E 549; Sp.

ENV H 551 Principles of Human Exposure Science (3) Examination of the scientific principles and methods used to characterize human exposures to environmental disease agents, discuss sources and pathways of exposure, use of standard factors, analytical approaches for exposure data, exposure biomarkers, and the energetics of physical agents and injuries. Prerequisite: CHEM 162; MATH 124. Offered: A.

ENV H 552 Environmental Chemistry of Pollution (4) Chemical and physical processes determining distribution and fate of chemical hazards, detection of low levels of hazardous compounds, and environmental evaluation and prediction. Fundamental chemical concepts and measurable properties of individual compounds to interpret and relate measurements. Prerequisite: admission to graduate program or permission of instructor. Offered: W.

ENV H 553 Environmental Exposure Monitoring Methods (4) Provides an in-depth understanding of current monitoring methods for occupational, residential, and community exposures to hazardous chemical agents. Examines the technical basis for sampling strategies and sampling and analytical methods for chemicals in air, water, food, and soil, and for biological markers of exposure and effect in humans and other biota. Prerequisite: ENV H 453 or permission of instructor. Offered: W.

ENV H 554 Biological Monitoring for Chemical Exposure (2) Advanced seminar on biological monitoring for assessment of chemical exposure and health risks from environmental agents. Considers applications and interpretation of results from analysis of biological specimens taken from persons exposed to chemicals in the work place and the general environment. Prerequisite: ENV H 551 or permission of instructor. Credit/no-credit only. Offered: Sp, odd years.

ENV H 555 Instrumental Methods for Industrial Hygiene Measurement: Laboratory (3) Utilizes typical instrumental techniques and analytical methods for the evaluation of potential occupational exposures. Prerequisite: ENV H 453 and ENV H 553 or permission of instructor. Offered: Sp.

ENV H 556 Quantitative Occupational Exposure Analysis (3) Exploration of industrial hygiene data to understand nature of airborne exposures in the occupational environment, and their interpretation for human health. Focus on reading and discussion of primary exposure assessment literature and statistical analysis of real dataset. Prerequisite: one quarter of statistics or biostatistics and basic industrial hygiene. Offered: W, odd years.

ENV H 557 Exposure Controls (3/4) Presents engineering concepts for selecting exposure controls for chemical,

physical, and biological agents. Topics include regulatory mandates, hazard rating strategies, protective clothing, respiratory protection, chemical safety management, building ventilation, local exhaust ventilation, chemical and bio-hazards controls, airflow measurements, and ventilation troubleshooting. Offered: W.

ENV H 559 Applied Occupational Health and Safety (3) Application of occupational safety and health principles. Student teams perform evaluations, assess production methods/processes and exposures, health and safety procedures and programs, and develop engineering and administrative controls. Students perform on a consulting project with a local company including budgeting, project reporting, and presentation. Offered: jointly with IND E 567/NSG 505; Sp, even years.

ENV H 560 Occupational Safety Management (4) Explores industrial organization and methods of integrating safety and industrial hygiene programs with industrial operations. Investigates philosophic issues related to industrial safety and health such as responsibility for safety, dependency on safe practice, and hierarchy of prevention. Contains numerous case problems and student involvement opportunities. Offered: jointly with NSG 506; Sp.

ENV H 562 Technical Aspects of Occupational Safety (3) Reviews federal OSHA (Occupational Safety and Health Administration) and state WISHA (Washington Industrial Safety and Health Act) standards. Explores the impact of these regulations on industry, particularly construction. Upon completion of the course, student receive an OSHA 510 30-hour Construction Safety and Health certificate. Offered: jointly with NSG 507; W.

ENV H 564 Recognition of Health and Safety Problems in Industry (2) Develops skills in occupational health and safety hazard recognition in a variety of important Northwest industries. Focuses on process understanding and hazard recognition skills during walk-through inspections of several local facilities, stressing a multidisciplinary approach. Offered: jointly with IND E 564; A.

ENV H 566 Introduction to Ergonomics (3) Basic principles of ergonomics in work environment applied to problems of worker and management. Topics include measurement of physical work capacity, problems of fatigue and heat stress, applied biomechanics, worker-machine interactions and communication, design of displays and controls. Prerequisite: basic human physiology or permission of instructor. Offered: jointly with IND E 566/NSG 508; W.

ENV H 567 Mechanisms of Carcinogenesis (2) Lectures/presentations of biochemical and molecular basis of carcinogenesis induced by environmental agents, including approaches to identification of carcinogens. Role of cell proliferation and cell death (apoptosis) in cancer formation and cancer treatment. Molecular mechanisms that regulate proliferation and apoptosis. Prerequisite: ENV H 516, ENV H 405, or permission of instructor. Offered: jointly with PHCOL 567; A, even years.

ENV H 569 Occupational Biomechanics (4) Lectures and laboratories address human occupational biomechanical and physiological limits and measurement, analysis, and modeling techniques that are used by ergonomists for design of safe, healthful, and productive physical work. Prerequisite: ENV H 566 or permission of instructor. Offered: jointly with IND E 569; Sp, even years.

ENV H 570 Occupational and Environmental Epidemiology (3) Research in occupational and environmental determinants of disease. Defining exposed populations, characterizing exposure levels, estimating disease risks relative to exposure. Cohort, case-control, cross-sectional designs for various health outcomes. Applications to exposure standard setting and risk assessment. Prerequisite: EPI 511 or EPI 512, EPI 513 or permission of instructor. Offered: jointly with EPI 570; Sp.

ENV H 571 Neuroepidemiology and Environmental Risk Factors (3) *W. KUKULL* Focuses on neurologic diseases

and etiology. Presentation of descriptive epidemiology, clinical features, and risk factors, including stroke, Parkinson's disease, Alzheimer's disease, multiple sclerosis, and other disorders. Discussion of NIH grantsmanship. Guest experts present some topics. Psychiatric disorders e.g. schizophrenia, autism spectrum disorders, and depression will not be discussed. Offered: jointly with EPI 571; W, odd years.

ENV H 572 Environmental Risk and Society (3) Examines environmental health risk assessments and explores how such assessments are viewed by affected communities. Reviews scientific risk assessment methods, risk perception, risk communication, and public participation processes. Examines the influence of advocacy and special-interest publications on risk assessment debates. Offered: W.

ENV H 573 Methods and Issues in Using Biological Measurements in Epidemiologic Research (3) *Schwartz* Introduction to use of measurements from biological specimens in epidemiologic studies. Prepares epidemiology and laboratory science students for conduct of interdisciplinary human studies. Evaluation of biomarkers, preliminary studies, methodologic issues, quality control. Brief review of molecular biology. Applications and current literature discussed. Prerequisite: EPI 511 or EPI 512. Offered: jointly with EPI 573; A.

ENV H 574 Probabilistic Exposure Analysis (3) Examination of probabilistic (in contrast to deterministic) approaches to prediction of human exposure to environmental contaminants including explicit separation of population variability from uncertainty due to ignorance. Discussion of data needs, pitfalls, policy ramifications, and current state of development and regulatory acceptance. Examples from real world. Student project required. Offered: Sp, odd years.

ENV H 576 Clinical Occupational Medicine (2) For clinicians in training, comprehensive overview of occupational disease principles, occupational history-taking, and the provider's role in workers' compensation. Epidemiologic evidence and pathophysiologic basis for occupational diseases reviewed, emphasizing organ system approach to diagnosis and management. Prerequisite: occupational medicine or preventive medicine residents/fellows, nursing students, or permission of instructor. Offered: S.

ENV H 577 Risk Assessment for Environmental Health Hazards (3/4) Examines context, methodologies, data, uncertainties, and institutional arrangements for risk assessment. Qualitative and quantitative approaches to identification, characterization, and control of environmental hazards to health emphasized through didactic and case studies. Offered: jointly with CEE 560/PB AF 589; A.

ENV H 580 Environmental and Occupational Health Sciences Seminar (1, max. 6) Presentation of current environmental and occupational health research and issues. Credit/no-credit only. Offered: AWSp.

ENV H 581 Environmental Health Reading (1) Critical reading of selected basic and applied research publications on environmental health problems and programs.

ENV H 583 Thesis Research Proposal Preparation (1) Includes reviewing components of research proposals and practicing writing and developing effective aims, hypotheses, background materials, and analytic strategies for writing theses and presenting at scientific meetings. Offered: Sp.

ENV H 584 Occupational and Environmental Health: Policy and Politics (3) Provides an understanding of the policy process and policy issues in occupational and environmental health and safety, including exploring the relationships between science, values, and politics in the process of setting public policy. Offered: Sp.

ENV H 587 Introduction to Biopharmaceutical Product Development (3) Provides a framework of the drug development process and its regulation. Prerequisite: ENV H 405 or ENV H 514, ENV H 515, and ENV H 516, or PCEUT 501,

PCEUT 502, and PCEUT 503; or equivalent, or instructor permission. Offered: jointly with PCEUT 587; A, even years.

ENV H 590 Selected Topics (1-6, max. 20) In-depth study of a current environmental health topic.

ENV H 591 Current Topics in Toxicology (2, max. 12) *T. KAVANAGH, Z. XIA* Provides in-depth examination of current topics in environmental and occupational toxicology taken from journal articles and seminars. Consists of presentations led by outside speakers, students, post-doctoral fellows, and faculty. Students expected to participate actively in discussion. Assigned weekly readings given according to the schedule of seminar speakers and topics.

ENV H 592 Current topics in Occupational Health Sciences (1/3) Weekly discussion of current research on a broad range of topics relevant to occupational and environmental health including exposure assessment, occupational epidemiology, occupational hygiene, and control of environmental hazards. Presentations and discussion sessions designed to help students organize and prepare a critical analysis of research findings. Credit/no-credit only. Offered: A.

ENV H 593 Current Topics in Risk Assessment (1, max. 6) Examines current topics in risk assessment and risk communication with a focus on issues in environmental health. Consists of presentations led by students, postdoctoral fellows, and faculty. Students expected to participate actively in discussion. Credit/no-credit only. Offered: AWSp.

ENV H 594 Current Topics in Environmental Health (1, max. 2) Critical review and discussion of current scientific literature of particular relevance to the Environmental Health program. Primary presentations rotate among faculty and students. Credit/no-credit only. Offered: W.

ENV H 595 Research Rotation (3, max. 9) Research laboratory rotation for pre-doctoral graduate students. Students commit at least 10 hours per week to a laboratory research project aimed at introducing the student to current methods of laboratory research, and to familiarize the student with specific faculty research interests. Prerequisite: graduate standing and permission of program director.

ENV H 596 Current Issues in Occupational and Environmental Medicine (2, max. 12) Interdisciplinary seminar on current and emerging topics in the practice of environmental and occupational health. Faculty- and student-led presentations with an interdisciplinary focus, including occupational hygiene, nursing, and medical issues. Prerequisite: environmental health graduate student, occupational health nursing student, or permission of instructor. Offered: jointly with NURS 580; AWSp.

ENV H 597 Case Studies in Environmental and Occupational Health (1, max. 12) Discusses clinical cases, recent journal articles, and global environmental health scenarios relevant to the clinical practice of environmental and occupational health. Explores collaborative management of environmental and occupational health-related illnesses and navigation of complex environmental health scenarios through real-world cases and critical analysis of published literature. Offered: AWSp.

ENV H 598 Degree Program Project/Portfolio ([1-9]-, max. 18) Supervised project work on a topic related to student's concentration in graduate study that results in a project paper. Offered: AWSpS.

ENV H 599 Field Studies (2-6, max. 6) Assignment to an environmental research or service program to develop field research and evaluation skills. Credit/no-credit only. Offered: AWSpS.

ENV H 600 Independent Study or Research (*-) Prerequisite: permission of departmental adviser. Offered: AWSpS.

ENV H 700 Master's Thesis (*-) Prerequisite: permission of departmental adviser. Offered: AWSpS.

ENV H 800 Doctoral Dissertation (*-) Prerequisite: permission of departmental adviser. Credit/no-credit only. Offered: AWSpS.

Epidemiology

GRADUATE PROGRAM

Epidemiology Program Office

F262 Health Sciences, Box 357236

(206) 543-6302 or (206) 543-8226

epiapply@uw.edu

depts.washington.edu/epidem

The Department of Epidemiology offers the following three graduate degrees: Doctor of Philosophy, Master of Science, and Master of Public Health, for individuals intending to become academicians, highly qualified research specialists, or well-trained public health practitioners, respectively. The department also offers a number of degree tracks within the master's degree programs, as well as several graduate certificates.

Admission Requirements for All Degrees

Admission to all graduate programs is highly competitive and is based on the following:

1. Background in epidemiology or other health-related fields (such as medicine, health or biological sciences, mathematics, quantitative social sciences), including prior areas of study and work experience, especially quantitative public health research
2. Undergraduate and graduate grades (if applicable)
3. GRE scores (exceptions are often made for master's degree applicants with a prior PhD, MD, DO, DDS, DVM, or equivalent health-related degree from a U.S. university; MD/MPH applicants at UW; and MD/PhD applicants funded by the Medical Scientist Training Program at UW. No exceptions to GRE requirement are made for PhD program applicants.)
4. TOEFL or IELTS score from international applicants, unless bachelor's degree taught entirely in English
5. Applicant interests that are aligned with those of Department of Epidemiology faculty. (It is not expected that applicants locate a faculty mentor in advance.)
6. Compelling motivation for pursuing training in epidemiology as demonstrated through a well-written goal statement
7. Letters of reference

The Master of Public Health (MPH) degree in epidemiology requires coursework in health services and environmental health, in addition to epidemiology and biostatistics, as well as a thesis and a practicum as preparation for a career in public health practice or as a prelude to the PhD program. Three tracks are available: the general track, which is selected by most students and allows specialization via the choice of electives and thesis topic; the global health track (GH); and the maternal and child health track (MCH). The global health track requires approximately two years of prior health science work experience in a developing country, although some of the two years may be health-related work with immigrant or underserved groups in the United States. (The epidemiology global health track is not the same as the MPH general track through the Global Health Department in that it focuses on epidemiology and biostatistics rather than on health services-oriented training, but it does incorporate some of the same classes.) Applicants without the requisite experience may apply to both the Epidemiology general track and the global health graduate certificate (listed below) which combined offer equivalent training. The MCH track expects prior U.S. MCH experience for admission. Applicants without this experience may apply to both the general track and the MCH

graduate certificate (listed below) which combined offer the similar training.

Formal concurrent degree programs involving the epidemiology MPH include the following: Doctor of Medicine (MD), Doctor of Philosophy (PhD) in Anthropology, Master of Arts in International Studies (MAIS), and Master of Public Affairs (MPA). A master's or doctorate from another department at the UW may be combined with the MPH with the approval of both programs.

The Master of Science (MS) degree in epidemiology requires concentration on courses and research in epidemiology and biostatistics as preparation for a research specialization or as a prelude to the PhD program. It also requires electives from the School of Public Health. Two tracks are available, the general track, which allows specialization via the choice of electives and thesis topic and the clinical research track (CR). The MS CR is intended chiefly for professionals who have already completed clinical training, and who plan to conduct research with patients in healthcare settings as a significant part of their future careers.

A formal concurrent degree program combines the epidemiology general track MS with the PhD in molecular and cellular biology. A master's or doctorate from another department at the UW may be combined with the MS with the approval of both programs.

Applicants interested in an MS in genetic epidemiology, administered by the Institute for Public Health Genetics (a School of Public Health program that is not part of the Department of Epidemiology), should visit <http://depts.washington.edu/phgen/programs/msge.html>.

The Doctor of Philosophy is designed to produce academics who are highly qualified as independent investigators, teachers, and practitioners. The requirements for the PhD degree in epidemiology differ from the MS program requirements primarily in the scope and complexity of research for the dissertation. Coursework includes a core series in epidemiology and biostatistics, as well as epidemiology electives and other electives from the School of Public Health.

Admission Requirements Specific to the PhD

1. Master's degree in epidemiology or other health-related field, including mathematics and quantitative social sciences.
 - a. A prior doctorate without a health-related master's degree is not acceptable.
 - b. An applicant with a doctorate only and no master's degree should apply to the MS or MPH first.
 - c. All courses and credits from the MS or MPH in epidemiology at the UW count directly toward the PhD in epidemiology.
2. GRE from all applicants, including those who hold a U.S. doctorate, except MSTP MD students at UW.

The Epidemiology Department and other School of Public Health departments offer several graduate certificate programs open to any qualified graduate student at the University (sph.washington.edu/prospective/edprograms.asp#cert). Some certificate programs are open to Graduate Non-Matriculated students, if indicated on the certificate websites. Following is a partial listing of certificate programs:

- *Advanced Clinical Research Methods*: depts.washington.edu/epidem/Certificates/acrc.shtml (May not be combined with an epidemiology PhD degree at UW)
- *Basic Clinical Research Methods*: depts.washington.edu/epidem/Certificates/brcr.shtml (May not be combined with an epidemiology PhD degree at UW)
- *Global Health Graduate Certificates*: globalhealth.washington.edu/academics/certificates-and-fellowships
 - General Global Health
 - Global Health of Women, Adolescents, and Children
 - Global Injury and Violence

- HIV and Sexually Transmitted Infections
- *Maternal and Child Health*: depts.washington.edu/mchprog/certificate/
- *Public Health Genetics*: depts.washington.edu/phgen/certificateprogram/Certificate.shtml
- *Statistical Genetics*: www.stat.washington.edu/statgen/index.php?page=certificate (Offered by the Biostatistics department)

Master of Public Health

Degree Requirements

Minimum 63 credits, as follows:

1. 45 to 49 class credits
2. *Core Courses*: 33 graded credits, including EPI 512, EPI 513, EPI 514, BIOST 511, BIOST 512, BIOST 513, either ENV H 510 or ENV H 511, HSERV 510, HSERV 511. BIOST 517-BIOST 518 may be substituted for BIOST 511, BIOST 512, BIOST 513
3. EPI 510, a prerequisite for EPI 514, is required for students without substantial SAS and Stata programming experience
4. *Electives*: 6 credits of EPI course electives of 2 or more credits each (See acceptable electives in the on the courses webpage at depts.washington.edu/epidem/courses/)
5. 3 to 6 credits (120 to 240 hours) in a field-based practicum (EPI 595)
6. 9 to 18 thesis (EPI 700) credits
7. Students may enroll in additional elective courses in epidemiology and other courses with substantial public health content with departmental approval, and for independent study (EPI 600) to bring the total to 63 credits. Public health-related 400-level courses taken as a graduate student at the UW may count toward total credits with departmental approval. Coursework without substantial public health content, and at the 300-level or below, does not count toward the degree.

MPH Specialized Program Options: The MPH degree offers specialized tracks as listed below. They have additional course, practicum and thesis requirements detailed on the program websites.

- *Global Health Track*: Requires additional coursework specific to international health. More information about this track is at depts.washington.edu/epidem/program/globalhealth.shtml.
- *Maternal and Child Health Track*: Requires additional coursework related to maternal and child health in the U.S. More information about this track is at depts.washington.edu/mchprog/academic/.

Master of Science

Degree Requirements

60 credits, to include:

1. 36 to 40 class credits
2. *Core Courses*: 24 graded credits, including EPI 512, EPI 513, EPI 514, BIOST 511, BIOST 512, BIOST 513. BIOST 517-BIOST 518 may be substituted for BIOST 511, BIOST 512, BIOST 513.
3. EPI 510, a prerequisite for EPI 514, is required for students without substantial SAS and Stata programming experience.
4. *Electives*: 6 credits of EPI course electives of 2 or more credits each. (See acceptable electives on the courses webpage at depts.washington.edu/epidem/courses/)
5. *School of Public Health Electives*: Two additional 500-level courses (2 or more credits each) in any department of the School of Public Health (including Epidemiology) or other UW courses with significant

public-health content. (See acceptable electives in the appropriate degree requirements checklist at depts.washington.edu/epidem/CurrentStudents/.)

6. 9 to 18 thesis credits (EPI 700)

Students may enroll in additional elective courses in epidemiology and other relevant departments, and for independent study (EPI 600) to bring the total to 60 credits. Public health-related 400-level coursework taken as a graduate student at the UW may count toward total credits with departmental approval. Coursework unrelated to public health and at the 300-level or below does not count toward the degree.

MS Specialized Program Options:

MS Clinical Research Track: Requires specific coursework in place of most of the electives for the MS General Track. For specific requirements, visit the program website at depts.washington.edu/epidem/program/cr.shtml.

Doctor of Philosophy

The curriculum includes courses on epidemiologic methods, and biostatistics. Electives in substantive disease and exposure areas, as well as research methods, are required. Requisite general electives from the School of Public Health are also part of the curriculum.

Degree Requirements

Minimum 90 total credits:

1. Minimum reduced to 60 credits for students with a prior or relevant master's degree (All course requirements must be satisfied even if more than 60 credits are needed to do so.)
2. 54 to 66 class credits
3. *Core Courses*: 32 graded credits including EPI 512, EPI 513, EPI 514, EPI 515, EPI 536 EPI 537, BIOST 517, BIOST 518. BIOST 511, BIOST 512, BIOST 513 may be substituted for BIOST 517-BIOST 518.
4. EPI 510, a prerequisite for EPI 514, is required for students without substantial SAS or Stata programming experience.
5. *Required Non-graded Courses*: EPI 528 (3), two quarters of EPI 584, EPI 588
6. Minimum three required epidemiology electives (minimum 2 credits each). (See acceptable electives in the appropriate degree checklist at depts.washington.edu/epidem/CurrentStudents/.)
7. Three additional electives (minimum 2 credits each) from any department of the School of Public Health, including Epidemiology, or other UW courses with significant public health content
8. Students are encouraged to take EPI 583 (1) each quarter of the first year and EPI 591 (1) each quarter after the first year.
9. *Dissertation*: 27 credits of EPI 800
10. The student's supervisory committee may require additional courses, including English language courses, to ensure that the student has adequate training in the area of epidemiology he or she is pursuing.
11. Additional epidemiology courses and EPI 800 credits, independent study (EPI 600), and courses with substantial public health content offered by other departments or schools (with permission), may be applied to the total PhD credits. Public health-related, 400-level coursework taken as a graduate student at the UW may count toward total credits with departmental approval. Coursework unrelated to public health, and at the 300-level or below does not count toward the degree.

Financial Aid

Research assistantships (RA) for work on various projects provide salary and tuition waivers for students working 20

hours a week. Although funding is not guaranteed with admission, many new PhD and a few master's students find a research assistantship by the start of their first autumn quarter. Most doctoral students have found an RA by their second or third quarter in the program, and many master's students do so by their second year, when they have more of the skills that faculty supervisors need. Research training stipends with partial tuition support are available on a limited basis, especially for more advanced doctoral students. Teaching assistantships are available competitively for second-year and higher-level students. More information is at <http://depts.washington.edu/epidem/funding/index.shtml>.

Research Facilities

University facilities include an excellent library system and access to computers. Many varied opportunities for field research and practice are provided in Seattle and elsewhere in the state and nation, at institutions such as Seattle Children's hospital, Fred Hutchinson Cancer Research Center, Group Health Research Institute, Harborview Medical Center, the Center for AIDS and STD, Public Health: Seattle-King County, Washington State Department of Health, VA Puget Sound Healthcare Systems, and many other local health institutions. Cooperating organizations focusing on global health also are available in Seattle and internationally. Additional, but not exhaustive, lists of cooperating agencies are at depts.washington.edu/epidem/research/Other_Institutions.shtml. A partial list of agencies and funding related to international health are listed at globalhealth.washington.edu/ghrc/funding-and-fieldwork.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/.

EPI 201 Outbreak Investigation and Response (4) I&S/NW, QSR J. BASEMAN Provides an introduction to infectious disease outbreaks of both domestic and global significance. Students learn about outbreak detection, investigation and response activities and methodologies through a combination of lecture, case studies, homework, and popular media.

EPI 220 Sexually Transmitted Infections: Causes and Consequences (5) I&S/NW, QSR L. MANHART Examines the causes and consequences of sexually transmitted infections (STI). Discusses strategies to prevent STI with a focus on sexual and reproductive health. Explores new advances in STI epidemiology, treatment, and public health control. Offered: A.

EPI 320 Introduction to Epidemiology (4) NW Goldberg For the undergraduate student wishing to devote only one quarter to a course in epidemiologic methods. Description of ways in which variation in disease occurrence is documented and how that variation is studied to understand causes of disease. Prerequisite: either BIOST 310, QMETH 201, Q SCI 381, STAT 220, STAT/CS&SS/SOC 221, or STAT 311, any of which may be taken concurrently. Offered: WSp.

EPI 330 Analyzing Epidemiologic Data: Basic Methods (4) I&S, QSR B. MUELLER Application of concepts to real data using basic epidemiologic analysis methods. Prerequisite: EPI 320; either BIOST 310, QMETH 201, Q SCI 381, STAT 220, STAT 221/CS&SS 221/SOC 211; STAT 311, or minimum score of 3 on AP Statistics test. Offered: Sp.

EPI 360 Exploring the HIV/AIDS Pandemic (5) I&S/NW, QSR S. HAWES Presents a comprehensive overview of the historical, public health, clinical, and biological aspects of HIV infection. Covers impact of AIDS on community and global health care and prospects for prevention and control. Offered: W.

EPI 499 Undergraduate Research (*) Offered: AWSpS.

EPI 501 Public Health Practice at the Local Level (3) Basic overview of state and local public health practice with leaders in the field and case studies focusing on rural and urban public health challenges. Offers preparation for practice in public health agencies. Prerequisite: HSERV 511 or permission of instructor. Offered: jointly with HSERV 501.

EPI 502 Physical Activity in Health and Disease (3) Impact of physical activity on individual and public health. Overview of physiological adaptations to activity, exercise prescription, exercise epidemiology, and prevention of chronic diseases. Public health recommendations for activity in the U.S. population, and the effects of the built environment on activity. Prerequisite: human physiology Offered: jointly with NUTR 505; Sp.

EPI 503 Applied Epidemiology in Public Health Practice (3) Baseman Introduces the principles, methods, and issues in public health practice-based epidemiology. Covers public health surveillance, outbreak and cluster investigation, community health assessment, screening, evaluation, and other select topics. Offered: jointly with HSERV 503; Sp.

EPI 505 Preventing Healthcare Associated Infections (1) Multidisciplinary approach to understanding, measuring, and developing policy to prevent healthcare associated infections. Credit/no-credit only. Offered: jointly with MED 540; W.

EPI 510 Epidemiologic Data Analysis (3) Mackelprang, Winer Intended for students planning to take EPI 514. Introduces concepts and programming skills necessary to analyze data sets for case-control and cohort studies. Provides students hands-on experience in using epidemiologic data sets for stratified analyses with SAS and Stata. Prerequisite: EPI 511 or EPI 512. Credit/no-credit only. Offered: W.

EPI 511 Introduction to Epidemiology (4) Kukull Epidemiologic methods for non-epidemiology majors. Focuses on research designs and methods to describe distribution and determinants of disease and health events in populations; uses quantitative and biomedical information to infer whether causal relationships exist between potential causes and disease in populations. Offered: A.

EPI 512 Epidemiologic Methods I (4) A. PHIPPS, A. ROW-HANI-RAHBAR, N. WEISS Considers principles and methods of epidemiology. Covers measures of disease frequency, descriptive epidemiology, overview of study designs, measures of excess risk, causal inference, screening, measurement error, misclassification, effect modification, and confounding. First in a two course sequence. Prerequisite: BIOST 511, which may be taken concurrently, or equivalent. Offered: A.

EPI 513 Epidemiologic Methods II (4) A. PHIPPS, A. ROW-HANI-RAHBAR, N. WEISS Considers how epidemiologic studies may be designed to maximize etiologic inference. Covers infectious disease epidemiologic studies, randomized controlled trials, cohort studies, case-control studies, cross-sectional studies, ecological and multilevel studies, and selected topics such as meta-analysis. Second in a two course sequence. Prerequisite: EPI 512. Offered: W.

EPI 514 Application of Epidemiologic Methods (5) Hawes, Littman Practical experience in analysis of data. Students analyze data sets currently on file using contemporary epidemiologic methods as taught in EPI 512 and EPI 513. Prerequisite: EPI 510 or experience in statistical programming; EPI 512, EPI 513, and epidemiology major. Offered: Sp.

EPI 515 Advanced Epidemiologic Methods (4) Guthrie, Phipps Introduces advanced epidemiologic methods, including causal inference, inverse probability weighting, propensity scores, imputation for missing data, approaches to multiple comparisons, Bayesian inference, meta-analysis, mediation analysis, and marginal structural models. Prerequisite: EPI 512; EPI 513; EPI 514; EPI 536/BIOST 536. Offered: jointly with BIOST 519; Sp.

EPI 516 Statistical Methods in Genetic Epidemiology (3) Theory and application of statistical techniques used in genetic epidemiology. Includes discussion of association studies, linkages and segregation analyses. Examples stressed with reference to assumptions and limitations. Prerequisite: either BIOST 513 or BIOST 518; PHG 511/EPI 517; or permission of instructor. Offered: jointly with BIOST 516/PHG 519.

EPI 517 Genetic Epidemiology (3) Research methods for evaluating genetic influences on disease and risk factors and genetic-environmental interactions. Study designs and statistical methods include twin studies, family studies, population-based association studies, segregation analysis, and linkage analysis. Prerequisite: EPI 511, BIOST 511, and GENOME 371, or equivalent. Offered: jointly with PHG 511; Sp.

EPI 519 Epidemiology of Cardiovascular Disease (3) Principles, methods, and issues in the epidemiology of cardiovascular disease. Focuses on coronary heart disease and its major risk factors; also covers other topics such as stroke and sudden death. The format includes informal lectures and discussions of the current literature. Prerequisite: EPI 511 or EPI 512, EPI 513. Offered: A.

EPI 520 Epidemiology of Infectious Diseases (3) Manhart Infectious diseases from a public health perspective. Topics include analytic methods, study design, outbreak investigations, surveillance, vaccine evaluations, global eradication, screening, modeling, and infectious causes of chronic diseases. Homework and discussion based on current examples from the published literature. Prerequisite: EPI 511, EPI 512, or permission of instructor. Offered: W.

EPI 521 Epidemiology of Maternal and Child Health Problems ([3-4]-) Enquobahrie Contributions to understanding and prevention of major maternal and child health problems, including pregnancy outcome, infant and child morbidity and mortality, maternal morbidity and mortality, abnormal child growth and development, and early-life factors in adult health problems. Prerequisite: graduate, medical, or dental school standing and EPI 511 or EPI 512 or permission of instructor. Offered: jointly with HSERV 542; W.

EPI 524 Epidemiologic Studies of Cancer Etiology and Prevention (3-4) M. MADELEINE Current knowledge of the role of environmental/lifestyle factors and genetic susceptibility in the etiology of several cancers with an emphasis on study design. Prerequisite: either EPI 511 or EPI 512; concurrent enrollment in EPI 513. Offered: W.

EPI 527 Vaccines (3) Wald Overview of issues in vaccine development, clinical trials, implementation of vaccination programs, and the role of vaccines in the control of infectious diseases. Emphasizes current issues and real-world challenges in the vaccine field and features critical reading of the literature. Offered: A.

EPI 528 Exposure Measurement in Epidemiology (3) J. DELANEY Principles and methods of measuring exposures (risk factors) in epidemiological studies. Questionnaire design; quality-control procedures for interviews, record abstraction, and lab methods; validity and reliability of measures; effects of measurement error; maximizing response rates; measurement of specific exposures. Prerequisite: EPI 513. Offered: Sp.

EPI 529 Emerging Infections of International Public Health Importance (3-) Hortwitch Focuses on the nexus between emerging infections and increasing globalization of the world due to the mobility of people and goods. Examines emergent events through risk factors and associated macro changes implicated in their genesis. Reviews microbial evolutionary strategies and factors of emergence. Prerequisite: graduate standing. Offered: jointly with HSERV 536; W.

EPI 530 AIDS: A Multidisciplinary Approach (2) C. FARQUHAR Comprehensive overview of the public health, clinical, and laboratory aspects of human immunodeficiency virus

(HIV) infection and disease. Topics include the pathogenesis, natural history, and management of HIV infections; the impact of HIV/AIDS on community and global healthcare; and prospects for prevention and control. Credit/no-credit only. Offered: jointly with G H 562/MED 530; A.

EPI 531 Statistical Methods for Analysis with Missing Data (3) *Chan* Covers statistical methods for the analysis of missing data, including likelihood-based, weighted GEE, multiple imputation, and Bayesian approaches. Uses computational tools such as EM algorithm and Gibbs' sampler. Covers both ignorable and non-ignorable missing-data mechanisms as well as cross-sectional and longitudinal study designs. Primarily uses data arising from epidemiologic studies. Offered: jointly with BIOST 531; W.

EPI 532 Epidemiology of Infectious Diseases in Resource-Limited Countries (3) *McClelland* A review of major infectious disease problems of the developing world, including AIDS, malaria, tuberculosis, measles, and diarrhea, with an emphasis on public health control strategies. Offered: Sp, odd years.

EPI 533 Pharmacoepidemiology (3) *Boudreau, Heckbert* Overview of pharmacoepidemiology including drug development and approval; application of epidemiologic methods to study drug safety and effectiveness; exploration of the interplay between research and public policy; introduction to resources for information about drugs; introduction to pharmacology principles pertinent to pharmacoepidemiology. Prerequisite: Health Sciences graduate student; either EPI 511 or both EPI 512 and EPI 513; or permission of instructor. Offered: jointly with PHARM 533; Sp, even years.

EPI 536 Categorical Data Analysis in Epidemiology (4) Summary of univariate categorical data analysis; introduction to multivariate analysis of categorical epidemiologic and health sciences data using multiplicative models. Experience at interpretation; familiarity with available software programs gained by analysis of bona fide data and critiques of published analyses appearing in literature. Prerequisite: BIOST 515; EPI 513 and either BIOST 513 or BIOST 518; or permission of instructor. Offered: jointly with BIOST 536; A.

EPI 537 Survival Data Analysis in Epidemiology (4) Introduction to multivariate analysis of survival data using multiplicative models. Application to epidemiologic and health sciences studies. Familiarity with interpretation and available software/computer programs gained by analysis of bona fide sets of data and critiques of published analyses appearing in the literature. Prerequisite: BIOST 536 or permission of instructor. Offered: jointly with BIOST 537; W.

EPI 538 Nutritional Epidemiology (3) *Beresford, Kratz* Application of epidemiological methods to studies of diet, nutrition, and chronic disease. A discussion of current issues and controversies enables students to design studies and read the literature in nutritional epidemiology. Prerequisite: EPI 511 or EPI 512 or permission of instructor. Offered: jointly with NUTR 538; A.

EPI 539 Research and Evaluation Methods in Global Health (3-4) *Mock, O'Malley* Provides an overview of a range of evaluation and research designs used in global health. Students learn practical methodologies to obtain, validate, and analyze information regarding health status, services, and programs. Discusses usefulness, validity, limitation of vital records, health reports, household (and cluster) surveys, and qualitative methods. Offered: jointly with G H 531; W.

EPI 540 Introduction to Cancer Biology (3) *Madeleine* Provides a general understanding of cancer biology, comparing normal cells to cancer cells, with a focus on the acquired characteristics of cancer cells. Integrates knowledge from different fields of cancer research, guiding students through diverse literature on cancer and carcinogenesis. Prerequisite: undergraduate biology coursework or permission of instructor. Offered: Sp, even years.

EPI 541 Introduction to Systematic Reviews and Meta-Analysis of Evidence (3) *E. DEVINE, F. WOLF* Conceptual understanding of the quantitative methods used to synthesize evidence. Methods for pooling evidence across independent studies, pooling binary/continuous outcomes, differences between fixed and random effects models, and guidelines for appraising published systematic reviews/meta-analyses. Prerequisite: either introductory level courses in statistics, epidemiology, or biostatistics or permission of instructor. Offered: jointly with BIME 541/HSERV 529/PHARM 529; Sp.

EPI 542 Clinical Epidemiology (2) *Weiss* Principles and methods involved in studying the outcome of illness. Prerequisite: EPI 511, or EPI 512 and EPI 513. Offered: S.

EPI 546 Psychiatric Epidemiology (3) *Vander Stoep* Using epidemiological methods to study mental illness. Topics include contributions of mental illness to global disease burden; major population-based studies of mental illness; measurement of psychopathology; culture and mental illness; role of neurodevelopment, genetics, social and physical environment in etiology of mental disorders; mental health services research. Prerequisite: either EPI 511, EPI 512, HSERV 591, or permission of instructor. Credit/no-credit only. Offered: jointly with PBSCI 546; Sp.

EPI 547 Social Determinants of Population Health and Health Disparities (3) Explores the elements and actions of a population health approach, including conceptualizing the determinants of health, synthesizing knowledge about major social determinants, and applying knowledge to improve population health and reduce health disparities. Enrollment priority for Health Services PhD students. Prerequisite: HSERV 511, permission of instructor. Offered: jointly with HSERV 514; Sp.

EPI 548 Social Determinants of Health: Research Methods (3) *Beresford, Smith* Explores study design, measurement and analytic issues applicable to research into the social determinants of health and health disparities. Semi-weekly graduate-level seminar offered to students with a basic knowledge of epidemiological and biostatistical principles. Prerequisite: either EPI 511 or EPI 512/EPI 513; BIOST 511/BIOST 512 or BIOST 517/BIOST 518. Credit/no-credit only. Offered: jointly with HSERV 548; W.

EPI 549 HIV/STI Prevention Research Methods (3) *J. BAETEN, R. HEFFRON* Focuses on current research and implementation of HIV/STI prevention (biomedical, behavioral, and public health interventions). Includes analyzing strength of research evidence to support candidate interviews, understanding key features of clinical trial design, and applying appropriate/feasible interventions for specific settings and populations. Offered: jointly with G H 563; Sp.

EPI 554 Introduction to Epidemic Modeling for Infectious Diseases (3) *R. BARNABAS* Covers the basic tools for building and analyzing mathematical models of infectious disease epidemics. Model types include deterministic and stochastic models, compartmental and individual-based models. Laboratory provides hands-on model building experience in Excel, Stella, and R. Offered: A.

EPI 555 Statistical Methods for Spatial Epidemiology (3) Motivates the need for, and describes methods for the analysis of spatially indexed epidemiological data. Covers four major topics: clustering and cluster detection, disease mapping, spatial regression, and an introduction to geographical information systems. Considers both point-references and spatially aggregated data. Offered: jointly with BIOST 555; Sp.

EPI 570 Occupational and Environmental Epidemiology (3) Research in occupational and environmental determinants of disease. Defining exposed populations, characterizing exposure levels, estimating disease risks relative to exposure. Cohort, case-control, cross-sectional designs for various health outcomes. Applications to exposure standard setting and risk assessment. Prerequisite: EPI 511 or EPI 512, EPI 513 or permission of instructor. Offered: jointly with ENV H 570; Sp.

EPI 571 Neuroepidemiology and Environmental Risk Factors (3) *W. KUKULL* Focuses on neurologic diseases and etiology. Presentation of descriptive epidemiology, clinical features, and risk factors, including stroke, Parkinson's disease, Alzheimer's disease, multiple sclerosis, and other disorders. Discussion of NIH grantsmanship. Guest experts present some topics. Psychiatric disorders e.g. schizophrenia, autism spectrum disorders, and depression will not be discussed. Offered: jointly with ENV H 571; W, odd years.

EPI 573 Methods and Issues in Using Biological Measurements in Epidemiologic Research (3) *Schwartz* Introduction to use of measurements from biological specimens in epidemiologic studies. Prepares epidemiology and laboratory science students for conduct of interdisciplinary human studies. Evaluation of biomarkers, preliminary studies, methodologic issues, quality control. Brief review of molecular biology. Applications and current literature discussed. Prerequisite: EPI 511 or EPI 512. Offered: jointly with ENV H 573; A.

EPI 582 Design and Analytic Strategies to Enhance the Validity of Epidemiologic Studies (1) *Weiss* Discusses the issues that led to specific methodologic developments during the past 30 years, along with a characterization of these developments and the consequences of their application. Prerequisite: EPI 512; EPI 513. Credit/no-credit only. Offered: W.

EPI 583 Epidemiology Seminar (1, max. 12) *S. DAVIS* Presentation of current epidemiologic research and application of epidemiologic research in the practice of public health. Offered: AWSp.

EPI 584 Doctoral Dissertation Seminar (1, max. 2) *S. DAVIS* Forum for Epidemiology doctoral students to obtain information for doctoral research, including: project ideas; forming a committee; developing a proposal; conducting the project; and presenting results. Prerequisite: EPI 512 and EPI 513, admission to the PhD program, successful completion of the preliminary examination, or second-year status. Credit/no-credit only. Offered: AW.

EPI 585 Injury and Violence: A Public Health Approach (3) *Schiff* Focuses on broad concepts including a conceptual model, surveillance, research methods, control and prevention of injuries. Topics include unintentional injuries from motor vehicle crashes, falls, drowning, sports injuries and intentional injuries from youth violence, intimate partner violence, homicide and suicide. Offered: A, even years.

EPI 586 Responsible Conduct of Research: Global and Local (3) *A. DRAKE, C. FARQUHAR* Prepares international and U.S. students to develop research proposals; conduct international and domestic field research; and present scholarly work. Offered: jointly with G H 532; A.

EPI 587 Practical Aspects of Research Operations (2) *Fitzpatrick* Provides the basics necessary to plan, implement, and manage a research study. Topics include human subjects applications, data collection, hiring and training of staff, participant recruitment and retention, data management, quality assurance and control, results reporting, communications, and budgeting. Prerequisite: K12 Clinical Scholar or one course in EPI/BIOST. Credit/no-credit only. Offered: A, even years.

EPI 588 Preparing, Writing, and Critiquing Scientific Research Proposals (3) *A. FITZPATRICK, L. KESSLER* Experience in preparing, organizing, and writing research proposals, following NIH and AHRQ guidelines. Includes weekly assignments and didactic exercises, leading to final research proposal. All students participate in mock study section to review and critique proposals. Prerequisite: second-year graduate student (PhD recommended), or PhD or MD in health-related field. Credit/no-credit only. Offered: jointly with HSERV 578; Sp.

EPI 590 Selected Topics in Epidemiology or International Health (1-6, max. 6) Tutorials arranged for a small number of students for in-depth examination of an area of epidemiology or international health, usually of current nature.

Seminar format. Prerequisite: EPI 511. Also a special summer format presenting introductory material. May be offered with ENV H 590 and/or HSERV 590. For more information and permission, consult department program adviser. Offered: AWSpS.

EPI 591 Current Literature in Epidemiology (1, max. 15) N. WEISS Articles pertaining to epidemiology and related subjects selected from the current literature to be distributed and read by all participants. Faculty members and enrolled students alternate being responsible for conducting sessions and choosing articles to read. Prerequisite: EPI 513. Credit/no-credit only. Offered: AWSpS.

EPI 592 Program Seminars (1-6, max. 16) Graduate seminars organized to address specific educational needs of students in various specialized programs within the Department of Epidemiology (i.e., Maternal and Child Health). Prerequisite: permission of instructor. Offered: AWSpS.

EPI 593 Cancer Prevention Research Laboratory (3, max. 24) White Research experience for pre- and post-doctoral students working on cancer prevention projects at the Fred Hutchinson Cancer Research Center. Credit/no-credit only. Offered: AWSpS.

EPI 595 Epidemiology Master's Practicum (1-6, max. 6) Supervised practice experience providing students an opportunity to learn how epidemiology is applied in a public health setting and in the formulation and application of public health policy. Prerequisite: EPI 512 and BIOST 511 or equivalent and permission of instructor. Credit/no-credit only. Offered: AWSpS.

EPI 600 Independent Study or Research (*-) Prerequisite: permission of independent study supervisor. Credit/no-credit only. Offered: AWSpS.

EPI 700 Master's Thesis (*-) Prerequisite: permission of thesis chair. Credit/no-credit only. Offered: AWSpS.

EPI 800 Doctoral Dissertation (*-) Prerequisite: permission of dissertation chair. Credit/no-credit only. Offered: AWSpS.

Health Services

H664 Magnuson Health Sciences Center
Box 357600

The mission of the Department of Health Services is to work with partners in public health and healthcare to prepare leaders, design solutions, and conduct innovative research that translates into practice and policy. The department offers rigorous academic preparation that integrates learning, service, and research opportunities, emphasizing practical experience and student-faculty collaboration. Through this approach, students master competencies needed for success.

The department offers rigorous academic preparation that integrates learning, service, and research opportunities, emphasizing practical experience and student-faculty collaboration. Through this approach, students master competencies needed for success.

Bachelor's and master's degrees are available in public health, health services administration, health information management, and health services research. Additionally, doctorate and post-doctoral opportunities are available in health services research.

UNDERGRADUATE PROGRAM

Adviser

(206) 543-8810

hihim@uw.edu

depts.washington.edu/hihim

Health Informatics and Health Information Management (HIHIM) offers both a Bachelor of Science degree and a postbaccalaureate certificate. Both the degree and certificate program require 65 credits, which may be completed in either one or two academic years.

Health Informatics and Health Information Management Postbaccalaureate Certificate

Admission Requirements

Baccalaureate degree from an accredited college or university with a minimum 2.50 GPA. Courses in, or the requisite knowledge and skills pertaining to, the following: human anatomy and physiology (laboratory course); introduction to basic computer applications such as spreadsheets, data bases, or word processing, or introductory programming; principles of management; statistics (any discipline); and medical terminology.

Certificate Requirements

65 credits:

Both the postbaccalaureate certificate and bachelor's degree programs require 65 credits, which may be completed in either one or two academic years.

For current information, visit the Health Informatics and Health Information Management website.

Bachelor of Science

Health Informatics and Health Information Management Major

Suggested First- and Second-Year College Courses: Human anatomy and physiology (laboratory course); introduction to basic computer applications such as spreadsheets, data bases, or word processing, or introductory programming; statistics (any discipline); English composition; and medical terminology.

Department Admission Requirements

1. Admission to UW Undergraduate Evening Degree Completion Program for summer quarter of planned entry to Health Informatics and Health Information Management (HIHIM)
2. Minimum 90 transferable credits (HIHIM 2-year curriculum plan). Students who have completed a minimum 120 transferable credits including 70 of the 80 UW general education required credits are eligible for the 1-year curriculum plan.
3. Completion of prerequisite coursework in the following areas:
 - a. Statistics (4-5 credits)
 - b. Anatomy and physiology with laboratory (6 credits)
 - c. Medical terminology (3-5 credits): Not offered at UW. Available at various community colleges (3-5 credits).
4. *Grades:* Minimum 2.50 cumulative GPA. Minimum 2.50 cumulative GPA in prerequisite coursework. Minimum 2.0 grade in each prerequisite course.
5. English language proficiency through English courses or a satisfactory score on a designated English proficiency examination specified on the program website.
6. Prerequisites must be completed prior to admission, with the following exception: A maximum of one prerequisite course may be in progress during summer quar-

ter. Applicant must include written petition with HIHIM application. Applicant may be considered for conditional admission. Offer of admission to HIHIM is withdrawn if prerequisite is not completed by the end of summer quarter or if prerequisite grade requirement is not met.

7. Admission is once a year, for summer quarter. Admission is competitive; completion of admission requirements guarantees consideration but not acceptance. Application deadline for each year is April 15. The academic summer schedule begins with an introductory course and an optional independent study course.

Additional information about prerequisite coursework can be viewed at depts.washington.edu/hihim/prerequisites.

Degree Requirements

1. *General Education Requirements (80 credits)*
 - a. *English Composition (C) and Additional Writing (15 credits):* English composition (5 credits); additional writing (W courses) (10 credits)
 - b. *Quantitative and Symbolic Reasoning (QSR) (4-5 credits):* Depending on course taken, may be satisfied by the statistics prerequisite requirement.
 - c. *Areas of Knowledge (60 credits):* Minimum 20 credits each in Visual, Literary, and Performing Arts (VLPA), Individuals & Societies (I&S), and Natural World (NW). BIOL 118 and BIOL 119 may count toward both the prerequisite and NW requirements.
2. *Major Requirements (65 credits)*
 - a. Disease concepts (4 credits)
 - b. Information systems (15 credits)
 - c. Coding and vocabulary (8 credits)
 - d. Management (30 credits)
 - e. Internships and projects (8 credits) - HIHIM 460, HIHIM 462
3. Additional electives to complete minimum 180 credits required for a degree.
4. Minimum 2.00 cumulative GPA in core courses and minimum 2.0 grade in individual courses.

For current information on application and program completion requirements, visit the Health Informatics and Health Information Management program website.

Continuation Policy

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

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The bachelor's degree program is designed to prepare individuals for careers in the management and use of healthcare information, and prepares students for the Registered Health Information Administrator (RHIA) national certifying examination of the American Health Information Management Association. The program gives students the tools to work in a wide variety of healthcare positions upon graduation, including health information management, health informatics with emphasis on electronic health records, healthcare quality improvement, decision support analysis, research, health insurance, and consulting. Graduates pass a national credential examination, with a majority working within the health information management field.
- *Instructional and Research Facilities:* None
- *Honors Options Available:* None
- *Research, Internships, and Service Learning:* Students complete two internships, one of which is the capstone project.

- *Department Scholarships:* None
- *Student Organizations/Associations:* Students are invited to join the health information management professional association at reduced rates.

GRADUATE PROGRAM

Graduate Program Coordinator

(206) 616-2926

hservmph@uw.edu

The Department of Health Services offers a two-year graduate program in health services leading to the Master of Public Health or Master of Science degree. The MPH degree prepares future health practitioners, managers, and researchers to conduct the unfinished work of improving the well being of communities in the United States and throughout the world. Graduates take jobs in health system management, health program design and evaluation, health promotion, public health practice, and policy analysis. Among other options, the department offers an MPH in community-oriented public health practice (COPHP). This program uses problem-based learning methods, and integrates classroom instruction and experiential fieldwork to prepare students to work in community and public health practice settings. Students may also pursue any of the MPH specialty options. The department also offers a three-year extended degree program in community health management, leading to the MPH degree for employed professionals working fulltime.

The department also maintains primary responsibility for the graduate program in Health Services Administration (an interdisciplinary degree-granting program of the Graduate School described in the Interdisciplinary Graduate Degree Programs section of this catalog). In addition, an executive version of the traditional MHA degree, designed for mid-career healthcare professionals, is offered. The MHA degree provides full academic preparation for careers in management and policy positions in health systems, hospitals, medical groups, health plans, and other types of healthcare organizations.

The department, in conjunction with UW Professional and Continuing Education, offers a fee-based master's degree in Health Informatics and Health Information Management.

The department offers a PhD in health services and participates in the training of doctoral fellows.

Master of Public Health

For current listings of MPH options and their requirements, see the MPH program website.

Admission Requirements

1. One set of official transcripts from all institutions of higher learning
2. Official scores from the general Graduate Record Examination (GRE) (required for applicants who have not already earned a doctoral-level degree from a U.S. institution of higher learning)
3. Test of English as a Foreign Language (TOEFL) scores, if applicable.
4. Written statement, including a description of the applicant's professional background, career goals, and educational objectives
5. Three recent letters of recommendation, preferably from former supervisors and teachers.
6. An in-person or telephone interview with a Health Services faculty person is highly recommended. Complete application details can be viewed at depts.washington.edu/hservmph/admission.

Degree Requirements

63 credits for each program (specialty option) listed below. For detailed requirements, see depts.washington.edu/hservmph.

Community-Oriented Public Health Practice Program

63 credits, to include:

1. *Problem-Based Learning (PBL) Core Curriculum:* 36 credits
2. *Integrated Fieldwork:* 6 credits (first year)
3. *Seminars:* 6 credits
4. *Capstone Project:* 9 credits (second year)
5. *Electives:* 6 credits from School of Public Health and Community Medicine and other schools/colleges at the UW, as appropriate

Health Systems and Policy

63 credits, to include:

1. At least 30 credits from graduate-level courses, of which at least 18 credits are from Health Services courses.
2. *Practicum:* 3 credits
3. *Thesis or Capstone Project:* 9 credits

Maternal and Child Health

63 credits, to include:

1. At least 30 credits from graduate-level courses, of which at least 18 credits are from Health Services courses.
2. *Practicum:* 3 credits
3. *Thesis:* 9 credits

Social and Behavioral Sciences

63 credits, to include:

1. At least 30 credits from graduate-level-in-classroom courses of which at least 18 credits are from Health Services courses.
2. *Practicum:* 3 credits
3. *Thesis:* 9 credits

Master of Health Administration

See UW General Catalog listing at www.washington.edu/students/gencat/academic/health_services_administration.html.

Master of Science

Admission Requirements

For current information, see the MS program website.

1. One set of official transcripts from all institutions of higher learning
2. Official scores from the general Graduate Record Examination (GRE) (required for applicants who have not already earned a doctoral-level degree from a U.S. institution of higher learning)
3. Test of English as a Foreign Language (TOEFL) scores, if applicable
4. Written statement, including a description of the applicant's professional background, career goals, and educational objectives
5. Three recent letters of recommendation, preferably from former supervisors and teachers
6. An in-person or telephone interview with a Health Services faculty person is highly recommended

Degree Requirements

Minimum 63 credits, to include:

1. At least 30 credits from graduate-level courses, of which at least 18 are from Health Services courses
2. Participation in a program research seminar: Either HSERV 587, HSMGMT 513, or HSMGMT 514

3. *Thesis:* 9 credits

Master in Health Informatics and Health Information Management

The Master of Health Informatics and Health Information Management (MHIHM) program prepares individuals for leadership in health informatics and technology, enterprise information management, and health administration. The curriculum pairs advanced health informatics and health information management courses with master of health administration courses.

The program trains professionals from the fields of health information management, health administration, business, information technology, and healthcare, to strategically lead, develop, and direct health information initiatives and systems. Graduates are prepared to take on senior management roles in this rapidly growing segment of the industry. The program prepares graduates for work in diverse healthcare delivery systems, such as hospitals, clinics, consulting and vendor organizations, and government agencies.

Financial Aid

The MHIHM program develops professionals who understand and assess the delivery system landscape and the growing role of enterprise information governance, technology drivers, and changing requirements for sharing health and patient information through exchange practices.

The curriculum enables students to build and enhance current strengths and acquire new skills. Students study comprehensive management strategies and apply practical methods in planning, analyzing, and manipulating health data to meet institutional needs and resource management. Students address data and technology management policies and tools. They learn to market, design, sponsor, and apply problem solving techniques to complex situations. In addition, students expand their collaboration and communication skills to participate in, and lead, high level leadership teams. Team-based learning, capstone projects, and involvement from healthcare community leaders, are all program hallmarks.

MHIHM classes convene in Bellevue, Washington, for a three-day period (Thursday through Saturday) once each month for 21 months. Additionally once each week faculty lead students in a web-based session, ideal for practicing professionals who plan to continue their careers while gaining a graduate degree.

The program operates under a fee-based structure and is administered in collaboration with UW Professional & Continuing Education. Complete application details can be viewed at www.health-informatics.uw.edu/admissions/application-details/.

Doctor of Philosophy

For the most current information, visit the PhD program website.

Admission Requirements

Admission priority is given to applicants who have graduated from a master's program with high academic standing. Applicants who have a bachelor's, master's, or professional degree in a field related to health services are given preferential review. Students with only a bachelor's degree are occasionally admitted. Applicants with relevant research experience and publications are the most competitive.

Students admitted to the program generally have GRE scores in or above the 75th percentile.

International applicants must submit the results of the Test of English as a Foreign Language (TOEFL), unless they meet UW criteria for waiving the requirement. Scores must show high English language proficiency. A minimum score of 580 (paper based) or 237 (computer based) on the TOEFL is required to be considered for admission to the UW.

Degree Requirements

100 credits minimum, as follows:

1. **Required Core Competencies (35 credits):** HSERV 512, HSERV 513, HSERV 514, HSERV 523, HSERV 524, HSERV 525; one of the following: HSMGMT 514, HSERV 587, or ECON 500; HSERV 522; BIOST 517, BIOST 518, or BIOST 511, BIOST 512, BIOST 513, or BIOST 514, BIOST 515; EPI 512, EPI 513
2. **Area of Emphasis:** Five courses or 15 credits in an area of emphasis. Suggested areas of emphasis: economics or finance; health behavior and health promotion; occupational health; cancer prevention and control; evaluation sciences; population health - the social determinants; global health; maternal and child health; sociology/demography; bioinformatics. For a customized area of emphasis, specific courses taken are selected by the student and the adviser, based on the student's past coursework, experience, proposed dissertation topic, and future career goals.
3. Doctoral courses in advanced theory and methods in health services: 50 credits, including a minimum of 30 dissertation credits
4. Written preliminary examination
5. Written and oral general examinations
6. Dissertation
7. Dissertation defense (final examination)

Financial Aid

Every attempt is made to ensure that students admitted are not prevented from pursuing graduate studies because of inadequate finances. Some fellowships, assistantships, scholarships, and loans are available each year.

Research Facilities

In addition to using University facilities, the program has extensive links with community healthcare delivery systems and agencies for research and training.

EXECUTIVE MPH

Graduate Program Coordinator

H674 Health Sciences, Box 357660

(206) 685-7580

For current information, see the Extended MPH program website.

The Executive MPH degree program is a part-time, partial distance learning program delivered through a combination of intensive four-week summer sessions on the University campus, directed independent study, and four intensive weekend seminars during the academic year. The program is designed for mid-career public and community health professionals with three or more years of experience related to public health. The program provides knowledge and skills required at mid- and upper-level practice and management positions for health professionals. In addition to the core courses in health services, epidemiology, biostatistics, and environmental health, the prescribed coursework includes a broad exposure to the health-care system plus specific management training in budgets, finance, personnel management, economics, organization theory, and program planning and evaluation. Pathways are available in health education, maternal and child health, public health practice, and oral health.

The Executive MPH degree program provides training in developing skills in the scientific base of public health, analytic methods, management and communication, and policy and advocacy, as well as training in cross-cutting issues. Graduates apply their skills directly to their careers.

Admission Requirements

1. Current employment in a public health-related agency preferred
2. Minimum three years experience in community, public, or environmental health-related field
3. Baccalaureate degree from an accredited college or university
4. Minimum 3.00 GPA in the last graded 90 quarter/60 semester hours
5. Graduate Record Examination (GRE) scores, taken within 6 years. (Applicants with MD, DO, or PhD degrees from an accredited U.S. college or university may waive the GRE requirement.)

Degree Requirements

63 credits minimum, as follows:

1. **Year 1 Required Courses:** BIOST 502, EPI 511, HSERV 501, HSERV 516, HSERV 520, HSMGMT 560
2. **Year 2 Required Courses:** BIOST 503, ENV H 511, HSERV 504, HSERV 522, HSMGMT 514, HSMGMT 563
3. **Year 3 Required Courses:** HSMGMT 566 (3), HSMGMT 572 (3)
4. **Thesis or Project Option:** HSERV 700 (master's thesis) or HSERV 598 (project); EPI 600/ENV H 600
5. **Practicum (required):** Focus based on pathway choice
6. **Elective or Pathway Credits (required):** Pathway courses may be spread out over two years. Electives may be taken at any time.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at uw.edu/students/crscat/

HSERV 100 Personal and Public Health (3) I&S Provides an overview of the key components of health and wellness. Presents a balance between individual responsibility and social determinants of public health, emphasizing a holistic preventative model. Incorporates self-assessment and considers the impact of personal, family, social, cultural, and environmental factors on health.

HSERV 290 Special Topics (1-6, max. 12) I&S Explores current or evolving areas of interest in public health.

HSERV 346 Using Economics to Solve Today's Healthcare Problems (4) I&S Health economics is a growing field and an important aspect of public policy. Introduces health economics and the tools economists use to analyze current issues in health care. Furthers the understanding of economics and how it is used in current debates. Prerequisite: ECON 200. Offered: jointly with ECON 346; A.

HSERV 415 War and Health (4) I&S A. HAGOPIAN, E. KANTER Explores the health consequences of war (injury, infectious diseases, mental health, chronic disease, malnutrition, infrastructure) and the role of health professionals and others in preventing war (advocacy, measurement and application of epidemiology methods, promotion of social equity). Offered: jointly with G H 419; Sp.

HSERV 475 Perspectives in Medical Anthropology (5) I&S J. TAYLOR Introduction to medical anthropology. Explores the relationships among culture, society, and medicine. Examples from Western medicine as well as from other medical systems, incorporating both interpretive and critical approaches. Offered: jointly with ANTH 475.

HSERV 476 Introduction to Applied Ethnographic Methods in Public Health (4) Introduces practical methods of gathering ethnographic data. Students investigate a local culture, including such diverse groups as graffiti artists and dumpster divers.

HSERV 480 Introduction to Public Health (3) Covers history and major agencies and organizations of public health, Systems perspective on understanding factors affecting public health, the core functions and services of public health, and the major current public health issues in the U.S. and world. Uses a modified problem-based learning (PBL format). Includes substantial group work.

HSERV 481 Issues in Public Health (3) Introduces public health by taking an in-depth look at local public health practice. Focuses on practical solutions for real life problems in local public health settings. Incorporates speakers from the local practice community.

HSERV 482 The Health of Populations (4) I&S, DIV Explores what makes a population healthy or unhealthy. Examines why the United States is less healthy than all other rich countries, despite being one of the healthiest fifty years ago.

HSERV 488 Dark Empire: Race, Health, and British Society - Abroad (5) Explores factors responsible for the well-being and health of black and other racial/ethnic minorities in Britain. Addresses: the National Health Service; ethnic diaspora, anti-immigration laws; urban riots; inequality, and the rise of Muslim fundamentalism and Islamophobia. Conducted in Britain.

HSERV 490 Advanced Topics (1-6, max. 12) I&S Explores current or evolving public health problems. Offered: W.

HSERV 499 Independent Study in Health Services (1-12, max. 12) Individual library or field study project selected in consultation with a faculty adviser.

HSERV 501 Public Health Practice at the Local Level (3) Basic overview of state and local public health practice with leaders in the field and case studies focusing on rural and urban public health challenges. Offers preparation for practice in public health agencies. Prerequisite: HSERV 511 or permission of instructor. Offered: jointly with EPI 501.

HSERV 503 Applied Epidemiology in Public Health Practice (3) Baseman Introduces the principles, methods, and issues in public health practice-based epidemiology. Covers public health surveillance, outbreak and cluster investigation, community health assessment, screening, evaluation, and other select topics. Offered: jointly with EPI 503; Sp.

HSERV 504 Health Communication ([1-3]-, max. 3) Overview of the theory and practice of designing, producing, and evaluating public health communication campaigns, including the use of mass media. Develops greater capacity for critical judgment about the use of communication strategies for achieving public health goals.

HSERV 507 Health Communication and Marketing for Health Promotion: Theory and Practice (3) Discusses health communication theories and applications at the individual level (persuasion), interpersonal level (motivational) interviewing), and population level (mass media). Examines marketing principles for health promotion. Develops a health communication campaign for clients. Investigates adaptation frameworks of communication campaign cutting across cultures.

HSERV 508 Dynamics of Community Health Practice (3) Analysis of principles of community health as applied to the delivery of clinical services in order to improve public health, reduce disparities, provide leadership in delivery of care, and synthesize one's clinical role with public health. Examines environmental, social, cultural, and behavioral determinants of health. Includes family, aggregates, and populations. Offered: jointly with NURS 560.

HSERV 509 Public Health and Informatics (3) A. TURNER Introduction to the emerging field of public health informatics. Covers general public health topics as well as key public health informatics issues and applications. Evaluates a public health information system. Prerequisite: either BIME 530 or permission of instructor. Offered: jointly with BIME 533; W.

HSERV 510 Society and Health (3) Provides an overview of three core areas in the social and behavioral sciences of public health practice and research: social determinants of individual and population health, health promotion and disease prevention, and cultural competency and community collaboration. Prerequisite: HSERV 511 or equivalent or permission of instructor.

HSERV 511 Introduction to Health Services and Public Health (3-4) History, organization, and effectiveness of U.S. healthcare and public health systems. Determinants of health, need, and utilization. Public and private financing. Supply and provision of personal and public health services. Managed care. Government and private sector roles. Prerequisite: graduate standing or permission of instructor.

HSERV 512 Health Systems and Policy (3) Students review and examine selected topics from literature. Includes need and access to care; theory and effects of health insurance; private and public insurance programs; managed care; costs/expenditures; availability and organization of health resources; and quality assessment and improvement. Enrollment priority for Health Services PhD students. Prerequisite: HSERV 511.

HSERV 513 Health Policy Research (3) Extends students' understanding of the nature of health policy and health policy development in the context of a market-based economy. Enrollment priority for Health Services PhD students. Prerequisite: HSERV 511, permission of instructor.

HSERV 514 Social Determinants of Population Health and Health Disparities (3) Explores the elements and actions of a population health approach, including conceptualizing the determinants of health, synthesizing knowledge about major social determinants, and applying knowledge to improve population health and reduce health disparities. Enrollment priority for Health Services PhD students. Prerequisite: HSERV 511, permission of instructor. Offered: jointly with EPI 547; Sp.

HSERV 515 War and Health (4) A. HAGOPIAN, E. KANTER Explores the health consequences of war (injury, infectious diseases, mental health, chronic disease, malnutrition, infrastructure) and the role of health professionals and others in preventing war (advocacy, measurement and application of epidemiology methods, promotion of social equity). Offered: jointly with G H 519; Sp.

HSERV 516 Introduction to Health Services ([3-4]-) Provides overview of healthcare system, exposes students to current issues and developments affecting organization and delivery of health services, helps students develop ability to frame and analyze questions and issues related to health services. Prerequisite: registration in Extended MPH degree program.

HSERV 518 Social and Ethical Issues (2-4, max. 4) Presents introduction to ethical issues in public health policy and practice. Additional one credit option focuses on health administration/managed care. Coursework designed to train students in basic skills of ethical analysis and increase competency in recognizing, researching, and analyzing issues arising in public health and health services delivery.

HSERV 519 Study Design and Causal Inference (1) Increases depth of knowledge about causal inference in impact evaluation. Applies the elements of causal inference to impact study design and statistical analysis, including the concept of statistical conclusion validity, internal validity, construct validity, and external validity. Credit/no-credit only. Offered: A.

HSERV 520 Methods in Applied Community Research ([0-4]-, max. 4) Skills/knowledge necessary to conduct orderly investigation of specific problems in preparation for MPH thesis or project. Includes problem identification, posing research questions, literature review, consideration of theoretical/practical context, choosing study design, data collection, protection of human subjects, and recognizing

potential errors. Prerequisite: registration in Extended MPH degree program. Credit/no-credit only.

HSERV 521 Advanced Qualitative Methods in Anthropology and Public Health (5) J. PFEIFFER Provides students with both a theoretical foundation in qualitative approaches to research in anthropology and public health and in-depth training in qualitative data management, analysis, interpretation, and presentation. Focuses on how to frame research questions, design, appropriate research strategies that incorporate qualitative methods, and analyze data. Offered: jointly with ANTH 519/G H 538; Sp, even years.

HSERV 522 Health Program Evaluation ([1-5]-, max. 5) Politics, theory, methods of evaluation, from simple health programs to evaluation of large-scale interventions. Emphasizes experimental and quasi-experimental designs to estimate program impacts, as well as evaluation of program implementation. Case studies drawn from health field illustrate various types of evaluations. Prerequisite: background in introductory statistics.

HSERV 523 Advanced Health Services Research Methods I: Large Public Databases; Big Data (4-5) Introduces the new big data of health services research, health claims, and survey databases. Discusses the promises and pitfalls of the data and models for analyzing the correlates of health care costs and utilization. Prerequisite: either HSERV 511, BIOST 511/BIOST 512/BIOST 513, BIOST 517/BIOST 518, or EPI 511/EPI 512, and permission of instructor.

HSERV 524 Advanced Health Services Research Methods II: Hierarchical and Incomplete Data (4-5) Introduces advanced biostatistical techniques for analyzing incomplete data in population health research. Examines a wide range of topics including: missing data and potential outcome framework for causal inference, propensity score and multiple imputation, multilevel random effect linear and logistic models, and empirical Bayes prediction. Prerequisite: either HSERV 523 or permission of instructor.

HSERV 525 Advanced Health Services Research Methods III: Casual Inference Using Observational Data ([4-5]-) Focuses on reviewing statistical methods developed for "micro" (individual-level) data on behavior (choices or exposures) and outcomes in order to make casual inference about the role of a choice or an exposure on outcomes. Prerequisite: either HSERV 523, BIOST 511, BIOST 512, BIOST 513, or permission of instructor.

HSERV 527 Survey Research Methods (4) A. MOKDAD Provides students with skills in questionnaire development and survey methods. Students develop a questionnaire and design a survey research proposal on a health-related or social topic. Prerequisite: either HSERV 511/HSERV 513; BIOST 517/BIOST 518; or EPI 512/EPI 513, which may be taken concurrently, or permission of instructor. Students should have a survey project in mind. Offered: jointly with CS&SS 527/G H 533.

HSERV 528 Critically Appraising and Applying Evidence in Healthcare (3) F. WOLF Literature appraisal skills for various articles (therapy effectiveness, diagnostic tests, literature reviews, clinical measurement, prognosis, quality of care, decision analysis, causation/etiology, guidelines, and economic evaluation). Appraisal of clinical information from literature, strengths/weaknesses of data, analyses, study design/applicability to a current patient's problem. Prerequisite: permission of instructor. Offered: jointly with BIME 540; W.

HSERV 529 Introduction to Systematic Reviews and Meta-Analysis of Evidence (3) E. DEVINE, F. WOLF Conceptual understanding of the quantitative methods used to synthesize evidence. Methods for pooling evidence across independent studies, pooling binary/continuous outcomes, differences between fixed and random effects models, and guidelines for appraising published systematic reviews/meta-analyses. Prerequisite: either introductory level courses in statistics, epidemiology, or biostatistics or per-

mission of instructor. Offered: jointly with BIME 541/EPI 541/PHARM 529; Sp.

HSERV 531 CPHP Population Health (3) Considers the elements that determine a population's health including the social determinants of health. Groups are challenged to question their innate views of health and what produces it by comparing the United States with other rich and poor countries, considering structural factors affecting health. Offered: A.

HSERV 532 CPHP Community Development (3) Provides an introduction to understanding and working with communities on health related issues. Students work directly with community members, community advocates, and community-based service organizations to address health issues. Students learn how to employ methods of community engagement to build on local assets to address health issues. Offered: A.

HSERV 533 CPHP Quantitative Methods (6) Acquaints students with methods of epidemiology and biostatistics used in conceptualizing, collecting, analyzing, and interpreting quantitative data on health outcomes and risk factors with quantitative methods for evaluating programs or treatments that address health concerns in populations. Expands skills in communicating quantitative aspects of public health, using writing, tables, and graphs. Offered: W.

HSERV 534 CPHP Environmental Health (2) Provides an overview of the fundamental scientific principles and practices utilized in environmental public health. Examines, via case study methodologies, the occurrence of diseases resulting from environmental and occupational exposures and how they can be modified, reduced, or eliminated by incorporating various control practices. Offered: Sp.

HSERV 535 CPHP Health Behavior and Health Promotion (4) Provides an overview of the theory and practice of planning, designing implementing, and evaluating public health promotion problems. Helps public health professionals apply sound judgment when making decisions about identification, audience segmentation, and intervention selection. Offered: Sp.

HSERV 536 Emerging Infections of International Public Health Importance (3-) *Hortwicht* Focuses on the nexus between emerging infections and increasing globalization of the world due to the mobility of people and goods. Examines emergent events through risk factors and associated macro changes implicated in their genesis. Reviews microbial evolutionary strategies and factors of emergence. Prerequisite: graduate standing. Offered: jointly with EPI 529; W.

HSERV 537 CPHP Health Policy (6) Covers concepts and analytic tools for health policy analysis, development, and advocacy, while exploring factors affecting public health policy, including science and community values. Student write a policy statement for an advocacy organization, teach a lay audience about an issue, and arrive at policy conclusions based on quantitative data.

HSERV 538 CPHP Program Evaluation (2) Covers the basic concepts and approaches for program evaluation in public health. Uses one case during the quarter, which includes a final assignment requiring students to work as a team to design, not conduct, an evaluation. Offered: W.

HSERV 539 CPHP Organizing Communities for Health (4) Synthesizes the accumulated skills and knowledge a public health professional uses to work with communities to advance public health. Integrates a broad array of skills to bring together the perspectives of the many players and interest groups that interact in dynamic community settings. Offered: W.

HSERV 540 CPHP Management and Leadership (6) Explores the principles of leadership and management within the context of public health organizations. Explores the distinction between management and leadership and examines the management functions of planning, organizing,

directing, and controlling the use of human and financial resources to accomplish the goals of the organization.

HSERV 541 Topics in Maternal and Child Health I (3-) Provides an overview of the historical and legislative basis for the major MCH health and social service policies and programs. Uses the life-course perspective to examine the social determinants of health and development of women, children, and adolescents. Pays special attention to racial inequities on the health of families.

HSERV 542 Epidemiology of Maternal and Child Health Problems ([3-4]-) *Enquobahrie* Contributions to understanding and prevention of major maternal and child health problems, including pregnancy outcome, infant and child morbidity and mortality, maternal morbidity and mortality, abnormal child growth and development, and early-life factors in adult health problems. Prerequisite: graduate, medical, or dental school standing and EPI 511 or EPI 512 or permission of instructor. Offered: jointly with EPI 521; W.

HSERV 544 Maternal and Child Health in Developing Countries (3) *D. DENNO* Emphasizes critical health problems of women and children in developing countries in social, economic, and cultural contexts. Practical approaches to developing MCH programs shared via lecture/discussions, exercises, and small group work. Students acquire skills in baseline assessment, setting objectives, planning and evaluating interventions, and involving communities. Offered: jointly with G H 544; W.

HSERV 548 Social Determinants of Health: Research Methods (3) *Beresford, Smith* Explores study design, measurement and analytic issues applicable to research into the social determinants of health and health disparities. Semi-weekly graduate-level seminar offered to students with a basic knowledge of epidemiological and biostatistical principles. Prerequisite: either EPI 511 or EPI 512/ EPI 513; BOST 511/BOST 512 or BOST 517/BOST 518. Credit/no-credit only. Offered: jointly with EPI 548; W.

HSERV 551 Public Health Law (2) Focuses on the role of law in public health administration and in the increasingly regulated healthcare industry. Provides a foundation in the relevant law for public health officers and healthcare industry administrators. Offered: jointly with LAW H 512.

HSERV 552 Health Policy Development (3-) Uses primarily case- and problem-based learning and small-group projects to focus on factors that influence public policy development concerning health services in the U.S., with some global health content. Examines the roles of science and stakeholder interests in the structure of and changes to a nation's health system. Offered: A.

HSERV 556 Tobacco Related Health Disparities (1/2) Integrates multiple disciplinary perspectives to address the pressing issue of disproportionate tobacco use and related diseases among marginalized populations, including those defined by socioeconomic status, race/ethnicity, and sexual orientation. Explores links between, and intervention strategies for, smoking and mental illness, social stress, acculturation processes, and genetics. Offered: jointly with FAMED 559.

HSERV 558 Tobacco and Public Health: Prevention, Treatment, Policy, and Social Change (1-3, max. 3) Integrates multiple disciplinary perspectives to provide a comprehensive overview of the history, health effects, policy, prevention, and treatment of tobacco use. Utilizes readings, stimulates discussions, and hosts renowned experts to provide students with the foundation to understand and address the local, national, and global epidemic of tobacco use.

HSERV 559 Public Policy and the Public's Health ([0-3]-, max. 3) *Watts* Explores the factors that affect health policy and the interaction of policy, markets, and the legal system through public health examples. Examines how science and community values intertwine in policy development, and how context influences the structure of and changes to a nation's health system.

HSERV 560 Adult Learning: Theory and Practice (3) Designed to help students apply Popular Education theory and practice to preparation, presentation, and evaluation of health education. Students design, teach, and evaluate four separate teaching sessions (one between each seminar) using theory and principles of Popular Education learned to date. Prerequisite: graduate standing or permission of instructor.

HSERV 561 Introduction to Health Promotion Planning and Evaluation ([0-3]-, max. 3) Links practice to theory between the planning, implementation, and evaluation of health promotion intervention and behavior change theory. Uses PRECEDE/PROCEED planning model by Green and Kreuter as framework.

HSERV 568 Health Economics (3) Applies microeconomics principles and models to understand the nature of health care markets and systems. Includes a wide range of health sector activities and policy issues by applying rigorous economic analytical tools coupled with review of key econometric and empirical analysis. Prerequisite: introductory coursework in microeconomic principles and basic statistics. Offered: W.

HSERV 571 Cultural Competency for Public Health Practice ([1-4]-, max. 4) Application of cultural competency to clinical practice, healthcare management, and health services research when working with culturally diverse populations. Methodological orientation is qualitative, historical, and ethnographic. Lecture, narratives, discussions, guest presentations, film, video. Interdisciplinary perspective appropriate for graduate students in public health, health administration, nursing, social work, and anthropology.

HSERV 575 Cancer Prevention and Control (3) Provides an overview of research in cancer prevention and control for students training for a career in this field. Students identify major areas of prevention and control research, conduct an analysis of data in cancer prevention and control, and learn to prepare a research project grant. Prerequisite: permission of instructor.

HSERV 576 Health, Culture, and Community (3) *Chrisman* A multidisciplinary approach to the development of leadership in personal and organizational cultural competence in community-based participatory research. Emphasizes understanding collaborative assessment, planning, and evaluation of health promotion and disease prevention programs to address the social determinants of health at the population level. Offered: jointly with NURS 557; W.

HSERV 577 Health Behavior and Preventative Medicine ([2/4]-, max. 4) Focuses on psychosocial and cultural factors related to health, preventive health behavior, illness perception, and behavior; theoretical basis for prevention; the interaction of consumers and providers in the delivery of healthcare services; and clinic and community based applications.

HSERV 578 Preparing, Writing, and Critiquing Scientific Research Proposals (3) *A. FITZPATRICK, L. KESSLER* Experience in preparing, organizing, and writing research proposals, following NIH and AHRQ guidelines. Includes weekly assignments and didactic exercises, leading to final research proposal. All students participate in mock study section to review and critique proposals. Prerequisite: second-year graduate student (PhD recommended), or PhD or MD in health-related field. Credit/no-credit only. Offered: jointly with EPI 588; Sp.

HSERV 581 Strategies of Health Promotion (4) Assessment of health promotion planning, implementation, and evaluation strategies for their strengths, weaknesses, and effectiveness. Students critique strategies to modify behavioral factors that influence lifestyles of individuals, including decisions influencing their reciprocal relationship with environmental factors affecting the health of individuals, organizations, and communities. Prerequisite: HSERV 511.

HSERV 583 Economic Evaluation in Health and Medicine (3) *Garrison, Veenstra* Methods and techniques for evaluating costs and cost-effectiveness of health, medical, and pharmaceutical interventions. Emphasis on economic evaluation, decision analysis, and modeling techniques for resource allocation and decision making. Applications to technology assessment, health policy, clinical practice, and resource allocation. Prerequisite: permission of instructor. Offered: jointly with PHARM 534.

HSERV 584 Assessing Outcomes in Health and Medicine (3) *Devine, Edwards* Concepts and methods for developing and using patient-reported outcomes in health and medicine. Emphasis on patient self-reported health status and quality of life. Qualitative research and psychometric methods applied to health outcomes assessment and all applications. Prerequisite: permission of instructor. Offered: jointly with PHARM 535; W.

HSERV 585 Seminar in Medical Geography (5, max. 10) *Mayer* Intensive research seminar dealing with new and promising research themes in medical geography and public health. Offered: jointly with GEOG 581.

HSERV 586 Medical Geography (3) *Mayer* Geography of disease, consideration in health systems planning. Analysis of distributions, diffusion models, migration studies. Application of distance, optimal location models to health systems planning; emergency medical services; distribution of health professionals; cultural variations in health behavior. Prerequisite: familiarity with social science research; health-related issues. Offered: jointly with GEOG 580.

HSERV 587 Health Policy Economics (3) Applies economic theory to selected topics in healthcare, including information, risk and insurance, industry organization, government regulation, and public health issues. Emphasizes policy implications of these applications. Offered: jointly with ECON 547.

HSERV 589 Community Based Participatory Research and Health (3) Begins with a research topic of importance to the community with the aim of combining knowledge and action for social change. Provides an understanding of principles and strategies, and appreciate of its advantages and limitations, and skills for participating effectively.

HSERV 590 Selected Topics in Health Services (*, max. 30) Explores current or evolving public health problems. Prerequisite: permission of instructor.

HSERV 591 Community Oriented Public Health Practice (1-6, max. 42) Seven-quarter integrated sequence covers public health aspects of community assessment, biostatistics, epidemiology, health promotion/disease prevention, behavior change, environmental health, community development, policy development and analysis, and program planning and management. It is taught in a problem-based format. Prerequisite: enrollment in the CPHP program.

HSERV 592 Program Seminars (1-6, max. 20) Graduate seminars organized to address specific educational needs of students in various fellowships, residencies, and other specialized programs within the Department of Health Sciences (i.e., maternal and child health, international health, preventive medicine, social and behavioral sciences). Prerequisite: permission of instructor.

HSERV 595 Practicum/Field Work in Community Medicine ([1-12]-, max. 12) Experience in variable time blocks in community health activities in agencies delivering and planning health services. Sites include neighborhood clinics, health planning bodies, medical practice settings, public health agencies, special problem clinics and facilities, environmental programs and services. Prerequisite: master's student in health services and permission of instructor.

HSERV 598 Extended Degree Program Project Option (*, max. 9) Supervised project work on a selected topic related to student's concentration in graduate study. Includes survey of literature, development of approach, and written pa-

per on conclusions. Prerequisite: registration in extended MPH degree program and satisfactory completion of the first summer's coursework.

HSERV 599 Capstone Project (*-) Applies and extends the public health skills learned to other settings, develops new skills, expands a professional network, and provides specialized knowledge that can be used to advance the student's future career and effectiveness in public health.

HSERV 600 Independent Study or Research (*-) Prerequisite: permission of instructor.

HSERV 700 Master's Thesis (*-) Prerequisite: permission of instructor.

HSERV 800 Doctoral Dissertation (*-)

Health Informatics and Health Information Management

HIHIM 407 Foundations for Healthcare Vocabularies (3) Focuses on health concepts, documentation, healthcare taxonomies, and clinical vocabularies, terminologies, classifications, and nomenclatures required for health data analysis, clinical coding, and clinical systems associated with the electronic health record.

HIHIM 408 Management Concepts with HIM Applications (3) Covers core management functions of planning, organizing, staffing, leading, and contracting in healthcare environment and decision-making, operations, supervision, and communication foundations for health information administration.

HIHIM 409 Disease Concepts for Managers (4) Develops a methodology for understanding and communicating dimensions of disease states as all health state that a person might experience. Presents clear, effective ways to describe the diversity of health conditions and focuses on disease from a health information systems perspective.

HIHIM 410 Introduction to Healthcare Systems and Health Data Systems (5) Covers current issues in healthcare; relationship of the healthcare system to health data systems: accreditation, licensure and professional standards; health records analysis, statistics, data linkage, application of professional standards to health records and record management systems; retrieval, tracking, and retention systems.

HIHIM 412 Healthcare Coding (5) Covers healthcare coding principles for International Classification of Diseases (ICD) and Current Procedural Terminology (CPT) code sets used in diagnosis and procedure code assignments for research and reimbursement by healthcare providers in all settings. Prerequisite: HIHIM 409.

HIHIM 413 Revenue Cycle Management (3) Covers the revenue cycle management of health information administration.

HIHIM 420 Healthcare Computer Systems and Electronic Health Records (5) Current health information systems and the role of health informatics; technology infrastructure and health informatics standards, electronic health records, definitions, functions, issues, and barriers; hospitals, ambulatory care, home health and long-term care and computer applications. Prerequisite: HIHIM 410; HIHIM 411.

HIHIM 421 Health Information Systems Analysis (5) Examines lifestyle systems development process and tools, project management and team coordination, analysis of health information systems, and user requirements. Prerequisite: HIHIM 420.

HIHIM 450 Organizational Theory in Health Facilities and Healthcare Delivery (3) Addresses the organization of healthcare services across the spectrum of healthcare delivery systems - both governmental (federal, state, local) and private. Financing of healthcare services and related policy issues are explored.

HIHIM 454 Finance Concepts for Healthcare Managers (4) Covers financial concepts applied to today's healthcare environment, financial management tools, and budgeting.

HIHIM 455 Professionalism and Leadership (4) Professional development, leadership assessment and ethics, interpersonal skills and effective communication, and human resource management requirements.

HIHIM 456 Quality Assurance and Research in Healthcare (5) Quality improvement, risk management, and utilization management in healthcare; design and analysis of quality improvement systems, including use of data systems in quality assurance and research; health data retrieval, analysis and presentation, and review of relevant healthcare informatics research. Prerequisite: statistics; medical terminology.

HIHIM 460 Management Project I (3) Explores the development of management skills and competencies, and a seminar through site experience in healthcare facilities with campus and clinical faculty. Prerequisite: HIHIM 410

HIHIM 462 Management Project II (5) Explores applied management using a formal capstone project in a healthcare setting. Prerequisite: HIHIM 460.

HIHIM 470 Legal Concepts for Health Fields (3) Examines principles of law as applied to the health field, with reference to health information management.

HIHIM 480 Management, Problem-Solving, and Decision-Making (5) Provides the tools and experiences useful at a management level for problem-solving and decision-making in health information administration.

HIHIM 490 Special Topics (1-5, max. 15)

HIHIM 499 Independent Study (1-5, max. 5)

HIHIM 508 Health Information Management Systems and Practice (1-2, max. 3) Provides a high level framework of health informatics and health information management practice. Covers practice related systems with emphasis on enterprise information governance, patient record organization, content and structure, and associated enterprise business functions and processes to provide foundation for understanding the practice.

HIHIM 510 Enterprise Systems and Electronic Health Records (3) Covers industry drivers, development, compliance framework, and certification of electronic health record systems status and operations addressed through strategic decision making and leadership: data movement among enterprise clinical, business, administrative systems to legal health record; and barrier and benefit assessment within major institutional culture and technology initiative changes. Offered: A.

HIHIM 520 Law, Policy, and Ethics in Health Informatics and Health Care (3) Explores the laws, policies, and issues involved in oversight and management of health data and health information systems. Defines the legal health record and the requirements, role, and uses. Covers the legal and ethical framework, issues and concepts, and the role of e-discovery on the emerging health data environment. Offered: W.

HIHIM 525 Database Concepts and Applications in Health Informatics (3) Provides an overview of data models, architecture platforms, and relational database theory and technology. Covers design and uses of databases in patient record systems, registries and indexes, and health databases, security, privacy and ethical issues, database design, data integrity, field properties, tables, reports, queries, and data retrieval. Offered: Sp.

HIHIM 530 Privacy and Security in Electronic Environments (3) Covers the laws, regulations, policies, and practice related to the confidentiality, privacy, and security of health information in an electronic environment. Federal and state laws and regulations require specific performance in the acquisition, use, storage, and maintenance of health information. Examines systems and practices. Offered: Sp.

HIHIM 535 Clinical Vocabularies, Terminologies, Classifications, and Mapping (3) Covers clinical terminologies, classifications, and mapping, which provides information on taxonomies and metadata, information objects, and classification theory in organizing information in an electronic system. Includes current initiatives in terminologies and data mapping in electronic health record systems. Offered: S.

HIHIM 540 Community Health Information and Information Exchange (2) Covers community and consumer health informatics associated with health services provides; electronic health records that address internal and external standards; accreditation and regulatory requirements needed to provide quality care; and health information exchange from policy to implementation. Offered: A.

HIHIM 550 Healthcare Data Management - Health Record to Enterprise (2) Covers the conceptualization, design, and management of data initiatives and knowledge needed by the healthcare enterprise. Reviews data integrity principles and guidelines to determine methodology for evaluation development and management of internal and external information requirements. Offered: W.

HIHIM 555 EHR/HI Systems Operations and Improvement (2) Addresses leadership and management of an organization's health information assets that are required as the nation transitions to interoperable health information systems. Offered: W.

HIHIM 556 Environment of Care (2) Explores the current healthcare environment related to healthcare safety issues. Examines an overview of major health and safety challenges and responses; focusing on the impact of the issues in improving health and safety in healthcare and information resources needed. Offered: Sp.

HIHIM 560 Special Topics in Health Informatics (1-3, max. 6) Presents problem solving opportunities on health industry information issues, strategies and unmet challenges. Topics reflect the current state, progress, and future expectations faced by healthcare and health information managers.

HIHIM 598 Enterprise Leadership, Change, and Project Leadership (3) Focuses on applying leadership readiness at the enterprise level; informatics and information governance challenges; research and project management resources; communication management strategies; and the impact of technology from management oversight to health services delivery. Offers an opportunity to practice a key role of leadership: transforming organizational culture by effective implementation of change. Offered: W.

HIHIM 599 Capstone Project (3) Provides a practice-based problem solving experience that draws on health informatics and information management; health industry knowledge; leadership and management strategies; and applies project management skills to design, plan, and implement a management project in healthcare and healthcare related organizations. Offered: S.

Health Services Management

HSMGMT 500 Risk and Insurance Seminar (3) Presents the principles and practices of health insurance and risk. Emphasizes healthcare financing arrangements in the United States, including both private and government-sponsored (public) programs. Discusses comparisons with other developed countries.

HSMGMT 501 Epidemiology/Critical Evidence Appraisal (2-4, max. 4) Basic knowledge about methods used in epidemiology and their application to critical appraisal of clinical, epidemiological, and health administration literature for evidence-based management of healthcare organizations, improvement of delivery of health services, and for creating health policies.

HSMGMT 503 Population Health Management (2) Provides health administration students with an introduction to managing the health of defined populations. Examples

include: the population within the catchment area of a hospital, the members of a health maintenance organization, the persons served by an accountable care organization, and the population employed in an workplace.

HSMGMT 505 Managing Healthcare Organizations (2-4) Introduces healthcare organizations and organizational management concepts. Develops a broad perspective by integrating conceptual, strategic, and systemic frameworks using four knowledge themes; the management role, organizational theory, management economics, and theory and practice of systemic organizational change within overall strategic management and systemic contexts.

HSMGMT 506 Introduction to Clinical Care (2) Introduces the world of clinical care. Discovers through readings, discussion, and direct experience, the people and processes of clinical care and how they relate to healthcare administration.

HSMGMT 507 Group Dynamics and Team Leadership ([1-4]-, max. 4) Focuses on theories and observations of team behaviors and techniques with emphasis on the individual as a team member; introduces team management/leadership models, theories, and skills. Students develop self-awareness, knowledge, and skills associated with building interpersonal relationships. Credit/no-credit only.

HSMGMT 510 Organizational Behavior (3-4) Application of organizational behavior theory to explore the factors that affect behavior, performance, and job satisfaction of people working in organizations. Provides a body of knowledge and skills needed to successfully manage and lead healthcare organizations. Focuses on "best practices" for managing individuals, teams, and organizations.

HSMGMT 513 Seminar in Healthcare Finance (3-4) Focuses on case studies and modern theory in managerial finance relevant to health services. Students prepare group presentations and individual case study analyses of health services finance problems. Builds on accounting and finance principles.

HSMGMT 514 Health Economics (3/4) Uses economic concepts and tools to examine range of issues pertaining to healthcare, delivery of healthcare services. Includes demand analysis, production of health services, expenditure growth, markets for hospital and physician services, externalities. Emphasis on using economics to examine issues and solve problems. Prior economics courses not required.

HSMGMT 515 Advanced Economics - Decision Analysis ([1-3]-, max. 3) Develops skills to become informed consumers of economic evaluations of health programs. Develops skills necessary to conduct economic analyses of public health and health service programs.

HSMGMT 518 Ethical Issues in Health Services (2-3) Presents an introduction to ethical issues that arise in management of health services organizations. Covers clinical and organizational ethics.

HSMGMT 523 Informatics in Healthcare Management (3) Medical informatics concerns the representation, organization, and manipulation of biomedical information and knowledge. Exposes students to a high-level understanding of informatics and its healthcare applications. Discussion of successes and failures in implementing information technology focuses on gaining leadership and management knowledge that embraces informatics.

HSMGMT 531 Systems Modeling Frameworks for Healthcare (3) Focuses on methodologies to support strategic decision making in a systems context, considering the material, patients, providers, information, and resource dependencies of most healthcare organizations. Includes optimization models and basic alternative evaluation methods for the applications of capacity planning, policy investigation, and design and planning decisions. Offered: W.

HSMGMT 532 Quantitative Methods for Health Systems Design and Analysis (3) Focuses on the method and application of operations research in health systems design and analysis. Covers a variety of topics in healthcare manage-

ment and decision making. Healthcare decision making touches areas in resource allocation, scheduling, staffing, capacity planning, cost-effectiveness analysis, and assessment of medical technologies. Offered: W.

HSMGMT 545 Capstone Integrative Seminar ([1-4]-, max. 4) Designed to assist students in the transition from theory to practice. Emphasis on sharpening analytical and intuitive leadership practices through the use of interactive case studies, team building exercises, and field projects. Prerequisite: second-year MHA students.

HSMGMT 550 Medical Practice Quality Measurement and Management (3) Provides an overview of healthcare industry themes regarding cost, access, and quality. Concentrates on definition, measurement, and improvement of quality. Shows how quality measurements and specifications; the concept of value, guidelines, and pathway; and the evidence-based medicine movement interconnect. Utilizes examples of cutting edge programs to apply and promote improvement.

HSMGMT 552 Health Administration and Business Law (4) Studies numerous interrelated legal topics pertinent to healthcare organizations, typically including contracts, medical malpractice, legal and ethical obligations to provide healthcare, privileging, medical decision-making, tax-exemption, antitrust, fraud, and health information management. Encourages discussion of how the law supports or hinders current efforts to improve healthcare delivery systems.

HSMGMT 553 Healthcare Marketing Strategy (2) Provides an understanding of wholesale and retail markets in the healthcare sector. Examines market research and the application of marketing strategies and tactics to support an organization's core strategies. Applies the concepts of market segmentation, targeting, and positioning to decisions about design, distribution, pricing, and promotion of health services.

HSMGMT 554 Entrepreneurship (2) Focuses on developing students' resourcefulness, know how, and decision support skills needed to critically identify, evaluate, and develop new healthcare ventures. Topics include anatomy of startup ventures; new venture creation and innovation, business plan development and assessment, financing, marketing, and growth strategies; and corporate venturing.

HSMGMT 560 Management Practice in Healthcare and Public Health Organizations (1-4, max. 4) Introduction to leadership and management, focusing on effective strategies for creating a productive work environment. Organizational structure and strategy introduced. Case studies and other problem-solving methods, using health services applications, are utilized in order to apply theoretical material. Prerequisite: graduate student.

HSMGMT 562 Strategic Management of Healthcare Organizations (3-5) Management of goals, strategy, and structure in healthcare organizations. Design of external relationships and internal structures, strategy-formulation, decision-making, and change. Integration of professional, social, and organizational values. Theory, student and practitioner experience, and case studies used to enhance repertoire of management approaches and skills. Prerequisite: HSERV 511 and HSMGMT 560 or equivalent.

HSMGMT 563 Personnel Management for Health Professionals ([1-3]-, max. 3) Designed for midcareer health services professionals developing strategies and skills in human resource management. Focuses on policy and practice issues important to handling day-to-day personnel problems-selection, promotion, performance appraisal, discipline, grievances. Prerequisite: registration in Extended MPH degree program or permission of instructor; non-business majors.

HSMGMT 566 Decision Support Models for Health Services (3) Management science and approaches developed as applied to problems in public health. Emphasizes conceptual understanding of processes/application of systematic

and rational approach to managerial problem solving, including cost-benefit, cost effectiveness analysis. Prerequisite: BIOST 502 and BIOST 503, or BIOST 511; registration in Extended MPH degree program; non-business majors.

HSMGMT 567 Clinical Systems Management (3) Introduces the management of clinical systems and their underlying cultures. Focuses on quality improvement, change management, governance, and clinical leadership development of physician-administrator partnerships in complex medical care settings.

HSMGMT 568 Quality Process Management (3-4) Provides a thorough understanding of the main concepts of operations management with a focus on total quality management techniques, along with key integrative frameworks that provide the foundation for successful applications of these approaches, as applied to healthcare organizations.

HSMGMT 570 Quantitative Methods (3-4) Concentrates on fundamental concepts of statistics and their application to healthcare management. Approaches statistics from two different perspectives that benefit leaders in healthcare: that of biostatistics and evidence based medicine, and that of management statistics for process improvement.

HSMGMT 571 Healthcare Financial Management (3) Focuses on the tools and analytic frameworks that healthcare managers use to make prospective forward-looking decisions. Problems worked in-class and assigned as homework to ensure that participants develop competencies and confidence in applying the analytic tools and frameworks. Prerequisite: HSERV 511 and ACCTG 500 or ACCTG 501 or permission of instructor. Offered: W.

HSMGMT 572 Financial Management for Health Professionals (3) Intensive review of basic accounting principles/terminology and an introduction to financial management/managerial accounting, including budgeting for managerial control, planning, cost accounting, financing health programs. Managerial accounting, program costing, rate setting, budget preparation. Prerequisite: BIOST 502 and BIOST 503, or BIOST 511; registration in Extended MPH degree program or permission of instructor; non-business majors.

HSMGMT 574 Financial Management I (3-4) Prepares clinical professionals for participating intelligently in, and contributing to, financial decisions of healthcare organizations. Learn the language and fundamental concepts of accounting and finance, and become comfortable with what is required in formal financial analysis.

HSMGMT 576 Capital Planning (2) Emphasizes preparing clinical executives for managerial and leadership in healthcare organizations. Key concepts include capital cycle, creditworthiness, financial planning, cost of capital, capital structure, and capital allocation.

HSMGMT 577 Environment of Care (2) Addresses the basic issues of the "environment of care." Explores the physical environments in which care is provided to patients, JCAHO standards provide the core structure. Uses real world experiences and examples.

HSMGMT 578 Project Management (2) Introduces need for, concepts of, and tools and techniques used in contemporary project management. Builds upon prior courses and experience in leadership, management, planning, and team development. Focuses on difference between management of ongoing operations and of projects, and the need for a disciplined approach when planning and executing projects.

HSMGMT 579 Accounting for Health Service Managers (3) Emphasis on preparing graduate students for management and leadership roles in their healthcare organizations. Covers financial accounting including the accounting equation, journal entries, and processes of accounting.

HSMGMT 590 Select Topics (1-6, max. 12) By arrangement, students and faculty members develop a program of reading and conference appropriate to the selected topic. Topic chosen is within the special competence of the par-

ticipating faculty member, in the area of health services management.

HSMGMT 592 Health Management Program Seminar (1-6, max. 6)

Reserve Officer Training Corps Programs

Aerospace Studies

104 Clark Hall

The Air Force Reserve Officer Training Corps program (AFROTC) at the UW produces leaders ready to lead in any environment. AFROTC molds students by exposing them to a rigorous training program that grooms each student from a role of followership into a future leader.

UNDERGRADUATE PROGRAM

Detachment 910

114 Clark Hall

Box 353830

(206) 543-2360

afrotc@uw.edu

General Program Requirements

All aerospace studies courses are available to cadets exclusively. Additionally any students may join the AFROTC program as cadets and enroll in the 100- and 200-level general military courses so long as they meet the minimum entrance requirements. Aerospace Studies 100- and 200-level courses count as credit toward graduation. The general military courses are prerequisites to entry into the professional officer courses (300- and 400-level courses) and seeking a commission in the Air Force is on a controlled, selective basis. Contact the Recruiting Flight Commander in the Department of Aerospace studies (AFROTC) for more information.

Commissioning Requirements

Students must successfully complete the AFROTC program and receive an academic degree from the University. Upon program and degree completion, cadets are offered commissions as second lieutenants in the Air Force.

General Military Courses

The 100- and 200-level courses for AFROTC cadets consist of one classroom hour, two hours of leadership laboratory, and two hours of physical fitness per week during the freshman and sophomore years. Uniforms and textbooks are provided. Students may enter the freshman class at the start of autumn, winter, or spring quarter. Sophomore students may enter at the start of autumn or winter quarter and take the freshman- and sophomore-level courses concurrently. A four-week field-training course, normally taken during the summer between the sophomore and junior years, is required for entry into the professional officer courses. Students receive pay and travel costs for field training.

Except for sophomore cadets on AFROTC scholarship, students incur no active-duty service commitment by taking general military courses and may drop the courses at any time within the limits of University course-drop policies.

Professional Officer Courses

Cadets selected for enrollment in professional officer courses are enlisted in the Air Force Reserve and receive a tax-free monthly subsistence stipend. They are furnished texts and uniforms. Junior- and senior-level classes consist

of three hours of academic classes, two hours of leadership-laboratory and two hours of physical fitness per week.

Financial Assistance

The Air Force offers many types of scholarships to college students. AFROTC scholarships pay tuition, certain fees, and textbook reimbursement. In addition, scholarship winners receive a monthly subsistence allowance. Cadets are eligible for one of these scholarships and should contact the Recruiting Flight Commander in the Department of Aerospace Studies (AFROTC), (206) 543-2360 or at afrotc@uw.edu.

Minor

Minor Requirements:

29 credits, to include the following:

1. 24 credits of aerospace studies coursework
2. 5 credits in a foreign language beyond the first-year level
3. Minimum 18 upper-division credits in aerospace studies coursework
4. Minimum 24 credits in residence through the UW
5. Minimum 2.5 grade in each course presented for the minor.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crsct/

A S 101 Foundations of the United States Air Force I (1) Focuses on the basic characteristics of air doctrine; U.S. Air Force mission and organization; functions of United States strategic offensive and defensive, general-purpose, and aerospace support forces; officership/professionalism and an introduction to communicative skills. Additional one-hour leadership laboratory is mandatory for cadets, but not special students. Offered: A.

A S 102 Foundations in the United States Air Force II (1) Focuses on the basic characteristics of air doctrine; U.S. Air Force mission and organization; functions of United States strategic offensive and defensive, general-purpose, and aerospace support forces; officership/professionalism and an introduction to communicative skills. Additional one-hour leadership laboratory is mandatory for cadets, but not special students. Offered: W.

A S 103 Foundations in the United States Air Force III (1) Focuses on the basic characteristics of air doctrine; U.S. Air Force mission and organization; functions of United States strategic offensive and defensive, general-purpose, and aerospace support forces; officership/professionalism and an introduction to communicative skills. Additional one-hour leadership laboratory is mandatory for cadets, but not special students. Offered: Sp.

A S 211 The Evolution of Air and Space Power I (1) Factors contributing to the development of air power from its beginnings to the present, and the evolution of air power concepts and doctrine. History of air power employment in military and nonmilitary operations in support of national objectives. Assessment of communicative skills. Additional one-hour leadership laboratory is mandatory for cadets, but not special students. Prerequisite: either A S 101, A S 102, or A S 103, any of which may be taken concurrently. Offered: A.

A S 212 The Evolution of Air and Space Power II (1) Factors contributing to the development of air power from its beginnings to the present, and the evolution of air power concepts and doctrine. History of air power employment in military and nonmilitary operations in support of national objectives. Assessment of communicative skills. Additional one-hour leadership laboratory is mandatory for cadets,

but not special students. Prerequisite: either A S 101, A S 102, or A S 103, any of which may be taken concurrently. Offered: W.

A S 213 The Evolution of Air and Space Power III (1) Factors contributing to the development of air power from its beginnings to the present, and the evolution of air power concepts and doctrine. History of air power employment in military and nonmilitary operations in support of national objectives. Assessment of communicative skills. Additional one-hour leadership laboratory is mandatory for cadets, but not special students. Prerequisite: either A S 101, A S 102, or A S 103, any of which may be taken concurrently. Offered: Sp.

A S 250 Aerospace Studies Leadership Laboratory (0-1, max. 10) Evaluates the challenges of team leadership in complex contemporary environments. Students apply critical thinking skills using scenarios that emulate real-life Air Force issues and environments. Evaluates Air Force leadership attributes, skills, and activities. Focuses on advanced leadership development. Corequisite: any A S course. Credit/no-credit only. Offered: AWSp.

A S 331 Aerospace Studies 300 (3) Emphasis on basic leadership and management fundamentals, professional knowledge, and communicative skills required of an Air Force officer. Case studies used to examine leadership and management situations. An additional leadership laboratory (mandatory for cadets but not special students) provides leadership experiences, giving students the opportunity to apply learned principles. Prerequisite: A S 213. Offered: A.

A S 332 Aerospace Studies 300 (3) Emphasis on basic leadership and management fundamentals, professional knowledge, and communicative skills required of an Air Force officer. Case studies used to examine leadership and management situations. An additional leadership laboratory (mandatory for cadets but not special students) provides leadership experiences, giving students the opportunity to apply learned principles. Prerequisite: A S 213. Offered: W.

A S 333 Aerospace Studies 300 (3) Emphasis on basic leadership and management fundamentals, professional knowledge, and communicative skills required of an Air Force officer. Case studies used to examine leadership and management situations. An additional leadership laboratory (mandatory for cadets but not special students) provides leadership experiences, giving students the opportunity to apply learned principles. Prerequisite: A S 213. Offered: Sp.

A S 431 Aerospace Studies 400 (3) I&S Needs for national security, evolution of American defense strategy, policy, and organization; methods for managing conflict, alliances and regional security to preserve American interests. Arms control, terrorism, and current military issues; refinement of communicative skills. A one-hour leadership laboratory is also required for cadets, but not special students. Prerequisite: A S 333. Offered: A.

A S 432 Aerospace Studies 400 (3) I&S Needs for national security, evolution of American defense strategy, policy, and organization; methods for managing conflict, alliances and regional security to preserve American interests. Arms control, terrorism, and current military issues; refinement of communicative skills. A one-hour leadership laboratory is also required for cadets, but not special students. Prerequisite: A S 333. Offered: W.

A S 433 Aerospace Studies 400 (3) I&S Needs for national security, evolution of American defense strategy, policy, and organization; methods for managing conflict, alliances and regional security to preserve American interests. Arms control, terrorism, and current military issues; refinement of communicative skills. A one-hour leadership laboratory is also required for cadets, but not special students. Prerequisite: A S 333. Offered: Sp.

Military Science

104 Clark Hall

The ROTC program provides students an opportunity to learn and practice the art of leading people. Recognizing there is a great difference between cognition and volition, the program is structured to give the student practical experience in leading and managing resources.

The Army ROTC (AROTC) program enables the student to learn about the military profession and the role it plays in our democratic system of government. Courses enable such knowledge to be acquired on campus without serving in the military forces.

Army ROTC electives enrich the student's course of study. Such courses also open up an additional career option, enabling the student to earn a commission and to serve in the Army as an officer, or in the Reserves or National Guard while pursuing a civilian career. Officers serve in a wide variety of career paths, including infantry, human resources, aviation, intelligence, automation, and hospital administration.

Army ROTC provides the student membership in a close-knit fraternal organization.

ROTC programs on college campuses ensure that the influences of higher education are transferred into the military services - a mandatory requirement in a democracy.

A minor in military science and leadership is available to any student at the UW. Requirements are shown below.

For information on the programs described below, contact the following:

Enrollment and Scholarship Officer
105 Clark, Box 353820
(206) 543-9010

Traditional Four-Year Program

Open to freshman and sophomore men and women. Academic studies include courses in military history, principles of leadership, techniques of instruction, management and staff procedures, logistics, physical conditioning, and military law. Extracurricular activities include such options as Ranger Company, color guard, training exercises, field trips, and related activities. A non-scholarship student incurs no obligation of any kind during the first two years of the four-year AROTC program.

Placement credit toward completion of AROTC courses may be given for prior ROTC or military training. Veterans routinely receive full credit for the first two years of AROTC and may enter the advanced course when they are academic juniors. All military textbooks and uniform items are furnished without charge. Students in the advanced course receive tax-free monthly subsistence of \$350 per month as an academic junior and \$400 per month as an academic senior. In the advanced course, cadets are required to participate in the leadership-development program, which is a practicum of skills and principles taught during the previous two years. Between their junior and senior years, cadets attend a five-week summer camp during which they receive varied and challenging training and for which they are paid both for the time at camp and for travel expenses to and from the camp location. Upon entering the advanced course, students agree to complete the program, accept a commission upon graduation, and serve a minimum of four years if scholarship (three years if non-scholarship) and be on active-duty commitment. If the cadet chooses to go into the Reserves or National Guard, then he or she serves a minimum of eight years.

Four-Year Scholarship Program

Application to this program should be made while the student is still in high school. Selection of students is made on a nationwide competitive basis. This program may lead to a commission in the Active Army, the Army Reserve, or the Army National Guard. All tuition, a flat rate for books and laboratory expenses, and uniform items, plus monthly tax-free stipends, are provided by the Army. The program requires four years of academic study on campus, as well as a five-week advanced camp training period between the junior and senior years, for which the cadet is paid for both time and travel expense to and from the camp location. Academic studies are identical to those of the traditional four-year program. The student must sign a contract wherein the student agrees to complete this program, along with a chosen academic program, to accept a commission, and to serve on active duty or in the reserve forces after commissioning.

Three-Year Scholarship Program

Open to qualified students already on campus. The scholarship provides financial assistance during the remaining years of the student's enrollment. Each scholarship pays for tuition and a flat rate for books and laboratory expenses and provides tax-free monthly stipends of \$350 for academic juniors and \$400 for academic seniors. All other advantages and obligations are the same as those of the four-year scholarship program.

Two-Year or Lateral Entry Program

Open to qualified undergraduate and graduate students who have at least two years remaining in school and who have completed at least 81 credits. Students may qualify for entrance into the advanced course under this program in two ways.

They may participate as qualified veterans who receive placement credit for the first two years of AROTC. Veterans are also eligible to compete for two- and three-year scholarships while receiving their educational benefits. Members of the Reserves and National Guard may also be eligible to participate in AROTC and receive their commission upon graduation.

Requires attendance at the Leader's Trainers course for five weeks at Fort Knox, Kentucky. Completion of this training also qualifies students for direct entry into the advanced course. While at camp, students receive pay plus travel expenses to and from the camp location, and they may compete for two-year scholarships, provided scholarships are available.

UNDERGRADUATE PROGRAM

Enrollment and Scholarship Officer
105 Clark, Box 353820
(206) 543-9010

The Army ROTC program offers a minor in military science and leadership.

Minor

Minor Requirements

27 credits, to include the following:

1. M SCI 401, M SCI 402, M SCI 403 (9 credits)
2. Additional military science coursework (18 credits)
3. Minimum 18 credits of military science completed at the upper-division level
4. Minimum 18 credits of military science completed in residence through the UW
5. Minimum 2.5 grade in each course presented for the minor

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

M SCI 101 Military Science and Leadership Development (3) Introduction to challenges and competences critical for effective leadership. Examines how critical thinking, goal setting, time management, and stress relate to leadership. Develops knowledge and comprehension of leadership dimensions. Lessons include history and mission of the Army and leadership, personal development, values and ethics, and tactics and techniques discussions. Offered: A.

M SCI 102 Military Science and Introduction to Tactical Leadership (3) Overviews leadership fundamentals of problem solving, listening skills, briefings, providing feedback, and effective writing. Explores dimensions of leadership values, attributes, skills, and actions in the context of practical, hands-on, and interactive exercises. Introduction of effective oral communication. Develops skills in map reading, land navigation, and tactical maneuvering at team levels. Offered: W.

M SCI 103 Military Science and Introduction to Applied Basic Leadership (3) Final introductory series on leadership. Applies leadership fundamentals emphasizing attributes, skills, and actions. Students assess capabilities simultaneously, considering their personal leadership. Lessons apply leadership to military tasks of map reading, navigation, and tactics. Offered: Sp.

M SCI 110 Military Science Leadership Laboratory (0.5, max. 3) Evaluates the challenges of leading teams in complex contemporary environments. Students apply critical thinking skills using challenging scenarios related to small unit operations. Provides feedback on the 16 Army leadership attributes, skills, and actions. Focuses on leadership development. Credits do not count toward graduation. Credit/no-credit only. Offered: AWSp.

M SCI 201 Military Science and Innovative Team Leadership (3) Explores dimensions of innovative tactical leadership strategies and styles. Practices personal motivation and team building through planning, preparing, and executing group exercises. Develops knowledge of leadership values and attributes through an understanding of Army leadership examples. Lessons include leadership, personal development, values and ethics, officership, and tactics and techniques. Offered: A.

M SCI 202 Military Science and Foundations of Tactical Leadership (3) Explores creative and innovative tactical leadership strategies and styles by examining team dynamics and leadership theories. Examines challenges of leading teams in complex contemporary environments. Practical exercises focus on dimensions of terrain analysis, patrolling, operation orders, and cultural awareness. Lessons include fundamentals of leadership, personal development, and tactics and techniques. Offered: W.

M SCI 203 Military Science and Transformational Leadership (3) Continues study of the theoretical basis of Army leadership and framework and dynamics of transformational leadership in the context of military operations. Develops greater self-awareness by assessing leadership styles and practices oral and written communication skills. Enables progress to applied and advanced tactical leadership study. Offered: Sp.

M SCI 301 Military Science and Tactical Leadership (3) Studies, practices, and evaluates adaptive leadership skills. Develops self-awareness and critical thinking skills using challenging scenarios related to small unit operations. Analyzes and evaluates leadership values, attributes, skills, and actions. Lessons focuses on leadership, land navigation, oral and written presentations, tactics, and physical fitness. Prerequisite: M SCI 101; M SCI 102;

M SCI 103; M SCI 201; M SCI 202; M SCI 203; may not be repeated if received grade of 2.0 or higher. Offered: A.

M SCI 302 Military Science and Applied Leadership (3) Continues adaptive approach to leadership applying situations necessary to build skills required in complex scenarios. Develops proficiency in evaluating, decision-making, persuading, and motivating peers through practical exercises. Students evaluate individual leadership values, attributes, skills, and actions, and receive specific feedback on their leadership abilities based on written and oral presentations. Prerequisite: M SCI 101; M SCI 102; M SCI 103; M SCI 201; M SCI 202; M SCI 203; may not be repeated if received grade of 2.0 or higher. Offered: W.

M SCI 303 Military Science and Advanced Tactical Leadership (3) Finalizes M SCI 301 and M SCI 302 leadership skills that are necessary to successfully lead others while solving complex problems. Explores, evaluates, and develops decision-making skills required in contemporary environments. Reviews critical aspects of combat, specifically stability and support operations. Provides specific leadership feedback and prepares for advanced leadership and management. Prerequisite: M SCI 101; M SCI 102; M SCI 103; M SCI 201; M SCI 202; M SCI 203; may not be repeated if received grade of 2.0 or higher. Offered: AWSp.

M SCI 305 Practicum-Techniques of Military Instructions (1-3, max. 3) Analysis, review of techniques used in military training and instructions. Students plan, rehearse, deliver, provide written critique on block of military instruction from the Military Qualification Skills Manual. Prerequisite: M SCI 101; M SCI 102; M SCI 103; M SCI 201; M SCI 202; M SCI 203; may not be repeated if received grade of 2.0 or higher.

M SCI 310 Military Science Advanced Leadership Laboratory (1, max. 6) Evaluates the challenges of leading teams in complex contemporary environments. Students apply critical thinking skills using challenging scenarios related to small unit operations. Provides feedback on the 16 Army leadership attributes, skills, and actions. Focuses on advanced leadership development. Prerequisite: M SCI 110. Offered: AWSp.

M SCI 401 Military Science and Developmental Leadership (3) I&S Develops proficiency in planning, executing, and assessing complex problems, functioning as a staff member, and providing leadership-performance feedback. Explores situational opportunities assessing values, risk, and ethical decisions. Performance measured by abilities to give and receive systematic, specified feedback on 16 leadership attributes, skills, and actions focusing on advanced leadership development. Prerequisite: M SCI 301; M SCI 302. Offered: A.

M SCI 402 Military Science IV: Advanced (3) I&S Explores dynamics of leading in complex situations of contemporary environments. Examines differences in customs and courtesies, military law, principles of war, and rules of engagement. Lessons review aspects of interacting with nongovernmental organizations, civilians, and host nation support with case studies examining complex ethical and practical demands of leadership. Prerequisite: M SCI 301; M SCI 302; M SCI 303; may not be repeated if received grade of 2.0 or higher. Offered: W.

M SCI 403 Military Science and Advanced Leadership (3) I&S Completes fundamental learning of advanced leadership attributes, skills, and actions that effectively prepare students for careers in military or civilian leadership. Examines Army modularity, unit organization, joint operations, and the role of junior leaders. Focuses on case studies, situational exercises, student presentations, and battlefield analysis to develop insights on leadership. Prerequisite: M SCI 301; M SCI 302; M SCI 303; may not be repeated if received grade of 2.0 or higher. Offered: Sp.

Naval Science

202 Clark

Naval Science offers University students an opportunity to engage in study that leads to a commission in the U.S. Navy or Marine Corps while working toward a baccalaureate degree. The Naval Reserve Officer Training Corps (NROTC) Unit functions in conjunction with Naval Science. An NROTC student may select an academic major within certain limitations (e.g., some programs that normally lead to immediate graduate education, such as architecture, are not consistent with the mission of the NROTC program).

In addition to their University curricula, NROTC students take naval science courses in history and customs, naval engineering/weapons systems, navigation, naval operations, and leadership/management. In addition, each student must attend one naval science laboratory session and one physical training session per week. During the summer, students may have a four-to-six-week training cruise to put into practice their earlier classroom training.

Two NROTC programs are offered, as outlined below. In addition, any University student may take a naval science course without enrolling in the NROTC program, or may complete a minor in naval science, requirements for which are shown below.

Navy-Marine Scholarship Program

Each year students are accepted for scholarship status in the four-year, three-year alternate, and two-year NROTC scholarship programs. Eligibility for the three- and four-year programs is based upon nationwide competition and selection by a central selection committee. Application must be made by December 1 of the academic year preceding appointment as a midshipman. Those selected are provided educational benefits, including subsidy by the Navy of all tuition, fees, and uniforms. In addition, there is a textbook stipend each quarter and a monthly subsistence pay which ranges between \$250 and \$400.

For the two-year scholarship program, applications from current sophomores, or juniors enrolled in five-year programs of study, must be received by March. Those chosen by a central selection committee attend a six-week course of instruction at the Naval Science Institute (NSI) at Newport, Rhode Island, during the summer prior to their junior year. Successful completion of NSI instruction qualifies these students for enrollment in the advanced courses in the NROTC program. All scholarship students are appointed as midshipmen, USNR-R, and upon graduation are commissioned as officers in the Navy or Marine Corps Reserve, after which they serve on active duty for a minimum of four years.

Navy-Marine College Program

Each year, men and women are accepted for four- and two-year non-scholarship college programs. Applications for the two-year program are accepted from current sophomores in community colleges or four-year colleges and must be received prior to March of their sophomore year (or third year, if in a five-year program).

Those students selected for the two-year program attend a six-week course of instruction at NSI during the summer prior to their junior year. Successful completion of NSI instruction qualifies students for enrollment in the advanced course in the NROTC program. Students in the NROTC college program pay their own college expenses but receive monthly subsistence pay during their junior and senior years. The Navy furnishes all uniforms and textbooks used in naval science courses.

All college-program students are eligible for a scholarship after completing one academic term, with scholarship awards based on academic grades and participation with-

in the midshipman battalion. The two-year college-program students also may win a scholarship for superior performance at NSI. Upon graduation, college-program students are commissioned in the Navy Reserve or Marine Corps Reserve and serve on active duty for three years.

UNDERGRADUATE PROGRAM

Adviser

202 Clark, Box 353840

(206) 543-0170

nrotc@uw.edu

Minor

Minor Requirements

25 credits, to include the following:

1. N SCI 201; N SCI 402 (6 credits)
2. Additional naval science coursework (19 credits)
3. Minimum 12 naval science credits completed at the upper-division level
4. Minimum 12 naval science credits completed in residence through the UW
5. Minimum 2.5 grade in each course presented for the minor

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

N SCI 101 The Naval Service (3) General introduction to the U.S. Navy and Marine Corps, with emphasis on organization, missions, roles, tasks, assets, and operations. Offered: A.

N SCI 102 History of U.S. Sea Power I (3) I&S A study of the U.S. Navy and Marine Corps as they fit into the history of the United States, from the American Revolution to the outbreak of World War II. Prerequisite: N SCI 101. Offered: W.

N SCI 103 History of U.S. Sea Power II (3) I&S A study of the U.S. Navy and Marine Corps as they fit into the history of the United States, from World War II to the present day. Prerequisite: N SCI 102. Offered: Sp.

N SCI 110 Naval Science Laboratory (*, max. 12) Evaluates the challenges of leading teams in complex contemporary environments. Topics vary. Required each quarter for NROTC students. Credit/no-credit only. Offered: AWSp.

N SCI 201 Naval Leadership and Management (3) I&S Introduction of the theory and techniques of naval leadership based on principles of behavioral science pertinent to understanding individual and group behavior of adults. Introduces the management process and the relationship of management functions to leadership. Stresses acceptance of a traditional deep sense of moral responsibility on the part of the aspiring leader. Prerequisite: minimum 2.0 grade in N SCI 101. Offered: A.

N SCI 202 Navigation I (3) NW The science and practice of maritime coastal navigation, including visual fixing, dead reckoning, and piloting methods. Computation of tides and currents and nautical rules of the road. Prerequisite: N SCI 101. Offered: W.

N SCI 203 Navigation II (3) NW Basic theory and practice of celestial and electronic navigation. Relative motion theory and contact coordination practice in a multiple ship environment. Prerequisite: N SCI 202. Offered: Sp.

N SCI 301 Naval Ship Systems I (3) Study of fundamental principles of energy transfer and thermodynamics. An introduction to nuclear propulsion, gas turbines, and auxiliary power systems. Offered: A.

N SCI 302 Naval Ship Systems II (3) Study of ship characteristics, ship design, hydrodynamic forces, stability, damage control, and shipboard electrical systems. Includes introduction to engineering documentation, electrical safety, preventative maintenance, and personnel qualifications. Prerequisite: N SCI 301. Offered: W.

N SCI 303 Naval Weapon Systems (3) Study of fundamental principles of sensor, tracking, weapon delivery subsystems, and current naval weapons. Includes techniques of linear analysis of ballistics and weapons, and dynamics of basic components of weapon-control systems. Prerequisite: N SCI 302. Offered: Sp.

N SCI 321 Evolution of Warfare I (3) I&S Focuses on critical thinking on how and why warfare has changed. Explores how warfare and technology have evolved over time, their relationship, and how innovations promulgate. Topics include maneuver warfare, fourth generational warfare, and various military strategy strategist theories. Designed for future Marine Corps Officers, but open to all students.

N SCI 323 USMC Leadership and Administration of Justice I (3) Concepts, objectives, characteristic qualities, and practical techniques of leadership as exercised by the Marine Corps officer. Emphasizes leadership and management role of the junior officer in the Fleet Marine Forces. Intensive physical activities and outdoor projects to test an individual's physical and mental endurance. Prerequisite: N SCI 110; N SCI 421. Offered: Sp.

N SCI 401 Naval Operations (3) Introduction to naval operations, the employment of naval forces, naval tactics, formulation of operations plans and orders, employment of detection equipment, and meteorology. Prerequisite: N SCI 101. Offered: A.

N SCI 402 Naval Leadership and Ethics (3) I&S Study of leadership and ethics within a military context using applicable case studies. Examines the Law of Armed Conflict and Code of Conduct; the importance of integrity, moral courage, and ethical behavior to effective leadership; and the interrelationship between authority, responsibility, and accountability. Offered: W.

N SCI 403 Naval Organization and Management (3) Study of organization, systems, and techniques employed in the Navy for management of its human, material, and financial resources. Some work relates to the administration of discipline in the Navy under the Uniform Code of Military Justice. Emphasis on the leadership and management role of the junior officer in the fleet. Prerequisite: minimum 2.0 grade in N SCI 402. Offered: Sp.

N SCI 421 Amphibious Warfare (3) I&S Provides basic knowledge of evolution of amphibious warfare from pre-modern era to present. Strategic, operational, and tactical considerations in planning specific operations and amphibious landings. Prerequisite: either N SCI 321 or minimum two POL S or JSIS courses. Offered: A, even years.

School of Social Work

Dean

Edwina Uehara

210 Social Work/Speech and Hearing Sciences

The School of Social Work offers two professional programs, one at the undergraduate level and one at the graduate level, as well as a PhD program. The Bachelor of Arts in Social Welfare (BASW) program prepares students for entry-level generalist practice. The graduate professional program prepares students for advanced practice within a field of concentration; students earn a Master of Social Work degree. Both the BASW and MSW programs are accredited by the Council on Social Work Education. The School also offers a Doctor of Philosophy degree in social welfare that prepares students for careers in research and education. Consistent with University policy, no credit is granted on the basis of life experience or previous employment. All three programs are housed in the Social Work/Speech and Hearing Sciences Building, 4101 Fifteenth Avenue Northeast, Seattle, WA 98105-6299.

In addition, the School offers two concurrent degree programs – one with the School of Public Health leading to the MSW and MPH degrees, and a second with the Evans School of Public Affairs, leading to MSW and MPA degrees.

UNDERGRADUATE PROGRAM

Adviser

23D Social Work, Box 354900

(206) 543-8617

sswadm@uw.edu

The School of Social Work offers the following program of study

- The Bachelor of Arts degree with a major in social welfare

The program includes upper-division courses in social welfare, with prerequisites in human biology, economics, psychology, statistics, and sociology. Social welfare courses include content on social welfare history, policy and services, human behavior and the social environment, social welfare research, and cultural diversity. These academic courses prepare students for the senior year three-quarter practicum experience, which involves a total of 480 hours of direct social services under the supervision of a practicum instructor approved by the School.

Bachelor of Arts Program

Suggested First- and Second-Year College Courses: SOC WF 101, SOC WF 200; SOC WF 201; prerequisites in psychology, sociology, economics/political science, and human biology (see below); also, courses in American ethnic studies, sociology, psychology, and gender, women, and sexuality studies.

Department Admission Requirements

Pathways for admission to the social welfare major:

1. Approximately 36 juniors are admitted each year. Admission, which is for autumn quarter only, is competitive and completion of requirements listed below does not guarantee acceptance. April 1 is the application deadline. To be considered for admission, applicants must meet the following criteria by the time they begin classes in the social welfare program:
 - a. Minimum 65 credits completed

- b. Five prerequisite courses, four of which must be completed prior to beginning the program in autumn (minimum 2.0 grade required in each). Courses in the areas of psychology, sociology, economics/political science, and human biology must be completed before beginning the required SOC WF courses. An introductory statistics class may be taken as late as spring quarter of the junior year, but is a required prerequisite of senior-year courses and is recommended prior to admission. See for list of acceptable courses and more information.

- c. A minimum 2.00 cumulative GPA

- d. Have some paid or volunteer social service experience

- e. Completed application, admission essay, resume, and copies of college transcripts

2. Approximately eight freshmen and sophomores are admitted through early admission. Applicants may apply either in spring quarter of their freshman year or autumn quarter of their sophomore year. Application deadlines are April 15 and October 31. Applicants must meet the following criteria:

- a. Minimum 30 credits completed

- b. Completion of or enrollment in at least one of five prerequisite courses, three more of which must be completed prior to beginning the program degree requirements in autumn of the junior year (minimum 2.0 grade required in each). Courses in psychology, sociology, economics/political science, and human biology must all be completed prior to beginning required SOC WF courses. An introductory statistics class may be taken as late as spring quarter of the junior year, but is a required prerequisite of senior-year courses and is recommended prior to admission. See School website for list of acceptable courses and more information.

- c. Minimum 3.00 cumulative GPA

- d. Fifty community service/student leadership hours in college and high school

- e. Completed application, admission essay, resume, personal disclosure statement, and official copies of all college transcripts

- f. One letter of recommendation

- g. Preference given to students who have completed a social welfare premajor offering (see School website for more information)

A group interview with the program director and faculty/staff is scheduled after completed applications are submitted.

Application forms and a detailed description of the social welfare major are available at the School's website, socialwork.uw.edu/. A student may discuss the program in person by contacting the Director of Admissions, (206) 543-5676, sswadm@uw.edu. Students accepted to the major complete a change-of-college form and transfer their academic file to the School's Student Services Office. Students not accepted may contact the Director of Admissions to discuss alternatives to the social welfare major, or the appeal process.

Major Requirements

67 credits as follows:

1. Core Courses (2.0 minimum grade required in each course): SOC WF 200; SOC WF 310; SOC WF 311; SOC WF 312; SOC WF 315; SOC WF 320; SOC WF 390; SOC WF 402; SOC WF 404; SOC WF 405; SOC WF 410; SOC WF 415; SOC WF 460 or SOC WF 442 or SOC WF 443; SOC WF 465; and SOC WF 435
2. 2.00 cumulative UW GPA
3. 2.50 cumulative GPA in SOC WF required courses

Continuation Policy

All students must make satisfactory academic progress in the major and meet outlined standards of professional behavior. Failure to do so may result in probation or referral to the student review committee, either of which could lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the department website.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The BASW program produces beginning-level social work practitioners and is accredited by the Council on Social Work Education. Students become generalist social work professionals able to work with individuals, families, groups, communities, and organizations in enhancing the health, well being, and empowerment of disadvantaged communities across the lifespan. Graduates may pursue social work practice jobs, or graduate education in social work, or a range of other fields (e.g., law, medicine, public policy, international development). Students receive an interdisciplinary liberal arts education, drawing on a range of social science courses which prepare them to promote human welfare and deal with complex social problems. Students are involved in both academic coursework (gaining intellectual knowledge and critical thinking skills) and a field placement experience ("lived" or "on the ground" experience).

The following outcomes define the BASW program:

- a. Preparation of entry-level baccalaureate social workers for generalist practice in a multicultural context.
- b. Education and training of generalist social workers who are informed, engaged, and responsive practitioners, able to understand and take action in enhancing human welfare and in promoting social and economic justice.
- c. Education of students within the context of an interdisciplinary liberal arts education, to foster a comparative and critical examination of social welfare and social work through the study of its history, policies, research, and practice interventions.
- d. Preparation for graduate education.

In addition, the School of Social Work houses a number of centers and projects. For more information on these research activities, visit socialwork.uw.edu/research/research-centers.

- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Contact the adviser for information.
- *Department Scholarships:* A limited number of financial-aid opportunities are available to students. Applicants are urged to apply for assistance through the Office of Student Financial Aid by February 15. Completion of the Free Application for Federal Student Aid (FAFSA) is required for consideration for any departmental funding. Inquiries may be directed to the chair of the scholarship committee, School of Social Work.
- *Student Organizations/Associations:* Organization of Student Social Workers (OSSW)

GRADUATE PROGRAM

Graduate Program Coordinator

Box 354900

(206) 543-8617

sswadm@uw.edu

Master of Social Work

The School of Social Work offers a Master of Social Work degree with three options: a two-year full-time program; a one-year advanced-standing program for qualified students with a degree in social work/social welfare from a Council on Social Work Education accredited undergraduate program; and a three-year part-time extended degree program.

All program options prepare students for advanced professional practice with a culturally diverse range of at-risk populations in publicly funded social services. The curriculum encompasses two distinct but interconnected areas: the beginning content or professional foundation, and opportunities for advanced content in areas of policy, services, and methods.

The professional foundation provides instruction in the basic knowledge and skills required for effective, generalist social work practice, as well as socialization to the profession, its value orientation, ethics, and history.

The advanced curriculum provides in-depth knowledge and skills needed for advanced practice in the social work profession. The advanced curriculum is being revised. Check the School's website, socialwork.uw.edu for current information.

Admission Requirements

Formal admission to the Graduate School as well as to the School of Social Work. Bachelor's degree, strong academic background, and social-service experience. Official transcripts from all colleges and universities attended, references, application forms, résumé, and an admission essay to be considered for autumn-quarter entry. January 15 is the closing date for receipt of applications and materials. Admission is competitive and selection is based on a review of the applicant's submitted materials. Current application materials can be obtained from the School's Admissions Office website at socialwork.uw.edu/admissions/.

Degree Requirements

Minimum 46 credits (advanced standing program); 75 credits (day and extended degree programs), as follows:

1. Completion of required professional foundation and advanced curriculum credits and demonstrated competence in both academic and field practicum work.
2. *Human Biology Requirements:* BIOL 100, BIOL 101, BIOL 118, BIOL 161, NUTR 300, or GENOME 261 (or equivalent), or SSW Continuing Education course "Human Biology" taken within 10 years of admission to the MSW program. Students must complete the requirement prior to beginning the advanced curriculum (including practicum). Credit may not be applied to the MSW degree. Courses in nutrition, psychobiology of women, and biology of aging also fulfill this requirement.
3. *Basic Statistics Requirement:* An introductory course in statistics (any discipline) is a prerequisite for SOC W 505/SOC W 506.
4. *Professional Foundation Courses Required for the Day and Extended Degree Program:* SOC W 500, SOC W 501, SOC W 504, SOC W 505, SOC W 506, SOC W 510, SOC W 511, SOC W 512, SOC W 513, SOC W 523, 3 credits of electives, SOC W 524. All foundation courses must be completed before beginning the advanced curriculum.

5. *Advanced Curriculum for the MSW Day Program:* Specialization in an advanced methods area or field of practice. Current areas of concentration include policy and administrative practice; health and mental health practice; community-centered integrative practice; practice with children, youth, and families; and multigenerational practice. Students enter the second year with an individualized learning plan (developed by winter quarter of their foundation year) that sets out a coherent program of advanced study. Identified in the learning plan is a policy/services course, an advanced methods area, an advanced field practicum, and proposed choices for methods and elective courses that support the student's overall area of concentration.

Programs of study vary slightly by concentration, but a typical program of study includes:

- a. One policy/services course (3 credits), consistent with the student's second year specialization
 - b. Two advanced methods (6 credits) in the student's primary method area or across methods with the approval of the faculty adviser and practicum coordinator
 - c. Elective course offerings (9 credits) to include courses related to the policy/services areas, and advanced HBSE and theory courses, with the primary focus on development of knowledge and skills in intervention. One elective course from outside the School. Elective courses range from 1 to 3 credits.
 - d. Advanced practicum (SOC W 525, 18 credits) aligns with the student's policy/services course and with the student's primary intervention method area.
6. *Advanced Curriculum for the MSW Extended Degree Program:* Students select one of two specializations within the Interpersonal/Direct Social Work Practice concentration: Integrative Health-Mental Health Advanced Practice, or Multigenerational Practice with Children, Families, and Elders. Advanced curriculum consists of policy/services course, a two-quarter advanced practice methods sequence, SOC W 571, 6 credits of electives, and a 720-hour advanced practicum.
 7. *MSW Electives:* Courses may be selected from curriculum offerings related to particular fields of practice, intervention theories, intervention modalities, social problems, populations, and research methods. Students may take advanced methods courses in areas other than the student's primary methods area and relevant courses in other graduate programs and professional schools of the University. Three credits of external coursework may be included.

Financial Aid

A limited number of financial-aid opportunities are available. Applicants to the MSW program are urged to apply for assistance through the Office of Student Financial Aid by February 15. Completion of the Free Application for Federal Student Aid (FAFSA) is required for consideration for any departmental funding. Departmental funding is limited and typically requires a department-specific application be submitted by April 1. Inquiries may be directed to the Admissions Office, School of Social Work. Information on available tuition awards may also be reviewed on the Social Work admissions website, socialwork.uw.edu/admissions.

Master of Social Work/Master of Public Health Concurrent Degrees

Concurrent degrees prepare professionals who function at the interface of both fields in practice, research, planning, administration, and policy development. Students develop (1) competence in social work practice in community health; (2) understanding of the organization and functioning of the health and social service delivery systems; and (3) basic analytical skills necessary to conduct research and to perform competently in a variety of public health

social work roles. Students also have an opportunity for in-depth study of particular issues related to their special interests and career goals.

Application

Students who matriculate into the full time program in either Social Work or Public Health are eligible. Students admitted to Social Work with advanced standing should apply for both programs simultaneously. Students in the part-time evening degree program in either Social Work or Public Health are not eligible for the program.

1. Students must apply to and be accepted by both schools.
2. Students are strongly encouraged to complete up to one year of studies in Social Work before entering the Public Health program. Applications for entry are due in both schools by January 15. Typically students apply to Social Work in January and enter the MSW program in September. They then apply to Public Health the following January and begin the MPH program the next September. Staggered entry permits students to complete all requirements of both degrees within three years.

Degree Requirements

115-125 credits (depending on number of electives taken)

1. Two separate sets of at least 36 credits each
2. At least 18 numerically graded credits for each degree in courses numbered 500 through 599. All required courses in the MPH program must be taken for a grade.
3. Up to 12 credits taken in one school may be counted toward the other school's total credit requirements, if approved by both programs. Electives for each department can be fulfilled by taking the required courses of the other department.
4. The MPH requires a thesis.

Doctor of Philosophy

The PhD program in social welfare prepares students to contribute to the advancement of knowledge and practice in the field of social welfare and the profession of social work for the promotion of social justice. Students acquire both the substantive and methodological competence to contribute theoretical formulations and empirical research that inform effective social work practice and advance scholarship in social welfare.

After the first year of required courses, each student's program of study is individually designed and focuses on well-defined substantive and interventive areas of research relevant to the field of social welfare. In the basic core of required courses, which includes teaching and research practice, students have an opportunity to pursue their particular interests with faculty members in the School of Social Work and in other schools and departments.

During the first two years, students define and develop the specialized areas that are the focus of their general examination and, typically, their subsequent dissertation research. Selected areas must have clear significance for the development of practice, programs, or policies in social work and social welfare.

The general examination for advancement to candidacy generally occurs at the end of the second year or during the third year. After advancement to candidacy, students devote themselves full time to completion of their dissertation research. The last step before the degree is the final examination, defense of the dissertation. Students are strongly encouraged to remain in residence at the University until the dissertation is accepted. The PhD program takes approximately four years, although academic excellence in learning and performance is always the first criterion for degree progress.

Admission Requirements

Admission is highly selective and students are admitted for autumn-quarter entry only. Applicants must have a master's degree in social work or a closely related field.

The Council on Social Work Education requires that faculty who teach practice courses in accredited programs have two years of supervised practice experience. Thus, obtaining such experience is highly important for those who seek academic positions following graduation.

Applicants selected for admission are those whose scholastic achievements, previous experience, and aptitude for social welfare research, scholarship, and teaching indicate the greatest promise for achieving the objectives of the program. In addition, an effort is made to maintain a balanced student group reflecting the range of concerns in social welfare and of faculty resources. The deadline for receipt of admission material is December 15. For more information, call (206) 685-1680, or email phdmhr@uw.edu.

Degree Requirements

90 credits minimum, to include:

1. **Required Courses:** Must include content on diverse populations, including the disadvantaged and oppressed. Includes content on people of color, women, gay men and lesbians, and persons with disabilities. Specific type or nature of the content (e.g., readings, exemplars, exercises) and how it is introduced and integrated likely differs across courses. In all cases, content on diversity must be in accord with course objectives and be visibly present in the course syllabus.

All required coursework (with the exception of 800-level tutorials) must be completed before or during the quarter in which the oral section of the general examination takes place.

Courses required must be taken on a graded basis unless offered credit/no-credit only (i.e., they cannot be taken on a satisfactory/not-satisfactory basis).

- a. Introduction to Advanced Research Methods and Design. Two quarters during first year.
- b. Fundamentals of Statistics. Two quarters during first year through other departments (primarily Sociology or Biostatistics).
- c. Research Issues and Priorities in Social Welfare. Two quarters during first year.
- d. Social Welfare Policy. Two quarters during first year (contemporary policy and international and global policy).
- e. Research Practicum. Two quarters; to be completed by the end of second year (credit/no-credit only).
- f. Teaching Practicum. One quarter; to be taken after successful completion of first year (credit/no-credit only).
- g. Career Planning Seminar. One-credit seminar offered quarterly (credit/no-credit only). Focus is on professional development issues and skills with emphasis on academic and research careers.
- h. Teaching Preparation. One quarter in the second year.
- i. Minimum two (3+ credit) courses in advanced graduate research methods (typically 500-level courses offered in other departments) relevant to the student's anticipated research in a substantive or interventive area. Coursework beyond the minimum is encouraged.
- j. Minimum two (3+ credit) graduate social science theory courses (500 level or above), designed to provide strong theoretical foundations. Students often use these courses to develop a "minor" in one of the social sciences. Offered in the College of Arts and Sciences or one of the professional schools, they are

related to the substantive or interventive content of the student's program. Coursework beyond the minimum is encouraged for greater depth of interdisciplinary theoretical training.

- k. Dissertation Tutorials (SOC WL 800). Taken after the student has successfully completed the oral general examination and has been advanced to candidacy for the PhD. Students must complete a total of 27 credits over at least three quarters to satisfy the Graduate School requirement
2. **Elective Courses in the School of Social Work**
 - a. Qualitative Methods in Social Work Research. One or two quarters, offered alternate years.
 - b. Analytical Perspectives on Social Welfare Policy. One quarter, offered annually.
 - c. Advanced Topics in Data Analysis. One quarter, offered annually, covering advanced quantitative methods.
 - d. Social Movements and Participatory Action Research Methods. One quarter, offered alternate years.
 - e. Psychosocial Scale Construction and Measurement. One quarter, offered alternate years.
 - f. Interdisciplinary Prevention Science: Children and Adolescents. Overview of developmental perspective examining factors that promote or inhibit health development at different stages and during transitions (focus on birth through age 21), 3-credit course (credit/no-credit only).
 - g. Promoting Well-Being among At-Risk Groups. Guidance for Health Promotion/Prevention Research.
3. **Additional Course Expectations:** Students may take tutorials (SOC WL 600) with faculty members while completing advanced coursework and writing the integrative paper (prior to the oral general examination). These tutorials should include one or more written products. Students are also encouraged to take additional courses that bear on their substantive areas of interest. Courses may be taken in any department or school of the University but should ordinarily be at the 500 level or above.
4. **Prevention Research Training Program Courses:** (Trainee requirements in addition to all PhD program courses)
 - a. *Seminar in Prevention Science.* One-credit seminars taken autumn, winter, and spring quarters each year of the traineeship. Credit/no-credit only.
 - b. *Promoting Well-Being among At-Risk Groups:* Interdisciplinary Guidance for Health Promotion/Prevention Research. One quarter, 3 credits, introduction to prevention research.
 - c. Two additional graduate level (500+) courses, one social science theory and one research methods, related to the prevention research area of study.

Financial Aid

The School of Social Work ensures that all students have some means of financial support during the nine-month school year for the first three years in the program and is frequently able to continue support beyond this point. In each of the first three years, the PhD program director assists students in obtaining funding from the School, other UW sources, or external federal and private granting agencies. Each year, awards of stipends, fellowships, and research and teaching assistantships are made on the basis of resources available and match with areas of student interest. An award of a particular stipend or assistantship in one academic year does not carry a commitment for that same award in another year because both the grant situation and the applicant pool change. Advanced teaching and research positions are available on a competitive basis. Students are encouraged to begin their efforts to secure dissertation research support early and to stay in

communication with the PhD program directors and associate deans, who oversee assistantship assignments in consultation with the School administration.

COURSE DESCRIPTIONS

See page 5 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the online course catalog at www.uw.edu/students/crscat/

SOC W 500 Intellectual and Historical Foundations of Professional Social Work Practice (3) Intellectual, historical, and ethical foundations of the social work profession. Engagement with crucial aspects of the profession's history; contemporary issues, problematics, and directions; and key concepts and theoretical frameworks. Students develop personal, professional, and intellectual foundations for practicing social work built on the central values of plurality and social justice.

SOC W 501 Poverty and Inequality (3) Analysis of poverty and inequality in United States. Analytic and descriptive focus on measurement, processes of production and perpetuation, and public policy responses. Examines causes of poverty, the role of policy, and socioeconomic dimensions of stratification, including race, ethnicity, class, gender, immigration status, disability, age, sexual orientation, and family structure.

SOC W 504 Social Work for Social Justice: Developing a Personal-Professional Stance (3) Focuses on personal and professional development toward social work practice for social justice. Employs critically self-reflective, experiential, and dialogic learning processes to engage students to explore personal meaning systems and narratives in the context of professional values of social justice, multiculturalism, empowerment, and globalization.

SOC W 505 Foundations of Social Welfare Research (3) *Almgren, Balassone, Erera, Roffman* Overview of research process/methods in social work, with focus on consuming and performing practice-related research and evaluating one's own practice. Emphasis on critical understanding of empirical literature, development of useful and appropriate questions about social work practice, and strategies and techniques for doing research and applying findings to practice. Offered: Sp.

SOC W 506 Social Welfare Research and Evaluation (3) Second of a two-quarter research sequence. Introduces a range of methods for informing evidenced-based social work practice. Emphasizes critical appraisal of the literature, development of research questions, and strategies and techniques for conducting practice-relevant research, including data collection and analysis. Prerequisite: minimum 2.5 grade in SOC W 505.

SOC W 507 Advanced Standing Social Welfare Research and Evaluation (5) Introduces a range of methods for informing evidence-based social work practice. Emphasizes critical appraisal of the literature, development of research questions, and strategies and technique for conducting practice-relevant research, including data collection and analysis. Prerequisite: advanced standing students.

SOC W 510 Practice I: Introduction to Social Work Practice (3) Foundation knowledge and skills for direct practice with individuals, families, and groups. Assists students toward mastery of interviewing and relationship building skills and knowledge of cross-cultural communication and practice issues and of social work values and ethics. Provides opportunity to develop beginning level skills in assessment. Offered: ASP.

SOC W 511 Practice II: Intermediate Direct Service Practice (3) Foundation knowledge and skills for direct practice with individuals, families, and groups. Course assists students toward mastery in assessment, development of treatment plans based on theory and assessment information, goalsetting skills, and selection of appropriate interventions. Offered: AW.

SOC W 512 Practice III: Organizational Practice (3) Focuses on ways in which management activities contribute to service effectiveness for clients and quality of conditions for staff. Various managerial roles, functions, and skills examined. Impact of agency structure, culture, and mission on staff, clients, and organizational outcomes discussed with emphasis on ways social work managers influence change. Offered: W.

SOC W 513 Practice IV: Community Change Practice (3) Provides frame of reference and skills for community-based social work practice. Theories of social change are examined with examples drawn from community organizing and policy advocacy. Offered: Sp.

SOC W 516 Research Base for Prevention Science (3) Introduces the transdisciplinary field of prevention science; enhances understanding of the developmental epidemiology of risk, protection and outcome and how prevention interventions are conceptualized and evaluated; critiques research on preventive interventions and practice; and outlines the role of prevention science in advancing health and well-being over the life course.

SOC W 517 Promoting Individual, Family, School, and Community Risk Prevention (3) Covers existing evidence-based practices in prevention science that have demonstrated effects on reducing risks and promoting positive development in youth. Emphasizes practice skills, topic include promotion of healthy development in childhood/adolescence; prevention of child abuse and neglect, early pregnancy, violence and delinquency, substance abuse, school misbehavior, and mental health disorders.

SOC W 518 Macro Practice in Health and Prevention (3) Students engage in the translation of research, advocacy, and the sustainability and dissemination of prevention initiatives and programs. Includes skill development in policy analysis, community organizing, and media/legislative advocacy. Covers current issues in prevention, the policy context surrounding them, and skills to propel prevention forward as a priority in or society.

SOC W 519 Policy/Services: Health/Mental Health (3) Investigates how social and economic inequality in America is established, manifested, and maintained. Also examines interventions that purportedly address inequality. Provides analytic tools to help with critical thinking about competing views of inequality and the interventions that address it.

SOC W 520 Policy/Services: Multigenerational (3) Investigates how social and economic inequality in America is established, manifested, and maintained. Also examines interventions that purportedly address inequality. Provides analytic tools to help with critical thinking about competing views of inequality and the interventions that address it.

SOC W 521 Child and Family Inequalities: Policy/Services Platform (3) Advanced study of policy and services relevant to practice with children, adolescents, and families. Applies social justice framework to understanding policy context and organization of services responses to child and family inequalities, especially for historically oppressed and marginalized populations. Examines social construction of policies in historical, political, and comparative context.

SOC W 522 Introduction to Practicum: Advanced Standing (2) Orients advanced standing students towards their practicum. Covers critical issues related to the advanced standing practicum and prepares students for successful practice in their chosen agencies. Incorporates and builds upon content and skills acquired through a generalist (micro, mezzo, and macro levels of practice) undergraduate social work education. Credit/no-credit only.

SOC W 523 Introduction to Practicum (0-1, max. 2) Workshops for preparation for agency-based placement interviewing and orientations occur at agencies. Credit/no-credit only.

SOC W 524 Foundation Practicum (1-8, max. 12) Agency-based practicum with emphasis on development of knowl-

edge, perspectives, and skills needed for practice with individuals, families, groups, organizations, and communities. Prerequisite: social work major. Credit/no-credit only. Offered: AWPSS.

SOC W 525 Advanced Practicum (1-10, max. 24) Agency-based advanced practicum. Prerequisite: completion of foundation courses and practicum. Credit/no-credit only. Offered: AWPSS.

SOC W 526 Multigenerational Policy-Services Platform: A Feminist, Multicultural Lens (3) Builds social workers' competencies to analyze, critique, and advocate for policies and processes that support growing numbers of multigenerational families. Presents a feminist, multicultural, and multigenerational perspective to analyze how historical and current service structures, policies, and regulations support or undermine families across the lifespan.

SOC W 527 Global and Local Inequalities: Critical Analyses of the Processes and Policies of Globalization (3) Discussion of the health of the planet, economic and cultural globalization, the enduring legacies of imperialism and colonialism in this global era, and their local impacts. Foci include international agreements, UN conventions, immigration, and refugee policies.

SOC W 528 Healthcare Inequalities: Policy/Services Platform (3) Examines the organization, policies, and services of U.S. healthcare system from a social justice framework. Topics include the U.S. healthcare system's historical development, differential access to health and healthcare, healthcare system reform, and the analysis of healthcare policy from contrasting ideological perspectives.

SOC W 529 Mental Health Inequalities: Policy/Services Platform (3) Mental health policy trends and organization of services at national, state, and local levels reflected in legislative, regulatory, and institutional policies. Provides historical perspective on the development of U.S. mental health policies and services. Discusses specific areas of intersystem linkages in terms of equitable access and empowerment.

SOC W 530 Advanced Practice with Diverse Children and Families (3) Builds on foundation frameworks and competencies to develop specialized knowledge and skills for working with vulnerable children and families. An ecological framework informs family- and community-centered assessment and intervention that is empowering, culturally responsive, and clinically relevant. Foci include resilience, violence, attachment, loss, substance abuse, and disability.

SOC W 531 Advanced Practice with Diverse Children and Families: Focus on Child Mental Health (3) Develops specialized knowledge and skills for practice with children with mental health concerns and their families. Emphasis on child and family mental health assessment and interventions that are culturally relevant, collaborative, and strength-promoting. Topics include culture and mental health, system of care, psychotropic medication, ADHD, and depression.

SOC W 532 Advanced Practice with Diverse Children and Families: Focus on Child Welfare (3) Develops advanced knowledge and skills for culturally relevant child welfare practice across a range of settings including child protection, foster care, and adoption. Topics include family dynamics around child maltreatment; trauma and its impact on children; separation, loss, and identity development; and self-care in child welfare practice.

SOC W 533 Multigenerational Advanced Practice with Older Adults (3) Emphasizes a multigenerational, culturally competent empowerment approach and in-depth knowledge on "best practices" related to assessment, diagnosis, and clinical interventions with older adults and their families. Builds on other multigenerational classes.

SOC W 534 Praxis of Intergroup Dialogue (3) Students design, plan, implement, and evaluate intergroup dialogue sessions as peer facilitators. Students facilitate intergroup

dialogue in conjunction with SOC W 504. Focuses on intensive in-vivo instruction, consultation, and supervision of facilitators.

SOC W 535 Special Topics in Interpersonal/Direct Practice (2-3, max. 9) Examines current substantive topics in direct/interpersonal practice.

SOC W 536 Social Movements and Organizing: People, Power, and Praxis (3) Focuses on social, economic, and political problems from an organizer's perspective, and strategies, tactics, and skills necessary to engage in organizing activities. Emphasizes principles common to community, electoral, union, and issue organizing. Addresses why people organize, how organizing works, and what it takes to be a good organizer.

SOC W 537 Empowerment Practice with Refugees (3) Empowerment practice with refugees and immigrants across a transnational continuum of forced migration, including flight, internal displacement, asylum seeking, repatriation, and resettlement. Instruction includes classroom activities, workshops with local service providers, and agency-based projects. Addresses implications for strengths-based social services, policy, and practice skills.

SOC W 538 Critical Empowerment Practice with Multi-ethnic Communities (3) Principles of empowering practice, critical analyses of models of multiculturalism and paradigms of knowledge and practice proven problematic in our increasingly diverse society. Assists students in developing empowering practice values, knowledge, and skills for work in multi-ethnic communities.

SOC W 539 Ethnographic Interviewing (3) Facilitates empowering and culturally sensitive practice, while providing an understanding of the other from his/her own perspective. Addresses power in worker-client relationships, clients as experts, communication across cultures, the uses and presentation of data to effect social change, ethical issues, and specific ethnographic interviewing techniques.

SOC W 540 Advanced Social Work Practice in Health Settings I (3) Teaches theory and strengths-based practice within interprofessional health care settings from biopsychosocial, family systems, multi-cultural, contextual, and lifespan perspectives. Advances skills in conducting assessments and interventions to support individuals and families experiencing pain and loss associated with trauma and acute or chronic illness.

SOC W 541 Advanced Social Work Practice in Health Settings II (3) Teaches health care theory and practice skills relevant to working with adults and children in a variety of health care settings, using biopsychosocial, contextual, multicultural, interdisciplinary, and lifespan perspectives. Advances skills in adherence assessment, ethical decision-making, discharge planning, cross-cultural and cross-professional practice, and counseling regarding life-threatening illness.

SOC W 542 Recovery-Oriented Social Work Practice in Community Mental Health (3) Emphasizes recovery-oriented practice with adults with severe and persistent mental illness and persons with co-occurring mental illness and substance disorders. Trains for generalist social work practice in most community mental health settings: community mental health centers, psychiatric hospitals, residential programs, jails, homeless shelters, on-the-streets, client's homes, etc.

SOC W 543 Social Work Practice in Community Mental Health II (3) Focuses on social work practice with persons with severe mental illness. Emphasizes recovery, supported housing, supported employment, integrated treatment of co-occurring disorders. Covers practice with diverse populations: multicultural, developmentally disabled, geriatric, and gay/lesbian. Examines partnering with family members and working with Social Security. Complements SOC W 542, but may be taken free-standing.

SOC W 544 Clinical Social Work with Individuals I: Theory and Practice (3) First quarter of a two-quarter sequence on

the theory and practice of clinical social work. Focuses on key concepts underlying direct practice. Topics include the therapeutic relationship, therapeutic listening, the ground rules, transference, counter transference, psychological defenses, resistance, phases of treatment, transference, countertransference, and vicarious trauma.

SOC W 545 Clinical Social Work With Individuals II: Theory and Practice (3) Second of a two-quarter sequence on the theory and practice of clinical social work. Focuses on the use of interpretation, obstacles to treatment, intervention techniques, case formulations that link assessment and intervention, monitoring client progress, and on selected theories of therapy.

SOC W 546 Addressing Trauma and Recovery in Multigenerational Advanced Practice (3) Multigenerational perspective on clinical interventions for various traumas: childhood sexual abuse, battering at any age, chemically dependent parents, elders with abusive adult children, and a range of losses throughout the lifespan. Recovery process explicated in terms of family strengths across the generations and through state-of-the-art techniques for healing trauma.

SOC W 547 Multigenerational Integrative Seminar (1-3, max. 3) Designed to foster the integration of classroom learning and field education. Taken concurrently with advanced practicum, provides support for addressing challenges in professional settings, development of leadership skills, and preparing for future work in the field of multigenerational practice. Credit/no-credit only.

SOC W 548 Advanced Practice I: Multigenerational (3) First quarter of a two-quarter sequence. Emphasizes preparation of practitioners with capacity to move flexibly among a variety of professional roles, including the provision of direct services, program planning, supervision, and community practice. Emphasizes contextual assessment from micro to macro levels.

SOC W 549 Advanced Practice II: Multigenerational (3) Second quarter of a two-quarter sequence. Highlights program planning, supervision, and intervention across all levels of practice.

SOC W 550 Strategic Program Management and Change Leadership in Human Services (3) Examines tools and techniques required for leadership, program planning, implementation, and program change. Topics include strategic planning, logic modeling, agency-bound relations, work-group facilitation, and diversity-promoting management. Lecture, discussion, and exercises. Required for SSW administration concentrators; open to others with permission of instructor.

SOC W 551 Human Resource Management in the Human Services (3) Theories and techniques for 1) designing human services workplaces that support employees' performance and well-being, and 2) managing diverse, satisfied, and high-performing human service staffs. Topics include job quality analyses; job descriptions; employee interviewing, supervision and performance evaluation; models of negotiation and conflict resolution; and strategies for working with volunteers.

SOC W 552 Financial Management of Human Services Programs (3) Covers key financial management components of human service programs, including development and use of business plans, budgets, and financial statements. Helps students to demonstrate an understanding of financial management through budget preparation, financial statement analysis, new project cost projections, audits, and presentations using computer-based spreadsheets and presentation software.

SOC W 554 People, Place, Equity (3) Introduces empirical, theoretical, and applied knowledge on place as a key dimension of social work practice. Examines how people-place relationships differentially affect social opportunities such as health and wellness, employment, and housing. Provides intellectual and practical foundations for incor-

porating spatial analyses and collaborative place-making interventions in practice.

SOC W 555 Global Perspectives in Social Work Practice (3) Focuses on contemporary social issues of global importance: poverty; HIV/AIDS; population growth; gender inequality; and war, conflict, and displacement, with specific focus on these issues in the global south. Examines sociocultural, economic, and political processes that shape these issues, and entwined perspective of human rights and development.

SOC W 556 Family Healing: A Cross-Generational Approach (3) *Lustbader* Explores how to respond to multigenerational dynamics within the entire extended family and examines how bow difficulties and strengths are passed from one generation to another. Emphasizes cultural differences as well as issues pertaining to the impact of chemical dependency, mental illness, and disability across generations.

SOC W 557 Caring for Persons with Life-Limiting Illness: A Lifespan Approach (3) Focuses on multi-systemic social work practice with seriously ill people with a life-limiting condition. Examines how families care for a critically ill loved one, and the differences that occur when the seriously ill person is a child, adolescent, a mid-aged adult, or an elder at the end of life.

SOC W 558 Gender, Gender Identity, and Sexuality (3) Anti-oppression focus on social work practice with lesbian, gay, bisexual, transgender, two-spirit, intersexed, and queer communities. Emphasizes cultural, social, and political context within which such practice occurs as well as an examination of the diversity and heterogeneity within these communities. Enhances students' micro and macro practice skills.

SOC W 559 Child Development (3) Provides students with a basic understanding of child development theory and research as well as specific knowledge about the development of children from infancy through adolescence. Emphasizes developmental approach to assessment and intervention with children and families. Particular emphasis placed on developmentally-based child welfare practice.

SOC W 560 Policy Processes, Institutions, and Influences (3) Focuses on the process and institutions through which social policies are developed, adopted, and implemented, with special attention to the implications of these processes for social justice. Develops practice skills in analyzing and influencing the policy process, including social problem definition, policy design, policy adaptation, and policy implementation.

SOC W 561 Concepts and Methods of Policy Analysis (3) Engages students in the concepts and applied practice of policy analysis and evaluation. Prepares students to address two generic policy questions: Given an identified problem, what policy or program should be selected? Given a particular policy or program, how do we evaluate effectiveness? Particular attention paid to social justice implications.

SOC W 562 Advanced Practice I: Health/Mental Health (3) First quarter of a two-quarter sequence. Emphasizes preparation of practitioners with capacity to move flexibly among a variety of professional roles, including the provision of direct services, program planning, supervision, and community practice. Emphasizes contextual assessment from micro to macro levels.

SOC W 563 Advanced Practice II: Health/Mental Health (3) Second quarter of a two-quarter sequence. Highlights program planning, supervision, and intervention across all levels of practice.

SOC W 565 Special Topics in Policy Practice (2-3) Examination of current substantive topics in policy practice. Content varies according to recent developments in the field and the interests of the instructor.

SOC W 570 Anti-racist Organizing for Social and Economic Change (3) Applies an institutional analysis of racism and

white privilege to the strategies of community organizing by communities of color and indigenous peoples. Examines anti-racist organizational transformation, intersectionality of oppressions and privileges, white allies in anti-racist struggles, and the role of social workers in maintaining and combating institutional racism.

SOC W 571 Assessment of Mental Disorders (3) Provides basic knowledge and skills to assess mental disorders and improve critical thinking concerning assessment and diagnosis. Emphasizes the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) for its system of symptom description and classification. Examines challenges of methodological implications of mental health assessment across race, gender, and ethnicity.

SOC W 572 Understanding Addiction, Pharmacology of Drugs, and Treatment Methods (3) Provides students with the knowledge and basic skills to recognize and understand the dynamics of chemical dependency in the lives of individuals, how to assess the presence of this disorder, and what the issues are in referring individuals to treatment for this disorder.

SOC W 573 Child Welfare and Permanency Planning (3) Focuses on social work interventions within the public child welfare system for children who have been abused and neglected. Includes practice models to ensure safety and permanency for children, federal and state mandates for permanency, cultural determinants, juvenile court dependency system, and research findings pertaining to permanency planning outcomes.

SOC W 574 Collaborative Community-Based Program Evaluation (3) Focuses on carrying out a formative and process evaluation of a community program in conjunction with program staff and clients. In addition to learning about program theory, measurement construction, study design, and data analysis, students develop consultative and presentation skills needed in utilization-focused evaluation.

SOC W 575 Domestic Violence Policy and Intervention (3, max. 6) Examines policy, theory, research, and intervention in field of intimate partner violence with emphasis on historical, cultural, and political contexts. Advanced study of structural contributors, policy parameters, and service delivery and cross-systems necessary to effective practice and leadership in the field locally, nationally, and globally.

SOC W 576 Empowerment Practice with Persons with Disabilities (3) Provides background in theories and models of disability that contribute to empowerment-oriented intervention techniques. Emphasizes direct practice skills for working with people with disabilities and their families. Emphasizes understanding how disability studies and the disability movement influence social work practice.

SOC W 577 Maintaining Quality Social Work Practice: Ethics, Self-care, and Risk Management (2-3) Develops models for managing ethical and legal obligations to clients and others; managing risk; and maintaining ethical, responsible, and self-sustaining practice over a professional career. Examines competing ethical frameworks and material on essential values underlying ethical principles and the basis for ethical and legal regulation of practice.

SOC W 578 Evidence-Based Practice in Child Mental Health (3) Critically examines the program components and empirical research base of selected child mental health treatment program models designed to serve children and youth who present with severe emotional or behavioral disorders. Focuses on treatment models that reflect a "systems care philosophy" and which offer alternatives to traditional services.

SOC W 579 Faith Matters and Mental Health Practice: Conflict vs Integration (3) Examines the complex interrelation between faith matters and the practice of mental health professions, including approaches to definitions and assessments.

SOC W 580 Grant Writing and Fund Development (3) Prepares students to participate and provide leadership in

grant writing and fundraising for community-based human services. Opportunity to practice skills required for developing a successful grant proposal and planning a successful fundraising program. Identify, cultivate, and develop sources of funding. Students assist in writing a complete grant proposal as final project.

SOC W 581 Historical Trauma and Healing (3) Provides specialized knowledge and skills for practice with communities experiencing historical trauma. Covers emerging theories of historical trauma, impact of historical trauma on families and communities, and culturally relevant interventions to promote healing. Builds upon the concepts of empowerment practice and indigenous models of social work.

SOC W 582 Interpersonal Violence and Trauma (3) Examines trauma theory, nature of interpersonal violence, psychodynamic concepts, cognitive behavioral theory, treatment of victims and offenders. Topics include psychological trauma, abuse-specific psychotherapy, multidisciplinary and cognitive behavioral interventions with victims and offenders, effects of interpersonal violence, and counter-transference reactions. Format includes lecture, discussion, case presentations, and presentations by community experts.

SOC W 583 Multicultural and Multigenerational Approaches to Healing Grief and Loss (3) Uses critical analysis to expand Western symptom-oriented grief and loss theory to include multicultural approaches, exploring new constructionist models of meaning-making, narrative biography, and cultural tradition through case studies. Assessment and intervention exercises include journaling, art, and ritual, allowing students to explore how their own grief affects practice.

SOC W 584 Multicultural Mental Health Practice (3) Advanced-practice course that builds upon foundation content in HUB, micro- and macro-practice/HBSE sequences, policy, diversity, and research. Grapples with complex mental health service design and delivery issues often informed by ethnocentric paradigms of knowledge and practice that have proven problematic in their general application in our increasingly diverse society.

SOC W 585 Advanced Group Work (3) Overview of group work and major theorist in the field. Examines differential applicability of methods across diverse populations. Emphasis on developing powers of observation of group process (as opposed to content) and on ability to intervene at the group level (as opposed to individual level). Prerequisite: Group work experience.

SOC W 586 Policy Advocacy (1-3, max. 3) Focuses on involvement in the policy-making process. Students design projects to influence public policy in local, state, and federal levels. Readings based on policy materials (proposed and final laws, regulations, budgets, advocacy documents). Credit/no-credit only.

SOC W 587 Spirituality in Healthcare (2) Examination of the beliefs, values, meaning, and spirituality of health professionals for the well-being of their patients as well as for themselves. Offered: jointly with B H 518/FAMED 547; Sp.

SOC W 588 Social Work in Schools (3) Required for School Social Worker certification. Explores theoretical frameworks, current issues in education, individual, group and family practice; organizational context; and systems change. Also covers legal issues, racism and educational outcomes, special education, culturally sensitive practice, advocacy, family involvement, child abuse mandated reporting, collaboration, and ethics.

SOC W 589 Social Work Practice with Families (3) Philosophical, theoretical, and practice issues relevant to family-centered social work. Presents family systems theory and a generalized model of engagement, assessment, and treatment. Clinical applications with particular client populations and their presenting problems, such as couples, family crisis, child behavioral problems, and affective disorders.

SOC W 590 Social Work Supervision and Consultation (3)

Provides knowledge and skills involved in the role of social worker as supervisor and team leader; supervision as a leadership function, power and authority, professional boundaries, staff recruitment, selection, performance evaluation, and addressing staff-related performance problems.

SOC W 591 Social Work Practice in Long-Term Care Across the Lifespan (3) Applies a multigenerational framework to introduce values, skills, and knowledge necessary for social work practice in long-term care settings across all age groups. Meets at a nearby continuing care community and provides regular opportunities to interact with persons requiring long-term care, their families, and formal caregivers.

SOC W 592 Social Work Practice with African-American Families (3) Introduces the study of African-American families from a historical, socio-cultural, and political perspective. Presents various theories for understanding African-American families and addresses an Afrocentric framework for intervention.

SOC W 593 Social Work Practice with Chemically Dependent Adults: Understanding Assessment, Evaluation, and Counseling (3) Teaches skills in four contexts: (1) incorporating questions concerning alcohol/drug use in an assessment of new clients, (2) conducting a comprehensive alcohol/drug assessment when a problem has been identified, (3) offering a brief motivational enhancement intervention to ambivalent clients, and (4) delivering cognitive-behavioral counseling focusing on overcoming dependence.

SOC W 594 Gender and Inequalities in the Global Context (3) Examines issues of gender, globalization, and inequality through a gender lens. Topics include global movements of capital (the global factory) and labor (migration, trafficking, etc.), disruption/creation of family forms and gender roles (domestic violence), social welfare, private/public policies, international frames (human rights), resistance, and response.

SOC W 595 Co-Occurring Addiction and Mental Health Disorders (3) Provides students with the knowledge and skills to understand the dynamics of co-occurring addiction and mental health disorders (COD) in the lives of individuals. Students learn how to assess the presence of COD and what the issues are in referring individuals to treatment or providing them treatment for COD.

SOC W 596 Statistics in Social Work (1-3, max. 3) Introductory foundation in descriptive statistics, probability theory, statistical inference, and bivariate statistics commonly used in evaluations of social program and clinical practice. Conceptual emphasis on understanding the logic of measurement and statistical inference. Understanding reinforced by hand calculations involving high school algebra. Fulfills SOC W 505 prerequisite.

SOC W 597 Graduate Study Abroad in Social Work (1-15, max. 15) For graduate students in a UW study abroad program. Specific content varies and must be individually evaluated.

SOC W 598 Integrative Seminar (1-5, max. 12) Integrates specialized knowledge in social work settings. Offered: AWSp.

SOC W 599 Independent Study in Social Work (1-10, max. 10) Prerequisite: approval of a well-specified plan by an instructor and program director, including learning objectives and activities. Credit/no-credit only.

SOC W 600 Independent Study or Research (1-10, max. 10) An independent research project. Prerequisite: approval of a well-specified plan by an instructor and program director, including learning objectives and activities included on the SOC W 600 form.

SOC W 700 Master's Thesis (*-)

Social Welfare

SOC WL 515 Community Service Practicum (3, max. 6)

Development of skills on working in partnership with community institutions in the role of researcher or scholarly collaborator, through ongoing reflection and consultation with a faculty member. Uses a learning contract to focus specific activities. Credit/no-credit only. Offered: AWSpS.

SOC WL 552 Seminar in Contemporary Social Welfare Policy (3)

Critical review of contemporary American income maintenance and related social welfare policies, and the economic, political, and social factors that affect their development, implementation, and effectiveness. Evaluation of their effects on poverty, income inequality, and related social outcomes, including international comparisons. Assessment of proposals for reform. Closely linked to SOC WL 553.

SOC WL 553 Policy Implementation and Organizations (3)

Examines divers organization theories relevance to policy implementation, translational research, and practice interventions within health and human service settings. Emphasizes multilevel models and integrative frameworks that take into account individual, group, and organizational factors, recognizing outcomes as embedded phenomenon nested within organization, community, and societal contexts. Offered: Sp.

SOC WL 554 Analytical Perspectives on Social Welfare Policy (3)

Broad overview of the social welfare policy process, including epistemological issues, content on social problem construction and definition, policy agendas and case study methodology. Introduction to analytical tools and concepts needed to take a proactive role in policy development, advocacy, implementation, and policy research.

SOC WL 556 West Coast Poverty Center Seminar Series (1, max. 15)

Presents cutting-edge research on poverty, inequality, and public policy. Offered: AWSp.

SOC WL 557 Dissertation and Career Seminar (1, max. 20)

Orients advanced PhD students to three main tasks: dissertation, job market, and entering teaching and research careers. Offered: AWSp.

SOC WL 559 Preparing to Teach: Instructional Theory and Practice (3)

Teaching conceptualized as professional practice. Focuses on integration of theory, research and educational strategies, techniques, and skills into students' practice as educators. Classroom discussions and activities promote reflection, exploration, critical analysis, and experimentation.

SOC WL 577 Promoting Well-Being among At-Risk Groups through Prevention Research (3)

Nurios Interdisciplinary overview of major concepts and methods in health promotion and prevention research, with emphasis on at-risk populations. Attentive to health disparities, collaboration with diverse communities and biobehavioral advances in addition to application of theory and prevention-science framework. Encourages interdisciplinary participation and supporting students in articulating their research perspectives.

SOC WL 578 Seminar in Special Topics for Prevention Research (1, max. 30)

Interdisciplinary overview of major concepts in promotion of mental health and prevention of mental distress with prevention science as framework. Provides conceptual foundations for advanced study in specialized aspects of mental health prevention research. Credit/no-credit only.

SOC WL 579 Interdisciplinary Approaches to Prevention Science: Children and Adolescents (3)

Overview of theory, research, and practice in prevention science. Developmental perspective examining factors that promote or inhibit health development at different stages and during transitions (focus on birth through age 21). Designed for interdisciplinary dialogue, and includes guest faculty from around the University who are specialists in course topics. Credit/no-credit only.

SOC WL 580 Quantitative Research Methods and Design

(3) Logic, terminology, and methods of quantitative social science approaches to correlational, experimental, quasi-experimental, survey, and program evaluation research. Components of the research process (problem definition, concept explication, ethical evaluating, and designing defensible quantitative research studies).

SOC WL 581 Qualitative Research Methods and Design

(3) Theoretical and methodological foundations of a range of qualitative methods relevant to social welfare and social science research. Fundamentals of qualitative research design and implementation, including framing research questions, sampling, data collection, analytical methods, and quality criteria. Focus on ethics, cultural sensitivity, and community-based research with vulnerable populations.

SOC WL 582 Research Practicum (3-) Development of specific methodological skills in social welfare research through participation in an ongoing research project. Learning contract used to target specific research competencies. Credit/no-credit only. Offered: ASpS.

SOC WL 583 Research Practicum (-3) Development of specific methodological skills in social welfare research through participation in an ongoing research project. Learning contract used to target specific research competencies. Credit/no-credit only. Offered: ASpS.

SOC WL 584 Teaching Practicum (3) Supervised teaching of a required course or teaching as a co-instructor with a faculty member. Learning contract used to target specific teaching competencies, e.g., assessing and evaluating student outcomes, identifying class session goals and objectives, tailoring instruction methods to diverse learning styles. Credit/no-credit only. Offered: AWSpS.

SOC WL 585 Qualitative Methods in Social Work Research I (3) The first in a two-quarter sequence offering intensive experience in the theory and application of qualitative and ethnographic research methods. Prepares students for conducting qualitative studies and for combining qualitative and quantitative research methods. Focuses on applications especially relevant to social welfare.

SOC WL 586 Qualitative Methods in Social Work Research II (3) The second in a two-quarter sequence offering intensive experience in the theory and application of qualitative and ethnographic research methods. Prepares students for conducting qualitative studies and for combining qualitative and quantitative research methods. Focuses on applications especially relevant to social welfare.

SOC WL 589 Multivariate Data Analysis for the Social Sciences (4, max. 8) Erosheva Provides social scientists with an introduction to multivariate analysis techniques and the knowledge to carry them out. Focuses on statistical methods that explore relationships between observed variables. Topics include principal components, cluster, factor, latent class analysis. Prerequisite: SOC WL 587, SOC WL 588, or equivalent. Offered: jointly with CS&SS 589; A.

SOC WL 590 Topics in Advanced Research Methods (3)

Special topics in social and behavioral research design for advanced graduate students. Topics vary and focus on community-based research methods and measurement construction for culturally diverse populations. Prerequisite: doctoral student in social welfare or related discipline; advanced master's level students by permission of instructor.

SOC WL 591 Seminar on Topics in Social Welfare (1-3, max. 15)

SOC WL 598 Issues and Priorities in Social Welfare Research (3) Foundations in the definitions of theory; the socially constructed nature of theory and definitions of social "problems"; conceptual and theoretical perspectives on human society, interaction, and change; and analysis of the theoretical foundations of social science research paradigms.

SOC WL 599 Research Problems and Priorities in Social Work and Social Welfare (3)

Assists students in applying theory in building an original conceptual model. Emphasizes critical thinking, including ideological, political, methodological, and ethical contexts/implications of ideas, theories, and models that shape social welfare scholarship and its application to social practice. Prerequisite: admission to social welfare PhD program or permission of instructor.

SOC WL 600 Independent Study or Research (*-)

Prerequisite: approval of a well-specified plan by the instructor and program director. Includes a written product. Credit/no-credit only. Offered: AWSpS.

SOC WL 800 Doctoral Dissertation (*-) Offered: AWSpS.

Social Welfare (BASW)**SOC WF 101 Social Work in Action: Bridging the Gap From Science to Service (5)**

I&S Explores current social work practice and research applied to major societal problems. Lectures and discussions by leading faculty introduce students to the evidence-based perspective underlying program planning and practice innovation. Topics include: juvenile delinquency, child maltreatment, domestic violence, foster care reform, mental health, school violence, substance abuse, and poverty. Offered: A.

SOC WF 120 International Responses to Human Needs: Social Welfare Policies and Services (5)

Focuses on major global social services such as poverty, immigration, and health that are reshaping social welfare policies and services throughout the world. Provides a comparative overview of social welfare policies and programs in the United States and selected other countries.

SOC WF 200 Introduction to Social Welfare Practice (5)

I&S Introduction to the field of social work, including the theoretical concepts and institutional framework that guide practice. Overview of social work profession and social welfare system within which it operates. Lectures supplemented by exercises, films, guest lectures, and class discussions. Offered: A.

SOC WF 201 Advances in Prevention Science: Bridging the Gap from Science to Service (5)

I&S Investigates the potential for preventing major social problems (child abuse and neglect, alcohol misuse, and interpersonal violence). Critically examines the state of prevention science, includes dialogue about ways to enhance the exchange of ideas between research and practice communities, and explores implications for social policy.

SOC WF 215 Intergroup Dialogues (3)

DIV Explores issues of social identities, differences, and inequalities to build understanding, skills, and values for bringing about greater social justice using dialogic communication.

SOC WF 250 Writing for Social Welfare (2)

Focuses on producing short essays, paragraphs, and individual sentences. Discusses writing conventions and students' questions and challenges; analyzes writing samples; and practices short writing to develop greater ease with writing well and writing frequently. Credit/no-credit only.

SOC WF 297 Study Abroad in Social Work (1-15, max. 15)

For participants in a UW study abroad program. Specific content varies and must be individually evaluated.

SOC WF 310 Social Welfare Practice I (5)

Provides an introduction to the roles, tasks, and functions of the social welfare practitioner and to theories and methods of intervention; a conceptual framework for social work practice with individuals, families, and small groups; and an opportunity to develop skills in problem assessment, intervention, termination, and evaluation. Offered: A.

SOC WF 311 Social Welfare Practice II (5)

Provides an introduction to the roles, tasks, and functions of the social welfare practitioner and to theories and methods of intervention; a conceptual framework for social work practice with individuals, families, and small groups; and an opportunity to develop skills in problem assessment, interven-

tion, termination, and evaluation. Prerequisite: SOC WF 310. Offered: W.

SOC WF 312 Social Welfare Practice III (5)

(5) Focus on macro systems in a diverse society using the generalist perspective. The implications of system resources and configurations for meeting human needs are considered. The role and function of generalist social workers to understand and advocate for system development and change is emphasized. Prerequisite: SOC WF 311. Offered: Sp.

SOC WF 315 Community Service Learning (1-5, max. 6)

Opportunity for students to apply social work theory to practice, to advocate for social justice, and to be involved in community service. Students learn by connecting classroom theory and community-based experience through the completion of community-based projects in social work-type agencies. Majors only.

SOC WF 320 Social Welfare Policy (5)

I&S Emphasizes policy and program development in social welfare with emphasis on the context, making, and unmaking of social policy. Covers policy formulation as well as current and emerging policies in social welfare. Prerequisite: SOC WF 200. Offered: WSp.

SOC WF 390 Introduction to Social Welfare Research (5)

Introduction to logic of the scientific method as applied to social work and social welfare practice, to the design and conduct of a research study, and to data collection and summarization. Skill development in critical consumption of social welfare research. Prerequisite: either STAT 220 or QMETH 201. Offered: A.

SOC WF 402 Human Behavior and Social Environment I (5)

I&S Focuses on understanding human development across the lifespan. Integrates biological, psychological, structural, environmental, political, global, and socio-cultural perspectives. Explores the relationship between the person and the environment including families, groups, organizations, communities, and institutions.

SOC WF 404 Cultural Diversity and Justice (5)

I&S, DIV History and culture of disadvantaged and oppressed groups served by social welfare generalist practitioners. Offered: Sp.

SOC WF 405 Fieldwork Seminar (1-4, max. 9)

Integrates social work practicum experiences with prior and concurrent coursework in social sciences, social work, and research. Includes discussion of class presentations and simulations or practice situations that combine knowledge and skill utilization. Student logs provide a basis for individual goal identification and achievement. Required of social welfare seniors. Offered: AWSp.

SOC WF 410 Evidence-Based Practices in Social Welfare (3)

Focuses on interface between social work research and practice, with attention to origins and defining features of evidence-based practice (EBP) and approaches to intervention consistent with EBP framework. Integrates content on research and practice priorities, and provides students with knowledge and skills to promote use of theory-driven, empirically-supported interventions.

SOC WF 415 Beginning Field Instruction (1-12, max. 12)

Students are placed in selected social service agencies and accept beginning social service assignments under the supervision of competent agency personnel. Credit/no-credit only. Offered: AWSp.

SOC WF 435 Skills for Social Welfare Practice (1)

Builds on first-year generalist practice content. Provides skill building in one or two areas of social work practice relevant to many practice settings. Topic chosen by students and faculty. Credit/no-credit only.

SOC WF 442 Building Competencies for Intergroup Dialogue Facilitation (5)

VLPA/I&S, DIV Focuses on both knowledge and skills development for peer facilitators. Topics include philosophy and principles of dialogic education and dialogic communication; intergroup communication; social identity development; principles of working with conflict; group dynamics, observation, and facilitation;

team building among co-facilitators; and creating a support system among instructors and facilitators.

SOC WF 443 Facilitating Intergroup Dialogue (5) VLPA/I&S, DIV Practicum seminar providing instruction, consultation, and supervision of peer group facilitators. Focuses on comparison of facilitation experiences and consultations, trouble-shooting with other facilitators, co-facilitator team building, and planning for dialogues. Exploration of specific, current intergroup issues, such as affirmative action and immigration. Continuation of team-building work begun in SOC WF 442.

SOC WF 445 Special Topics in Social Work Practice Methods (3, max. 6) Examines roles, skills, and methods in designated areas of social work practice. Content builds on foundation practice methods.

SOC WF 450 Integrative Seminar: Poverty Analysis (5) Critical analysis of poverty both in the United States and from a global perspective. Analytical and descriptive focus on measurement, processes of production and perpetuation, and theoretical perspectives that lead to different social and economic policy responses.

SOC WF 460 Chemical Dependency: Assessment and Treatment (3) Provides students the knowledge and basic skills needed to recognize and understand the dynamics of chemical dependency in the lives of individuals. Students learn how to assess the presence of this disorder and what the issues are in referring individuals to treatment.

SOC WF 465 Social Welfare Capstone Seminar (1) Students demonstrate and reflect on mastery of core competencies and respective practice behaviors foundational to generalist practice. Studies analyze and synthesize data from their experiences in the BASW program and integrate this understanding with their new identity as a professional social worker. Credit/no-credit only.

SOC WF 490 Independent Research in Social Welfare (1-15, max. 15) Individual work with faculty member to assist with current research project(s). Students trained and supervised in some or all of the following research tasks: literature review, data analysis, record-keeping, interviewing, report writing, data entry and coding, data collection, and other tasks commonly found in research problems in social welfare. Credit/no-credit only.

SOC WF 491 Honors Seminar (1, max. 3) Three quarter seminar for students admitted into the BASW Honors Program. Guides students through stages of research conceptualization and proposal writing, IRB application, data collection and analysis, and dissemination. Includes feedback and discussion with instructor and peers. Credit/no-credit only.

SOC WF 492 Honors Thesis I (3-) Part one of a two quarter series for BASW Honors students writing their honors thesis. Students carry out an individual project of their choosing under the guidance of a faculty member. Focuses on data collection, management, and preliminary analysis.

SOC WF 493 Honors Thesis II (-3) Part two of a two quarter series for BASW Honors students writing their honors thesis. Students carry out an individual project of their choosing under the guidance of a faculty member. Focuses on data analysis, research writing, and presentation of results.

SOC WF 495 Special Topics in Generalist Social Welfare (1-5, max. 15) Readings, lectures, and discussions pertaining to significant topics of special and current interest to social workers.

SOC WF 497 Advanced Study Abroad in Social Work (1-15, max. 15) For participants in a UW study abroad program. Specific content varies and must be individually evaluated.

SOC WF 499 Independent Study in Social Welfare (1-15, max. 15) Independent reading or independent study. Includes written paper. Not open to graduate or non-matriculated students.

FACULTY

Faculty may have multiple appointments, but are listed by their primary appointing department only.

College of Arts and Sciences

American Ethnic Studies

Professors

Flores, Lauro Hugo 1980; PhD, 1980, University of California (San Diego)

Kashima, Tetsuden * 1976; MA, 1968, San Francisco State; PhD, 1975, University of California (San Diego)

Sumida, Stephen Hiro 1998; MA, 1970, Columbia University; PhD, 1982, University of Washington

Walter, John Christopher * 1988, (Emeritus); MA, 1968, University of Bridgeport; PhD, 1971, University of Maine

Associate Professors

Bonus, Enrique Caudal 1998; MA, 1990, California State University, Fresno; PhD, 1997, University of California (San Diego)

Gamboa, Erasmo * 1975; MA, 1973, University of Washington; PhD, 1984, University of Washington

Nomura, Gail Mieko 1999; MA, 1971, University of California (Berkeley); PhD, 1978, University of Hawaii

Retman, Sonnet H. 2002; PhD, 1997, University of California (Los Angeles)

Salas, Elizabeth 1987; MA, 1977, California State University, Los Angeles; PhD, 1987, University of California (Los Angeles)

Assistant Professors

Cordova, Dorothy Laigo 1988, (Affiliate); BA, 1976, Western Washington University

Pinedo-Turnovsky, Carolyn 2009; MA, 2003, City University of New York; PhD, 2006, City University of New York

Pittman, LaShawnDa 2013; MA, 2000, University of Connecticut; PhD, 2010, Northwestern University

Vu, Thuy Quoc 1987, (Affiliate); MA, 1972, Michigan State University; PhD, 1973, Michigan State University

Senior Lecturer

So, Connie Ching 1990; MPA, 1989, Princeton University

Lecturers

Atienza, Richard Mangilaya 2006; MAE, 2008, St. Joseph's College

Kirk, Brian Lamont 2014; MM, 1990, New York University

Scott, Terry Anne 2011; MA, 2002, Southern Methodist University

American Indian Studies

Professors

Harmon, Alexandra J. * 1991; JD, 1972, Yale University; MA, 1990, University of Washington; PhD, 1995, University of Washington

Hart, Daniel Winfield 1999; MFA, 1985, Temple University
Oliver, Marvin Emmett 1974, (Emeritus); MFA, 1973, University of Washington

Teuton, Christopher Barrett 2014; MA, 1995, University of Wisconsin (Madison); PhD, 2003, University of Wisconsin (Madison)

Witherspoon, Gary Jay * 1987, (Emeritus); MA, 1969, University of Chicago; PhD, 1970, University of Chicago

Associate Professors

Cote, Charlotte June 2001; MA, 1996, University of California (Berkeley); PhD, 2002, University of California (Berkeley)

Fryberg, Stephanie Ann 2013; MA, 1999, Stanford University; PhD, 2002, Stanford University

Million, Dian Lynn 2002; MA, 1998, University of California (Berkeley); PhD, 2004, University of California (Berkeley)

Lecturer

Colonnese, Tom Grayson 1993; MA, 1974, University of Northern Iowa; PhD, 1981, Arizona State University

Anthropology

Professors

Anagnost, Ann Stasia * 1990; MA, 1977, University of Michigan; PhD, 1985, University of Michigan

Anderson, Eugene Newton 2006, (Affiliate); PhD, 1967, University of California (Berkeley)

Close, Angela Elizabeth * 1995, (Emeritus); MA, 1974, Cambridge University (UK); PhD, 1976, Cambridge University (UK)

Duncan, Bettina Shell * 1995; MS, 1988, University of Wisconsin; PhD, 1994, Pennsylvania State University

Grayson, Donald Kenneth * 1975; MA, 1969, University of Oregon; PhD, 1973, University of Oregon

Harrell, Stevan * 1974; MA, 1971, Stanford University; PhD, 1974, Stanford University

Hunn, Eugene Stuart 1972, (Emeritus); MA, 1969, University of California (Berkeley); PhD, 1973, University of California (Berkeley)

Kahn, Miriam * 1986; MA, 1974, Bryn Mawr College; PhD, 1980, Bryn Mawr College

Keyes, Charles F. * 1965, (Emeritus); PhD, 1965, Cornell University

Lape, Peter Vanderford 2000; MA, 1995, San Francisco State; PhD, 2000, Brown University

Leonetti, Donna Lockwood 1974, (Emeritus); MA, 1967, University of Washington; PhD, 1976, University of Washington

Li, Yongxian 2009, (Affiliate); BA, 1979, Sichuan University (China)

Nason, James D. * 1968, (Emeritus); MA, 1967, University of Washington; PhD, 1970, University of Washington

Newell, Laura Livingston * 1957, (Emeritus); MA, 1957, Northwestern University; PhD, 1967, University of Washington

Nute, Peter E. * 1968, (Emeritus); PhD, 1969, Duke University

O'Connor, Kathleen Ann * 1999; MA, 1987, State University of New York (Albany); PhD, 1995, State University of New York (Albany)

Ottenberg, Simon * 1955, (Emeritus); PhD, 1957, Northwestern University

Pena, Devon Gerardo 1999; MA, 1978, University of Texas (Austin); PhD, 1983, University of Texas (Austin)

Rhodes, Lorna Amarasingham * 1983, (Emeritus); MA, 1971, Cornell University; PhD, 1973, Cornell University

Sivaramakrishnan, K. 1999, (Affiliate); MA, 1979, Jamia Millia Islamia University (India); MS, 1991, Yale University; MPhil, 1993, Yale University; PhD, 1996, Yale University

Smith, Eric Alden * 1980, (Emeritus); MA, 1976, Cornell University; PhD, 1980, Cornell University

Spain, David Howard * 1968, (Emeritus); MA, 1962, Ohio State University

Stein, Julie K. 1980; MA, 1976, University of Minnesota; PhD, 1980, University of Minnesota

Takezawa, Yasuko I. 1990, (Affiliate); MA, 1985, University of Washington; MIA, 1987, University of Tsukuba (Japan); PhD, 1989, University of Washington

Taylor, Janelle Sue 1999; MA, 1990, University of Chicago; PhD, 1999, University of Chicago

Winans, Edgar Vincent * 1957, (Emeritus); MA, 1954, University of California (Los Angeles); PhD, 1959, University of California (Los Angeles)

Associate Professors

Bilaniuk, Laada Myroslava 1997; MA, 1991, University of Michigan; PhD, 1998, University of Michigan

Chapman, Rachel R. 2004; MA, 1988, Yale University; MA, 1991, University of California (Los Angeles); PhD, 1998, University of California (Los Angeles)

Eck, Gerald Gilbert * 1974, (Emeritus); MA, 1974, University of California (Berkeley); PhD, 1977, University of California (Berkeley)

Feathers, James K. * 1983, (Research); MA, 1985, University of Washington; PhD, 1990, University of Washington

Fitzhugh, John Benjamin 1997; MA, 1992, University of Michigan; PhD, 1996, University of Michigan

Goodreau, Steven M. 2001; MA, 1998, Pennsylvania State University; PhD, 2001, Pennsylvania State University

Haakanson, Sven David Jr. 2013; MA, 1996, Harvard University; PhD, 2000, Harvard University

Hoffman, Daniel J. 2004; MA, 2001, Duke University; MD, 2004, Duke University

Holman, Darryl Jon * 1999; MS, 1990, University of Wisconsin; PhD, 1996, Pennsylvania State University

Jolles, Carol Zane 1988, (Emeritus); MA, 1985, University of Washington; PhD, 1990, University of Washington

Kramer, Patricia Ann 1993; PhD, 1998, University of Washington

Liebow, Edward Bruce 1987, (Affiliate); MA, 1978, Arizona State University; PhD, 1986, Arizona State University

Llobera, Marcos 2004; MSc, 1993, University of Leicester (UK); DPhil, 1999, University of Oxford (UK)

Lowe, Celia 1999; MPhil, 1996, Yale University; PhD, 2000, Yale University

Assistant Professors

Amrute, Sareeta Bipin 2008; MA, 2001, University of Chicago; PhD, 2007, University of Chicago

Eisenberg, Daniel Thomas Abraham 2012; PhD, 2012, Northwestern University

Etnier, Michael A. 1993, (Affiliate); MA, 1997, University of Washington; PhD, 2002, University of Washington

Gonzalez, Sara Lynae 2013; MA, 2006, University of California (Berkeley); PhD, 2011, University of California (Berkeley)

Marwick, Benjamin 2008; MA, 2002, University of West Australia; PhD, 2008, Australian National University

Minichillo, Thomas Joseph 1996, (Affiliate); MA, 1995, Ohio State University; PhD, 2005, University of Washington

Norman, Karma 1997, (Affiliate); MA, 2001, University of Washington; PhD, 2007, University of Washington
 Taylor, Katherine Markham 2000, (Affiliate); MA, 1992, University of Arizona; PhD, 2000, University of Arizona
 Wall-Scheffler, Cara 2007, (Affiliate); MPhil, 2001, University of Cambridge (UK); PhD, 2005, University of Cambridge (UK)

Willson, Margaret Elizabeth 2008, (Affiliate); MA, 1982, Western Washington University; MPhil, 1985, London School of Economics (UK); PhD, 1989, London School of Economics (UK)

Senior Lecturer

Bentz, Marilyn Grace * 1968, (Emeritus); MSW, 1967, University of Illinois; PhD, 1984, University of Washington

Lecturers

Barker, Holly M. 2004; MA, 1993, American University; PhD, 2000, American University

Carney, Megan Anne 2012; MA, 2009, University of California (Santa Barbara); PhD, 2012, University of California (Santa Barbara)

Johnson, Jessica Ann 2003; MA, 2006, University of Washington; PhD, 2010, University of Washington

Olson, Krisjon Rae 2013; MA, 2001, University of California (Berkeley); PhD, 2007, University of California (Berkeley)

Perez, Michael Vincente 2011; MA, 2006, Michigan State University; PhD, 2011, Michigan State University

Taylor, Matthew Strickland 2013; MA, 2001, Texas Technological University; PhD, 2006, University of Albany

Applied Mathematics

Professors

Adams, Loyce Mae * 1985; MS, 1978, University of Virginia; PhD, 1983, University of Virginia

Criminale, William O. * 1968, (Emeritus); PhD, 1960, Johns Hopkins University

De Boor, Carl R. 2004, (Affiliate); Diploma, 1959, University of Hamburg (Germany); PhD, 1966, University of Michigan
 Deconinck, Bernard 1999; MSc, 1995, University of Colorado (Boulder); PhD, 1998, University of Colorado (Boulder)
 Greenbaum, Anne 1997; MA, 1978, University of California (Berkeley); PhD, 1981, University of California (Berkeley)

Kutz, Jose Nathan 1997; PhD, 1994, Northwestern University

LeVeque, Randall John * 1985; PhD, 1982, Stanford University

Lewis, Mark Alun 1988, (Affiliate); PhD, 1990, Oxford University (UK)

Martin, Richard Douglas * 1969; MS, 1965, University of Washington; PhD, 1969, Princeton University

Murray, James Dickson * 1988, (Emeritus); PhD, 1956, University of St. Andrews (UK); MA, 1961, Oxford University (UK); DSc, 1968, Oxford University (UK)

O'Malley, Robert Edmund Jr. * 1990, (Emeritus); MS, 1961, University of New Hampshire; PhD, 1966, Stanford University

Pearson, Carl Erik * 1965, (Emeritus); PhD, 1949, Brown University

Qian, Hong 1997; PhD, 1989, Washington University

Schmid, Peter Josef * 1993, (Affiliate); MS, 1989, Technical University of Munich (Germany); PhD, 1993, Massachusetts Institute of Technology

Swanson, Kristin Rae 1996, (Affiliate); MD, 1998, University of Washington; PhD, 1999, University of Washington

Tung, Ka Kit 1988; MS, 1972, California Institute of Technology; PhD, 1977, Harvard University

Wan, Frederic Yui-Ming * 1983, (Affiliate); MS, 1963, Massachusetts Institute of Technology; PhD, 1965, Massachusetts Institute of Technology

Associate Professors

Hetmaniuk, Ulrich Ladislav 2008; MS, 2002, University of Colorado (Boulder); PhD, 2002, University of Colorado (Boulder)

Kot, Mark * 1989; MS, 1979, Cornell University; MS, 1984, University of Arizona; MS, 1987, University of Arizona; PhD, 1987, University of Arizona

Shea-Brown, Eric Todd 2007; MS, 2001, Princeton University; PhD, 2004, Princeton University

Todorov, Emanuil 2009; BS, 1993, West Virginia Wesleyan College

Assistant Professors

Dimitrov, Dobromir T. 2008, (Affiliate); MSc, 2003, University of Texas (Arlington); PhD, 2005, University of Texas (Arlington)

Lorig, Matthew James 2014; PhD, 2011, University of California (Santa Barbara)

Shlizerman, Eli 2009; MSc, 2005, Weizmann Institute For Science (Israel); PhD, 2009, Weizmann Institute For Science (Israel)

Art and Art History

Professors

Berger, Paul Eric * 1978, (Emeritus); MFA, 1973, State University of New York (Buffalo)

Bravmann, Rene A. 1968, (Emeritus); MA, 1963, Indiana University; PhD, 1971, Indiana University

Brody, David * 1996; MFA, 1983, Yale University

Carraher, Ronald G. * 1967, (Emeritus); MA, 1961, San Jose State University

Casteras, Susan P. * 1996; MA, 1973, Yale University; MPhil, 1975, Yale University; PhD, 1977, Yale University

Celentano, Francis * 1966, (Emeritus); MA, 1957, New York University

Cheng, Karen 1997; MDes, 1996, University of Cincinnati
 Christofides, Constantine George * 1966, (Emeritus); MA, 1949, University of Michigan; MA, 1950, University of Michigan; PhD, 1956, University of Michigan

Clausen, Meredith Leslie 1979; MA, 1972, University of California (Berkeley); PhD, 1975, University of California (Berkeley)

Cummins, Rebecca Jean 2001; MA, 1982, University of New Mexico; PhD, 2003, University of Technology (Australia)

Failing, Patricia A. * 1982, (Emeritus); MA, 1974, University of California (Berkeley)

Gale, Ann Elizabeth 1995; MFA, 1991, Yale University

Garvens, Ellen Jo * 1994; MA, 1983, University of New Mexico; MFA, 1987, University of New Mexico

Gates, Mary Gardner 1995, (Affiliate); MA, 1969, University of Iowa; PhD, 1981, Yale University

Goldsmith, Layne * 1983; MA, 1975, San Jose State University; MFA, 1979, Cranbrook Academy of Art

Govedare, Philip Bainbridge * 1991; MFA, 1984, Tyler School of Art

Hixson, William John * 1950, (Emeritus); MFA, 1950, University of Oregon

Holm, Bill * 1968, (Emeritus); MFA, 1951, University of Washington

Hu, Mary Lee * 1980, (Emeritus); MFA, 1967, Southern Illinois University

Hurley, Denzil * 1994; MFA, 1979, Yale University

Jones, Robert C. * 1960, (Emeritus); MS, 1959, Rhode Island School of Design

Kartsonis, Anna D. 1983, (Emeritus); MA, 1968, New York University; PhD, 1982, New York University

Kehl, Richard Lee * 1962, (Emeritus); MFA, 1961, Kansas City Art Institute

Kingsbury, Martha 1968, (Emeritus); MA, 1963, Harvard University; PhD, 1969, Harvard University

Lin, Zhi 2001; MFA, 1989, University of London, UK; MFA, 1992, University of Delaware

Lundin, Norman Kent * 1964, (Emeritus); MFA, 1963, University of Cincinnati

Marshall, John Carl * 1970, (Emeritus); MFA, 1968, Syracuse University

Opperman, Hal N. * 1967, (Emeritus); MA, 1963, University of Chicago; PhD, 1972, University of Chicago

O'Toole, Helen Josephine 1996; MFA, 1989, The School of Art Institute of Chicago

Ozubko, Christopher * 1981; MFA, 1981, Cranbrook Academy of Art

Pawula, Kenneth John 1965, (Emeritus); MA, 1962, University of California (Berkeley)

Spafford, Michael Charles * 1963, (Emeritus); MA, 1960, Harvard University

Taylor, Norman Jeffrey * 1968, (Emeritus); MA, 1967, University of Iowa; MFA, 1967, University of Iowa

Wadden, Douglas James * 1970; MFA, 1970, Yale University

Walker, James S. * 1987; MFA, 1983, Rhode Island School of Design

Warashina, M. Patricia * 1970, (Emeritus); MFA, 1964, University of Washington

Whitehill-Ward, John * 1975, (Emeritus); MS, 1974, Chicago Institute of Design & Technology

Wright, Robin Kathleen 1983; MA, 1977, University of Washington; PhD, 1985, University of Washington

Associate Professors

Ahn, Sang-Gyeun 2006; MA, 2000, Purdue University; MFA, 2002, University of Illinois

Cabeen, Louise Ellen * 1993; MFA, 1989, The School of Art Institute of Chicago

Gould, Annabelle K. 2003; MFA, 1999, Cranbrook Academy of Art

Jeck, Doug A. * 1996; MFA, 1989, The School of Art Institute of Chicago

Labitzke, Curt Wayne * 1984; MFA, 1984, University of Notre Dame

Lingo, Estelle C. 2006; MA, 1993, Brown University; PhD, 1999, Brown University

Lingo, Stuart Patrick 2006; MA, 1986, University of London, UK; PhD, 1998, Harvard University

Matthews, Kristine 1989; MA, 1997, Royal College of Art (UK)

McNeel, Amie Laird 2007; MFA, 1990, University of California (Berkeley)

Praczkowski, Edward * 1965, (Emeritus); MFA, 1965, Cranbrook Academy of Art

Proctor, Richard Macfarlane * 1962, (Emeritus); MA, 1962, Michigan State University

Roesler, Axel 2005; Diploma, 2000, Burg Giebichenstein (Germany); MFA, 2001, Ohio State University; PhD, 2005, Ohio State University

Scheier, Shirley Elizabeth * 1986; MFA, 1985, University of Wisconsin (Madison)

Wang, Haicheng 2008; MA, 2000, Peking University (China); PhD, 2007, Princeton University

Wieczorek, Marek Krzysztof 1997; MA, 1990, University of Amsterdam (Netherlands); MPhil, 1992, Columbia University; PhD, 1997, Columbia University

Zirpel, Mark 2008; MFA, 1989, San Francisco Art Institute

Assistant Professors

Drpic, Ivan 2011; MA, 2005, Harvard University; PhD, 2011, Harvard University
Hirsch, Tad 2011; MDes, 2000, Carnegie Mellon University; MS, 2004, Massachusetts Institute of Technology; PhD, 2008, Massachusetts Institute of Technology
Khullar, Sonal 2009; MA, 2004, University of California (Berkeley); PhD, 2009, University of California (Berkeley)
Norlen, Linda Christine 2006, (Affiliate); MFA, 2007, Goucher College

Lecturers

Berk, Leo Saul 1997; MFA, 1999, University of Washington
Burns, Erin Elyse 2007; MFA, 2009, University of Washington
Chang, Alex Y 1996; MA, 2014, University of Washington
Cowie, Claire M. 1998; MFA, 1999, University of Washington
Freeman, Julia E. 2006; MA, 2007, University of Washington
Johnson, Eirik Anders 1997; MFA, 2003, San Francisco Art Institute
Kennedy, David A. 2011; MFA, 2013, University of Washington
Muren, Dominic Laberge 2008; MA, 2007, The University of the Arts
Rice, Kolya 1994; MA, 1993, Rice University
Seisler, Nicole Yvette 2014; MFA, 2011, Art Institute of Chicago
Smith, Michael P. 2005; MA, 2006, University of Washington
Tihanyi, Timea 2001; MD, 1993, Semmelweis Medical University (Hungary); MFA, 2003, University of Washington

Asian Languages and Literature

Professors

Boltz, William G. * 1978; MA, 1969, University of California (Berkeley); PhD, 1974, University of California (Berkeley)
Cox, Collett Davis * 1985; MA, 1974, Columbia University; MPhil, 1976, Columbia University; PhD, 1983, Columbia University
Knechtges, David Richard 1972, (Emeritus); MA, 1965, Harvard University; PhD, 1968, University of Washington
Pauwels, Heidi Rika Maria 1990; MA, 1986, Catholic University of Leuven (Belgium); PhD, 1994, University of Washington
Salomon, Richard Geoffrey * 1978; PhD, 1975, University of Pennsylvania
Shapiro, Michael Charles 1970; MA, 1970, University of Chicago; PhD, 1973, University of Chicago
Yue-Hashimoto, Anne Oi-Kan * 1980; MA, 1963, University of Texas (unspecified); PhD, 1966, Ohio State University

Associate Professors

Atkins, Paul Stephen 2002; MA, 1994, Stanford University; PhD, 1999, Stanford University
Bhowmik, Davinder Leslie 1987; MA, 1993, University of Washington; PhD, 1997, University of Washington
Brandauer, Frederick Paul * 1973, (Emeritus); MDiv, 1958, United Theological Seminary; MA, 1965, University of Pittsburgh; PhD, 1973, Stanford University
Hamm, John Christopher 1999; MA, 1994, University of California (Berkeley); PhD, 1999, University of California (Berkeley)

Handel, Zev Joseph * 1998; MA, 1992, University of California (Berkeley); PhD, 1998, University of California (Berkeley)
Kano, Tamako-Niwa * 1962, (Emeritus); MA, 1946, Radcliffe; PhD, 1956, Radcliffe
Mack, Edward Thomas 2002; MA, 1996, Columbia University; PhD, 2002, Harvard University
Ohta, Amy Snyder * 1990; MA, 1990, University of California (Los Angeles); PhD, 1993, University of California (Los Angeles)

Assistant Professors

Cho, Heekyoung 2010; MA, 1999, Yonsei University (Korea); PhD, 2010, University of Chicago
Dubrow, Jennifer Eichel 2006; MA, 2002, University of Chicago; PhD, 2011, University of Chicago
Jesty, Justin 2011; MA, 2010, University of Chicago; PhD, 2010, University of Chicago
Knechtges, Tai-Ping C. 1990, (Affiliate); MA, 1974, Tunghai University (Taiwan); PhD, 1981, University of Washington
Lien, Yeongchung Edmund 2006, (Affiliate); MS, 1970, University of California (Berkeley); PhD, 1972, University of California (Berkeley); MA, 2006, University of Washington; PhD, 2011, University of Washington

Senior Lecturers

Ahmad, Jameel 2004; MA, 1996, Jawaharlal Nehru University (India); MPhil, 1998, Jawaharlal Nehru University (India); PhD, 2011, Jawaharlal Nehru University (India)
Bi, Nyan-Ping 2000; MA, 1988, Indiana University; PhD, 2000, Indiana University
Kim, Soohye 1994; MA, 1991, Florida International University; PhD, 1999, University of Washington
Matsuda-Kiami, Izumi 1996; MA, 1992, University of Wisconsin (Madison)
Nguyen, Kim O. 1984, (Emeritus); MA, 1967, University of California (Los Angeles); PhD, 1973, University of California (Los Angeles)
Nishikawa, Itsuko 2005; MA, 1999, Columbia University
Ohta, Kaoru * 1989; MA, 1984, Meiji Gakuin University (Japan); MA, 1987, University of California (Los Angeles); PhD, 1994, University of California (Los Angeles)
Sandjaja, Desiana Pauli 2004; MA, 2000, Ohio University
Yu, Liping 2004; MA, 1988, Tsinghua University (China); MA, 1998, Louisiana State University

Lecturers

Cao, Yu Qing 1988; MA, 1992, University of Washington; PhD, 2001, University of Washington
Chapman, Ian David 2012; MA, 2001, Fudan University (China); MA, 2003, Princeton University; PhD, 2007, Princeton University
Iwata, Akiko 2004; MA, 2001, University of Minnesota; MA, 2002, Columbia University
Kesavatana-Dohrs, Wiworn 1989; MA, 1984, University of Detroit; PhD, 1989, University of Michigan
Lenz, Timothy John 1989; MA, 1994, University of Washington; PhD, 1999, University of Washington
Pahlajrai, Prem 2002; MS, 1990, Georgia Institute of Technology; MA, 2005, University of Washington; PhD, 2013, University of Washington
Turner, Bich Ngoc 2014; MA, 2003, University of Hawaii; PhD, 2011, University of Hawaii
Won, Eunyoung 2010; MA, 2004, Michigan State University

Astronomy

Professors

Agol, Eric 2003; PhD, 1997, University of California (Santa Barbara)

Anderson, Scott Frederic * 1988; MA, 1980, University of California (Los Angeles); PhD, 1985, University of Washington

Bohm-Vitense, Erika Helga Kuth * 1967, (Emeritus); PhD, 1951, University of Kiel (Germany)

Brownlee, Donald Eugene * 1965; PhD, 1971, University of Washington

Connolly, Andrew J. 2006; PhD, 1993, University of London, UK

Dalcanton, Julianne 1998; PhD, 1995, Princeton University
Hawley, Suzanne Louise * 1999; MA, 1984, University of Texas (Austin); PhD, 1989, University of Texas (Austin)

Hodge, Paul William * 1965, (Emeritus); PhD, 1960, Harvard University

Ivezic, Zeljko 2004; PhD, 1995, University of Kentucky

King, Ivan Robert 2002, (Emeritus); MA, 1947, Harvard University; PhD, 1952, Harvard University

Linnell, Albert P. 2002, (Affiliate); PhD, 1950, Harvard University

Lutz, Julie Haynes 1998, (Emeritus); MS, 1968, University of Illinois; PhD, 1972, University of Illinois

Meadows, Victoria Suzanne 2007; PhD, 1994, University of Sydney (Australia)

Quinn, Thomas Reynolds * 1993; PhD, 1986, Princeton University

Sullivan, Woodruff T. III * 1973, (Emeritus); PhD, 1971, University of Maryland

Szkody, Paula * 1975; MS, 1972, University of Washington; PhD, 1975, University of Washington

Wallerstein, George * 1965, (Emeritus); PhD, 1958, California Institute of Technology

Associate Professors

Clark, Joanne Deborah Hughes 1994, (Affiliate); PhD, 1988, Queen Mary College (UK)
Juric, Mario 2014; PhD, 2006, Princeton University

Assistant Professors

Debattista, Victor P. 2004, (Affiliate); PhD, 1998, Rutgers University
Mc Quinn, Matthew Judd 2012; MA, 2006, Harvard University; PhD, 2009, Harvard University
Murphy, Thomas Williams Jr. 2000, (Affiliate); MS, 1996, California Institute of Technology; PhD, 2000, California Institute of Technology

Senior Lecturers

Larson, Ana Marie 1987; PhD, 1996, University of Victoria (Canada)
Laws, Christopher S. 1998; MS, 2001, University of Washington; PhD, 2004, University of Washington
Smith, Toby Russell 1988; MS, 1990, University of Washington; PhD, 1995, University of Washington

Biology

Professors

Amemiya, Chris T. 2004, (Affiliate); PhD, 1987, Texas A&M University
Ammirati, Joseph Frank 1979; MA, 1967, San Francisco State; PhD, 1972, University of Michigan
Bendich, Arnold J. 1969, (Emeritus); PhD, 1969, University of Washington
Bergstrom, Carl Theodore 2001; PhD, 1998, Stanford University
Bliss, Lawrence Carroll * 1978, (Emeritus); MSc, 1953, Kent State University; PhD, 1956, Duke University
Boersma, P. Dee * 1974; PhD, 1974, Ohio State University
Bradshaw, Harvey D. 1984; PhD, 1984, Louisiana State University

Carrington, Emily 2005; PhD, 1992, Stanford University
 Cattolico, Rose Ann 1975; MA, 1968, Temple University; PhD, 1973, State Univ of New York (Stony Brook)
 Cleland, Robert Erskine * 1964, (Emeritus); PhD, 1957, California Institute of Technology
 Cloney, Richard Alan * 1954, (Emeritus); MA, 1954, Humboldt State University; PhD, 1959, University of Washington
 Daniel, Thomas Louis * 1984; MS, 1978, University of Wisconsin; PhD, 1982, Duke University
 de la Iglesia, Horacio O. 2003; MA, 1991, University of Buenos Aires (Argentina); PhD, 1997, University of Massachusetts
 Del Moral, Roger 1968, (Emeritus); MA, 1966, University of California (Santa Barbara); PhD, 1968, University of California (Santa Barbara)
 Dunwiddie, Peter William 1998, (Affiliate); MS, 1976, University of Wisconsin; PhD, 1983, University of Washington
 Ebre, Thomas Glen 1997, (Emeritus); PhD, 1968, University of Chicago
 Hall, Benjamin Downs 1963, (Emeritus); MA, 1956, Harvard University; PhD, 1959, Harvard University
 Halperin, Walter * 1968, (Emeritus); MS, 1961, Southern Connecticut State University; PhD, 1965, University of Connecticut
 Haskins, Edward F. * 1966, (Emeritus); MS, 1962, University of Minnesota; PhD, 1965, University of Minnesota
 Hille, Merrill Burr * 1969, (Emeritus); PhD, 1965, Rockefeller University
 Huey, Raymond Brunson * 1977, (Emeritus); MA, 1969, University of Texas (Austin); PhD, 1975, Harvard University
 Kenagy, George James * 1976, (Emeritus); PhD, 1972, University of California (Los Angeles)
 Kerr, Benjamin B. 2005; PhD, 2002, Stanford University
 Klicka, John Thomas 2012; MS, 1994, Texas A&M University; PhD, 1999, University of Minnesota
 Kohn, Alan Jacobs * 1961, (Emeritus); PhD, 1957, Yale University
 Kozloff, Eugene Nicholas * 1961, (Emeritus); MA, 1946, University of California (Berkeley); PhD, 1950, University of California (Berkeley)
 Kruckeberg, Arthur Rice * 1950, (Emeritus); PhD, 1950, University of California (Berkeley)
 Laird, Charles David * 1968, (Emeritus); PhD, 1966, Stanford University
 Leopold, Estella Bergere * 1976, (Emeritus); MS, 1950, University of California (Berkeley); PhD, 1955, Yale University
 Moody, William James * 1982; PhD, 1977, Stanford University
 Moore, Sue Ellen 2001, (Affiliate); MS, 1979, San Diego State University; PhD, 1997, Scripps Oceanographic Institution
 Odell, Garrett M. * 1985, (Emeritus); PhD, 1972, Johns Hopkins University
 Olmstead, Richard Glenn 1996; PhD, 1988, University of Washington
 Orians, Gordon H. * 1960, (Emeritus); PhD, 1960, University of California (Berkeley)
 Paine, Robert Treat * 1962, (Emeritus); MS, 1958, University of Michigan; PhD, 1961, University of Michigan
 Palka, John Milan * 1969, (Emeritus); PhD, 1965, University of California (Los Angeles)
 Parichy, David M. 2005; PhD, 1997, University of California (Davis)
 Peichel, Catherine L. 2003, (Affiliate); PhD, 1998, Princeton University
 Perkel, David James 2000; PhD, 1992, University of California (San Francisco)

Riddiford, Lynn Moorhead * 1973, (Emeritus); PhD, 1961, Cornell University
 Rohwer, Sievert Allen * 1973, (Emeritus); MA, 1970, University of Kansas; PhD, 1971, University of Kansas
 Ruesink, Jennifer Li 1990; MPhil, 1991, Cambridge University (UK); PhD, 1996, University of Washington
 Sebens, Kenneth 2005; PhD, 1977, University of Washington
 Sidor, Christian A. 2005; MS, 1997, University of Chicago; PhD, 2000, University of Chicago
 Strathmann, Richard Ray * 1972, (Emeritus); MS, 1966, University of Washington; PhD, 1970, University of Washington
 Summers, Adam P. 1995; MS, 1992, New York University; PhD, 1999, University of Massachusetts
 Swalla, Billie Joann 1999; MS, 1983, University of Iowa; PhD, 1988, University of Iowa
 Tewksbury, Joshua Jordan 2002; PhD, 2000, University of Montana
 Torii, Keiko Uemura * 1999; MS, 1989, University of Tsukuba (Japan); PhD, 1993, University of Tsukuba (Japan)
 Truman, James William * 1973, (Emeritus); MA, 1969, Harvard University; PhD, 1970, Harvard University
 Tsukada, Matsuo * 1969, (Emeritus); MSc, 1958, Osaka City University (Japan); PhD, 1961, Osaka City University (Japan)
 Van Volkenburgh, Elizabeth 1982; PhD, 1980, University of Washington
 Waaland, Joseph Robert 1969, (Emeritus); PhD, 1969, University of California (Berkeley)
 Wakimoto, Barbara Toshiko 1984; PhD, 1981, Indiana University
 Ward, Peter Douglas 1984; MS, 1973, University of Washington; PhD, 1976, McMaster University (Canada)
 Willows, Arthur Owen Dennis * 1969, (Emeritus); PhD, 1967, University of Oregon
Associate Professors
 Bakken, Aimee Hayes * 1973, (Emeritus); PhD, 1970, University of Iowa
 Borboroglu, Pablo Garcia 2009, (Affiliate); PhD, 2003, Univ Nacional Del Comahue (Argentina)
 Bosma, Martha Mae 1987; PhD, 1986, University of California (Los Angeles)
 Cooper, Mark Scott * 1990; PhD, 1985, University of California (Berkeley)
 Di Stilio, Veronica Sandra 2003; PhD, 1998, University of Massachusetts
 Hille Ris Lambers, Janneke 2006; PhD, 2001, Duke University
 Imaizumi, Takato 2008; MS, 1998, Tokyo Metropolitan University; PhD, 2001, Tokyo Metropolitan University
 Moens, Cecilia Bernelot * 1998, (Affiliate); PhD, 1993, University of Toronto (Canada)
 Nemhauser, Jennifer L. 2006; PhD, 2000, University of California (Berkeley)
 Parkhurst, Susan Marie 1994, (Affiliate); PhD, 1985, Johns Hopkins University
 Priess, James Raymond * 1993, (Affiliate); PhD, 1983, University of Colorado (Boulder)
 Rodriguez, Russell 1995, (Affiliate); PhD, 1983, Oregon State University
 Shou, Wenying 2008, (Affiliate); PhD, 2001, California Institute of Technology
 Stromberg, Caroline A.E. 2007; MSc, 1997, University of Lund (Sweden); PhD, 2003, University of California (Berkeley)
 Wilson, Gregory P. 2007; PhD, 2004, University of California (Berkeley)

Assistant Professors

Brunton, Bingni Wen 2012; PhD, 2012, Princeton University
 Buckley, Lauren Beth 2013; PhD, 2005, Stanford University
 Hoekstra, Jonathan M. 1995, (Affiliate); MS, 1993, Stanford University; PhD, 2001, University of Washington
 Leache, Adam 2010; MS, 2000, San Diego State University; PhD, 2008, University of California (Berkeley)
 Mills, Claudia Eileen 1989, (Affiliate); MS, 1976, Florida State University; PhD, 1982, University of Victoria (Canada)
 Paredes, Alexander Richard 2012; MS, 1999, University of California (San Diego); PhD, 2006, Stanford University
 Parrish, Jay Z. 2010; PhD, 2002, University of Colorado (Boulder)
 Riffell, Jeffrey A. 2010; PhD, 2004, University of California (Los Angeles)
 Santana Mata, Sharlene Elizabeth 2012; MSc, 2004, Universidad de Los Andes (Venezuela); PhD, 2010, University of Massachusetts
Senior Lecturers
 Doherty, Jennifer Helen 2014; PhD, 2009, University of Pennsylvania
 Kennedy, Michael Leo 1999; MS, 1980, Central Washington University; PhD, 1994, Arizona State University
 Petersen, Karen Elizabeth 1990; MS, 1977, University of New Mexico; PhD, 1983, University of New Mexico
 Zeman, Leslie Brown 1998; DVM, 1975, Michigan State University
Lecturers
 Buchwitz, Brian Joseph 1997; PhD, 2004, University of Washington
 Crowe, Alison Jane 2000; PhD, 1993, State Univ of New York (Stony Brook)
 Freeman, Scott Rider 1985; PhD, 1990, University of Washington
 Herron, Jon Charles 1987; PhD, 1996, University of Washington
 Martin-Morris, Linda E. 1994; PhD, 1991, Brandeis University
 Oakley, Amy E. 2008; PhD, 2008, University of Michigan
 Waaland, Kathryn Susan D. 1972, (Emeritus); PhD, 1969, University of California (Berkeley)
 Wenderoth, Mary Pat 1988; MS, 1981, Purdue University; PhD, 1987, Rush University

Center for Studies in Demography and Ecology

Professor

Ellis, John Mark 1999; MA, 1984, Indiana University; PhD, 1988, Indiana University

Chemistry

Professors

Andersen, Niels Hjorth * 1968; PhD, 1967, Northwestern University
 Baer, Donald R. 2004, (Affiliate); PhD, 1974, Cornell University
 Baker, William Ray 2011, (Affiliate); PhD, 1979, University of Illinois (Urbana)

Burgess, Lloyd William 1985, (Emeritus); MS, 1979, Syracuse University; PhD, 1984, Virginia Polytechnic Institute and State University

Callis, James B. * 1970, (Emeritus); PhD, 1970, University of Washington

Campbell, Charles Taylor * 1989; PhD, 1979, University of Texas (Austin)

Chiu, Daniel Teyun 2000; PhD, 1998, Stanford University
Dalton, Larry R. 1998, (Emeritus); MS, 1966, Michigan State University; MA, 1971, Harvard University; PhD, 1971, Harvard University

Davidson, Ernest Roy 2002; PhD, 1961, Indiana University
Drobny, Gary Peter 1981; PhD, 1981, University of California (Berkeley)

Dunning, Thomas Harold 1990, (Affiliate); PhD, 1970, California Institute of Technology

Engel, Thomas * 1980, (Emeritus); MA, 1964, Johns Hopkins University; PhD, 1969, University of Chicago

Epitotis, Nicholas * 1972, (Emeritus); MA, 1967, Harvard University; PhD, 1972, Princeton University

Floss, Heinz G. * 1987, (Emeritus); MS, 1959, Technical University of Berlin (Germany); PhD, 1961, Technical University of Munich (Germany)

Gamelin, Daniel Robert 2000; PhD, 1997, Stanford University

Gammon, Richard Harriss * 1977, (Emeritus); MA, 1966, Harvard University; PhD, 1970, Harvard University

Gelb, Michael Herman * 1985; PhD, 1982, Yale University
Ginger, David S. 2003; PhD, 2001, University of Cambridge (UK)

Goldberg, Karen Ila 1995; PhD, 1988, University of California (Berkeley)

Gouterman, Martin Paul * 1966, (Emeritus); MS, 1955, University of Chicago; PhD, 1958, University of Chicago

Grate, Jay W. 2004, (Affiliate); MS, 1980, University of California (San Diego); PhD, 1983, University of California (San Diego)

Haight, Gilbert Pierce 1989, (Affiliate); PhD, 1947, Princeton University

Halsey, George D. Jr. * 1951, (Emeritus); PhD, 1948, Princeton University

Heinekey, Dennis Michael * 1991; PhD, 1982, University of Alberta, Canada

Hendrickson, Herman Stewart 1996, (Emeritus); PhD, 1962, University of Illinois

Hopkins, Paul Brink * 1982; PhD, 1982, Harvard University

Keller, Sarah Lynn 2000; PhD, 1995, Princeton University

Kovacs, Julia A. * 1988; PhD, 1986, Harvard University
Mayer, James Moers * 1984, (Affiliate); PhD, 1982, California Institute of Technology

Norman, Josephus Gaston * 1972, (Emeritus); PhD, 1972, Massachusetts Institute of Technology

Quinn, Patricia Kathleen 1984, (Affiliate); PhD, 1988, University of Washington

Rathod, Pradipsinh K. 2001; PhD, 1982, Oregon Health Sciences University

Raucher, Stanley * 1975, (Emeritus); PhD, 1973, University of Minnesota

Reid, Philip James 1995; PhD, 1992, University of California (Berkeley)

Reinhardt, William Parker * 1991, (Emeritus); AM, 1966, Harvard University; PhD, 1968, Harvard University

Robinson, Bruce H. * 1980; PhD, 1975, Vanderbilt University

Rose, Norman Jenisch * 1966, (Emeritus); PhD, 1960, University of Illinois

Ruzicka, Jaromir * 1984, (Emeritus); MSc, 1959, Technical University of Prague (Czech); PhD, 1963, Technical University of Prague (Czech)

Sasaki, Tomikazu * 1989; MS, 1981, Kyoto University (Japan); PhD, 1985, Kyoto University (Japan)

Schubert, Wolfgang Manfred * 1947, (Emeritus); PhD, 1947, University of Minnesota

Schurr, J. Michael * 1966, (Emeritus); PhD, 1965, University of California (Berkeley)

Sherwood, Peter 2012, (Affiliate); MA, 1970, University of Cambridge (UK); PhD, 1970, University of Cambridge (UK); DSc, 1995, University of Cambridge (UK)

Spiro, Thomas George 2007; PhD, 1960, Massachusetts Institute of Technology

Synovec, Robert Eugene * 1986; PhD, 1986, Iowa State University

Turecek, Frantisek * 1990; MSc, 1973, Charles University (Czech Republic); PhD, 1977, Charles University (Czech Republic)

Vandenbosch, Robert * 1963, (Emeritus); PhD, 1957, University of California (Berkeley)

Varanasi, Usha Suryam 1980, (Affiliate); MS, 1964, California Institute of Technology; PhD, 1968, University of Washington

Varani, Gabriele 2001; PhD, 1987, University of Milan (Italy)

Woodman, Darrell James * 1965, (Emeritus); MA, 1965, Harvard University; PhD, 1965, Harvard University

Zoller, William H. * 1984, (Emeritus); PhD, 1969, Massachusetts Institute of Technology

Associate Professors

Khalil, Munira 2006; PhD, 2004, Massachusetts Institute of Technology

Li, Xiaosong 2005; PhD, 2003, Wayne State University

Macklin, John Welton * 1968, (Emeritus); PhD, 1969, Cornell University

Maly, Dustin James 2006; PhD, 2002, University of California (Berkeley)

Michael, Forrest E. 2004; MA, 1998, Harvard University; PhD, 2001, Harvard University

Simon, Julian A. * 1996, (Affiliate); MA, 1984, Columbia University; MPhil, 1986, Columbia University; PhD, 1991, Columbia University

Zhang, Bo 2008; MS, 2002, Peking University (China); PhD, 2006, University of Utah

Assistant Professors

Boydston, Andrew 2010; MS, 2002, University of Oregon; PhD, 2007, University of Texas (Austin)

Bush, Matthew Francis 2011; PhD, 2008, University of California (Berkeley)

Carlson, William Brenden 1998, (Affiliate); PhD, 2003, University of Washington

Chatterjee, Champak 2010; MSc, 1999, India Institute of Technology; PhD, 2005, University of Illinois

Cossairt, Brandi Michelle 2012; PhD, 2010, Massachusetts Institute of Technology

Lalic, Gojko 2008; PhD, 2004, Harvard University

Maibaum, Lutz 2011; Diploma, 2001, University of Dusseldorf, Germany; PhD, 2005, University of California (Berkeley)

Masiello, David 2004; PhD, 2004, University of Florida

Schlenker, Cody Williams 2011; PhD, 2010, University of Southern California

Stoll, Stefan 2011; MEng, 1998, Graz University of Technology (Austria); MA, 2001, University of Music and Performing Arts Graz (Austria); PhD, 2003, Eidgenossische Technische Hochschule (Switz)

Sullivan, Philip A. 2002, (Affiliate); PhD, 2006, University of Washington

Vaughan, Joshua Charles 2013; PhD, 2005, Massachusetts Institute of Technology

Zalatan, Jesse George 2014; PhD, 2008, Stanford University

Senior Lecturer

Wiegand, Deborah Hicks 1990; PhD, 1990, Northern Illinois University

Lecturers

Bryant, Jasmine Rae 1998; MA, 1997, Seattle University; PhD, 2002, University of Washington

Carroll, Andrea D. 1998; MS, 2001, University of Washington; PhD, 2003, University of Washington

Craig, Colleen Foley 2001; MS, 2004, University of Washington; PhD, 2006, University of Washington

Elangovan, Arumugasamy 2005; MS, 1991, University of Madras (India); PhD, 1999, University of Madras (India)

Goldman, Lawrence Michael 2014; PhD, 2010, Cardiff University, Wales

Classics

Professors

Blondell, Ruby * 1985; MA, 1981, Oxford University (UK); PhD, 1984, University of California (Berkeley)

Clauss, James Joseph * 1984; MA, 1976, Fordham University; PhD, 1983, University of California (Berkeley)

Connors, Catherine Marie * 1990; MA, 1986, University of Michigan; PhD, 1989, University of Michigan

Gowing, Alain Michael * 1988; MA, 1981, Bryn Mawr College; PhD, 1988, Bryn Mawr College

Halleran, Michael Ros * 1983, (Affiliate); AM, 1978, Harvard University; PhD, 1981, Harvard University

Harmon, Daniel P. * 1967, (Emeritus); MA, 1965, Northwestern University; PhD, 1968, Northwestern University

Hinds, Stephen Edward * 1992; MA, 1983, Trinity College (Ireland); PhD, 1985, St. Johns College (UK)

Mackay, Pierre A. * 1966, (Emeritus); MA, 1959, University of California (campus unspecified); PhD, 1964, University of California (campus unspecified)

Pascal, Paul * 1953, (Emeritus); PhD, 1953, University of North Carolina

Associate Professors

Hollmann, Alexander J. 2001; MA, 1990, University of Colorado (Boulder); PhD, 1998, Harvard University

Kamen, Deborah 2007; MS, 1999, Oxford University (UK); MA, 2005, University of California (Berkeley); PhD, 2005, University of California (Berkeley)

Levaniouk, Olga 2001; MA, 1994, University of Colorado (campus unspecified); PhD, 2000, Harvard University

Stroup, Sarah Culpepper 2000; MA, 1994, University of California (Berkeley); PhD, 2000, University of California (Berkeley)

Topper, Kathryn 2008; PhD, 2007, Harvard University

Assistant Professor

Levin-Richardson, Sarah 2007; MA, 2006, Stanford University; PhD, 2009, Stanford University

Communication

Professors

Baldasty, Gerald Joseph * 1974; MA, 1974, University of Wisconsin (Madison); PhD, 1978, University of Washington

Beam, Randal A. 2003; MA, 1976, Syracuse University; DPhil, 1988, University of Wisconsin

Bosmajian, Haig A. * 1965, (Emeritus); MA, 1951, University of The Pacific; PhD, 1960, Stanford University

Carter, Richard Fremont * 1967, (Emeritus); MA, 1954, University of Wisconsin; PhD, 1957, University of Wisconsin (Madison)

Ceccarelli, Leah Marie 1996; MA, 1992, Northwestern University; PhD, 1995, Northwestern University
 Domke, David Scott 1998; MA, 1992, California State University, Fullerton; PhD, 1996, University of Minnesota
 Giffard, Charles Anthony * 1978, (Emeritus); MA, 1964, University of Washington; PhD, 1968, University of Washington

Howard, Philip Edward 2002; MA, 1994, London School of Economics (UK); PhD, 2002, Northwestern University
 Lang, Gladys Engel * 1984, (Emeritus); MA, 1942, University of Washington; PhD, 1954, University of Chicago
 Lang, Kurt * 1984, (Emeritus); MA, 1952, University of Chicago; PhD, 1953, University of Chicago

Manusov, Valerie Lynn 1993; MA, 1984, Michigan State University; PhD, 1989, University of Southern California
 Moy, Patricia 1998; MS, 1993, Cornell University; PhD, 1998, University of Washington

Parks, Malcolm Ross 1978; MA, 1975, Michigan State University; PhD, 1976, Michigan State University

Pember, Don Raymond * 1969, (Emeritus); MA, 1966, Michigan State University; PhD, 1969, University of Wisconsin (Madison)

Rivenburgh, Nancy Kay * 1989; MS, 1982, Boston University; PhD, 1991, University of Washington

Scheidel, Thomas Maynard * 1955, (Emeritus); MA, 1955, University of Washington; PhD, 1958, University of Washington

Simpson, Roger Allan * 1968, (Emeritus); MS, 1961, University of Wisconsin; PhD, 1973, University of Washington

Stamm, Keith Roman * 1973, (Emeritus); MS, 1965, University of Wisconsin; PhD, 1968, University of Wisconsin (Madison)

Underwood, Douglas Mark * 1987; MA, 1974, Ohio State University

Yerxa, Fendall Winston * 1965, (Emeritus); BA, 1936, Hamilton College

Associate Professors

Bowen, Lawrence * 1973, (Emeritus); MA, 1971, University of Wisconsin; PhD, 1974, University of Wisconsin (Madison)
 Bowes, John Elliott * 1974, (Emeritus); MS, 1965, Syracuse University; PhD, 1971, Michigan State University

Cranston, Patricia * 1954, (Emeritus); MA, 1954, University of Texas (Austin)

Fearn-Banks, Kathleen A. 1990; MS, 1965, University of California (Los Angeles)

Foot, Kirsten Allegra 2001; MA, 1990, Wheaton College; PhD, 1999, University of California (San Diego)

Harold, Christine Lynn 2007; MA, 1999, Pennsylvania State University; PhD, 2003, Pennsylvania State University
 Joseph, Ralina L. 2005; MA, 2001, University of California (San Diego); PhD, 2005, University of California (San Diego)

Kielbowicz, Richard Burket * 1984; MA, 1978, University of Minnesota; PhD, 1984, University of Minnesota

Neff, Gina S. 2005; MPhil, 2001, City University of New York; PhD, 2004, Columbia University

Nishime, Leilani Linda 2008; MA, 1991, University of Michigan; PhD, 1997, University of Michigan

Post, Robert M. * 1960, (Emeritus); MA, 1958, Ohio University; PhD, 1961, Ohio University

Assistant Professors

Hill, Benjamin Mako 2013; SM, 2007, Massachusetts Institute of Technology; PhD, 2013, Massachusetts Institute of Technology

Pearce, Katy Elizabeth 2012; MA, 2006, University of London, UK; PhD, 2011, University of California (Santa Barbara)

Powers, Matthew John 2013; MA, 2005, Simon Fraser University, B.C. (Canada); PhD, 2013, New York University

Senior Lecturers

McGarrity, Matthew 2004; MA, 2000, Indiana University; PhD, 2004, Indiana University

Nyquist, Jody Deering 1966, (Emeritus); MA, 1967, University of Washington

Lecturers

Captain, Catherine 2014; MS, 1996, Northwestern University; MS, 2013, London Business School (UK)

Cook, Caley Kirstin 2013; MA, 2007, University of Southern California

Coutu, Lisa Marie 1990; MA, 1992, University of Washington; PhD, 1996, University of Washington

Mayo, Justin 2014; MJ, 1998, University of Missouri

Otanez, Andrea Kaye 2013; MA, 1990, University of Utah
 Partnow, Jessica 2009; BA, 2006, City University of New York

Robles, Jessica Sarah 2013; MA, 2005, University of Essex (UK); PhD, 2011, University of Colorado (Boulder)

Souders, Michael Christian 2013; MA, 2005, Eastern New Mexico University; PhD, 2011, University of Kansas

Stonehill, Alexander M. 2009; BA, 2003, New School University

Stuteville, Sarah R. 2009; BA, 2006, City University of New York

Yasin, Ekin 2013; MA, 2006, New York University; MA, 2008, Columbia University

Comparative History of Ideas

Lecturer

Dwyer, Anne Kristina 2006; MA, 2008, University of Washington; PhD, 2014, University of Washington

Comparative Literature

Professors

Adams, Hazard Simeon * 1977, (Emeritus); MA, 1949, University of Washington; PhD, 1953, University of Washington

Borch-Jacobsen, Mikkel * 1986; Doct, 1981, University of Strasbourg (France)

Braester, Yomi 2000; MA, 1991, Hebrew University (Israel); MA, 1992, Yale University; PhD, 1998, Yale University

Brown, Marshall Joseph 1988; MPhil, 1969, Yale University; PhD, 1972, Yale University

Rossel, Sven Hakon * 1974, (Affiliate); PhD, 1968, University of Copenhagen (Denmark)

Steele, Cynthia 1986; MA, 1979, University of California (San Diego); PhD, 1980, University of California (San Diego)

Associate Professors

Bean, Jennifer Muntzing 1998; PhD, 1998, University of Texas (Austin)

Kogoj-Kapetanica, Breda * 1973, (Emeritus); Diploma, 1954, University of Zagreb (Croatia); LittD, 1966, University of Zagreb (Croatia)

Konick, Willis Alvin * 1950, (Emeritus); MA, 1954, University of Washington; PhD, 1964, University of Washington

Tweedie, James 2004; MA, 1999, University of Iowa; PhD, 2002, University of Iowa

Assistant Professors

Groening, Stephen Francis 2014; MA, 2001, Claremont Graduate School; PhD, 2008, University of Minnesota

Mahadevan, Sudhir 2008; MA, 2000, New York University; PhD, 2009, New York University

Dance

Professors

Cooper, Elizabeth Ann 2001; MFA, 1997, University of Washington

Knapp, Joan * 1967, (Emeritus); MA, 1964, University of Illinois

Wiley, Hannah Christine * 1980; MA, 1981, New York University

Associate Professors

Coupe, James 2004; MA, 1999, University of Edinburgh (UK); MA, 2000, University of Salford (UK); PhD, 2007, University of Washington

McMains, Juliet 2006; PhD, 2003, University of California (Riverside)

Salk, Jennifer 2002; MFA, 1994, Ohio State University

Lecturers

Cinotto, Rhonda M. 1994; BA, 1997, University of Washington

Curtis, Jeffrey S. 2000; MFA, 2002, University of Washington

Haim, Mark Steven 2002; MFA, 2006, Hollins College (Virginia)

Lincoln, Rachael Elizabeth 2013; MFA, 2009, University of California (Los Angeles)

Mendieta, Wilson 2011; MFA, 2013, University of Washington

Monroe-Cook, Brenna G. 2008; MFA, 2011, University of Washington

Moore, Paul Matthew Regoli 1995; BA, 1993, University of California (Santa Barbara)

Parker, Sarah Lee 2012; BS, 1993, University of Minnesota

Drama

Professors

Bryant-Bertail, Sarah Ann * 1990, (Emeritus); MA, 1981, University of Minnesota; PhD, 1986, University of Minnesota

Clay, Jack Dewayne * 1986, (Emeritus); MA, 1956, Northwestern University

Comtois, Mary Elizabeth * 1985, (Emeritus); MA, 1962, San Francisco State; PhD, 1970, University of Colorado (Boulder)

Curtis-Newton, Valerie 1993; MA, 1996, University of Washington

Gates, Sarah Nash * 1983, (Emeritus); MA, 1974, University of California (Santa Barbara); MFA, 1983, Boston University

Johnson, David Odai 1998; MFA, 1990, University of Utah; PhD, 1994, University of Texas (Austin)

Korf, Geoffrey Leonard 2002; MFA, 1991, Yale University
 London, Todd 2014; MFA, 1981, Boston University; PhD, 1985, American University

Lynch, Thomas Plummer 2005; MFA, 1979, Yale University
 Postlewait, Thomas 2007, (Affiliate); PhD, 1976, University of Minnesota

Associate Professors

Forrester, William Donald * 1972, (Emeritus); MFA, 1969, Yale University

Jones, Zane 2012; MFA, 1994, University of Southern California

Magelssen, Scott Andrew 2013; MA, 1999, University of Minnesota; PhD, 2002, University of Minnesota

Trout, Deborah L. * 1994; MFA, 1994, Yale University

Tsao, Andrew H. 2006; MFA, 1990, California Institute of The Arts

Valentinetti, Aurora 1943, (Emeritus); MA, 1949, University of Washington

Assistant Professors

Foroutan Yekta, Payam 2014, (Affiliate); MA, 2001, Tehran University (Iran)

Frace, Jeffrey 2008; MFA, 1997, Columbia University
Mihaylova, Stefka 2011; MA, 2000, Sofia University; MA, 2001, Central European University (Budapest); PhD, 2008, Northwestern University

Samini, Nagmeh 2014, (Affiliate); MA, 2000, Tehran University (Iran); PhD, 2004, Tehran University (Iran)

Wolcott, John Rutherford * 1967, (Emeritus); MFA, 1964, Carnegie Institute of Technology; PhD, 1967, Ohio State University

Senior Lecturers

Hafso, Scott Gordon 1992; MFA, 1995, University of Washington; MMUS, 1999, University of Washington

Shahn, Judith * 1990; BFA, 1977, Carnegie Mellon University

Lecturers

Alm, Geoffrey Earle 1998; BA, 1976, Evergreen State College

Lienau, Phillip II 2011; BA, 2000, University of California (Berkeley)

Madden, Catherine Ann 1987; MA, 1977, Washington University

Platt, Myra Mae Wilson 2008; BS, 1984, Northwestern University

Richlovsky, Jane Frances 1993; BA, 1991, Columbia College

Smith, Andrew D. 2003; MFA, 2005, University of Washington

Economics

Professors

Bajari, Patrick 2011; PhD, 1997, University of Minnesota
Barzel, Yoram * 1961; MA, 1956, Hebrew University (Israel); PhD, 1961, University of Chicago

Brown, Gardner Mallard Jr. * 1965, (Emeritus); PhD, 1964, University of California (Berkeley)

Bruce, Neil * 1990; MA, 1969, Queen's University At Kingston (Canada); PhD, 1975, University of Chicago

Crutchfield, James Arthur Jr. * 1949, (Emeritus); MA, 1942, University of California (Los Angeles); PhD, 1954, University of California (Berkeley)

Duncan, Greg Michael 2012, (Affiliate); MA, 1973, University of California (Berkeley); PhD, 1976, University of California (Berkeley)

Eicher, Theo Stefan * 1994; MA, 1991, Columbia University; MPhil, 1993, Columbia University; PhD, 1994, Columbia University

Fan, Yangin 2013; MA, 1987, University of Western Ontario (Canada); PhD, 1990, University of Western Ontario (Canada)

Ghironi, Fabio Pietro 2013; MA, 1994, Bocconi University (Italy); PhD, 1999, University of California (Berkeley)

Halvorsen, Robert Francis * 1972; MBA, 1965, Harvard University; MPA, 1968, Harvard University; PhD, 1973, Harvard University

Hartman, Richard Charles * 1971, (Emeritus); MA, 1971, University of California (Berkeley); PhD, 1971, University of California (Berkeley)

Khalil, Fahad Ahmed * 1991; MA, 1988, Virginia Polytechnic Institute and State University; PhD, 1991, Virginia Polytechnic Institute and State University

Kim, Chang Jin 1985; PhD, 1989, University of Washington
Lawarree, Jacques Paul * 1990; MA, 1984, University of Liege (Belgium); PhD, 1990, University of California (Berkeley)

Lundberg, Shelly J. * 1984, (Emeritus); PhD, 1981, Northwestern University

Mc Caffree, Kenneth Maurice * 1949, (Emeritus); MA, 1942, University of Denver; PhD, 1950, University of Chicago

McGee, John Seneca 1966, (Emeritus); PhD, 1952, Vanderbilt University

Nelson, Charles Rowe * 1975, (Emeritus); MA, 1967, University of Wisconsin; PhD, 1969, University of Wisconsin (Madison)

North, Douglas Cecil 1950, (Emeritus); PhD, 1952, University of California (Berkeley)

Parks, Richard W. * 1970, (Emeritus); MA, 1964, University of California (Berkeley); PhD, 1966, University of California (Berkeley)

Silberberg, Eugene 1967, (Emeritus); PhD, 1964, Purdue University

Startz, Richard * 1984, (Emeritus); PhD, 1978, Massachusetts Institute of Technology

Thornton, Judith Grouse Leber * 1961; MA, 1958, Radcliffe; PhD, 1960, Radcliffe

Turnovsky, Stephen John * 1987; MA, 1963, Victoria University of Wellington (New Zealand); PhD, 1968, Harvard University

Wen, Quan 2013; MA, 1988, University of Western Ontario (Canada); PhD, 1991, University of Western Ontario (Canada)

Wong, Kar-Yiu * 1983; MPhil, 1979, Chinese University of Hong Kong; MPhil, 1981, Columbia University; PhD, 1983, Columbia University

Zivot, Eric W. * 1993; PhD, 1992, Yale University

Associate Professors

Brock, Philip Lawton * 1991; PhD, 1982, Stanford University

Chen, Yu-Chin 2003; MA, 1996, Harvard University; PhD, 2002, Harvard University

Hadjimichalakakis, Michael Gregory * 1969, (Emeritus); PhD, 1970, University of Rochester

Kochin, Levis A. * 1972; PhD, 1975, University of Chicago

Rose, Elaina 1993; MA, 1988, University of Pennsylvania; PhD, 1993, University of Pennsylvania

Ellis, Gregory Michael * 1988; PhD, 1992, University of California (Berkeley)

Assistant Professors

Heath, Rachel 2011; MA, 2007, Yale University; MPhil, 2008, Yale University; PhD, 2012, Yale University

Lee, Jihyung 2013; MA, 2009, Yale University; MPhil, 2010, Yale University

Leukhina, Oksana Mikhaylovna 2010; MA, 2003, University of Minnesota; PhD, 2005, University of Minnesota

Tan, Xu 2013; MS, 2011, Stanford University

Wolff, Hendrik 2007; MSc, 2000, University of Bonn (Germany); MSc, 2004, University of California (Berkeley); PhD, 2007, University of California (Berkeley)

Yang, Mu-Jeung 2012; Diploma, 2006, University of Bonn (Germany); PhD, 2012, University of California (Berkeley)

Lecturers

Ellis, Gregory Michael * 1988; PhD, 1992, University of California (Berkeley)

Knox, Melissa Ann 2009; PhD, 2008, University of California (Berkeley)

O'Dea, Dennis Charles 2012; MA, 2007, University of Illinois (Urbana); PhD, 2010, University of Illinois (Urbana)

Salehi-Esfahani, Haideh 1990; PhD, 1985, University of Pennsylvania

Turnovsky, Michelle Henriette Louise 1987; Diploma, 1963, Ecole de Haut Enseignement, Paris; MBA, 1965, Harvard University; PhD, 1978, Australian National University

English

Professors

Abrams, Robert Edward * 1971; PhD, 1973, Indiana University

Alexander, Edward * 1960, (Emeritus); MA, 1959, University of Minnesota; PhD, 1963, University of Minnesota

Allen, Carolyn Rand J. * 1972; MA, 1966, Claremont Graduate School; PhD, 1972, University of Minnesota

Bawarshi, Anis 1999; MA, 1995, University of Kansas; PhD, 1999, University of Kansas

Bierds, Linda Louise * 1981; MA, 1971, University of Washington

Blake, Kathleen Ann * 1971, (Emeritus); MA, 1967, University of California (Los Angeles); PhD, 1971, University of California (San Diego)

Cherniavsky, Eva 2005; PhD, 1990, University of California (Berkeley)

Chrisman, Laura H. 2005; DPhil, 1992, University of Oxford (UK)

Coldewey, John C. * 1972, (Emeritus); MA, 1969, Northern Illinois University; PhD, 1972, University of Colorado (Boulder)

Dillon, George Lewis * 1986, (Emeritus); MA, 1966, University of California (Berkeley); PhD, 1969, University of California (Berkeley)

Dunn, Richard J. * 1967, (Emeritus); MA, 1961, Case Western Reserve University; PhD, 1964, Case Western Reserve University

Foster, Ronald Thomas 2005; MA, 1984, University of Texas (Austin); PhD, 1990, University of Wisconsin

Frey, Charles Hubbard * 1970, (Emeritus); JD, 1960, Harvard University; PhD, 1971, Yale University

Handwerk, Gary John * 1984; PhD, 1984, Brown University

Jeffords, Susan Elizabeth * 1985; MA, 1977, University of Pennsylvania; PhD, 1981, University of Pennsylvania

Johnson, Charles Richard * 1976, (Emeritus); MA, 1973, Southern Illinois University; PhD, 1988, State Univ of New York (Stony Brook)

Kaplan, Sydney Janet * 1971; MA, 1966, University of California (Los Angeles); PhD, 1971, University of California (Los Angeles)

Kaup, Monika 2000; MA, 1988, Ruhr Universität Bochum (Germany); PhD, 1991, Ruhr Universität Bochum (Germany)

Kenney, Richard Laurence * 1987; BA, 1970, Dartmouth College

Korg, Jacob * 1955, (Emeritus); MA, 1947, Columbia University; PhD, 1952, Columbia University

Lockwood, Thomas Frank * 1967; PhD, 1967, Rice University

Matchett, William Henry * 1954, (Emeritus); MA, 1950, Harvard University; PhD, 1957, Harvard University

Mc Hugh, Heather * 1982, (Emeritus); MA, 1972, University of Denver

McCracken, James David * 1966, (Emeritus); MA, 1962, University of Chicago; PhD, 1966, University of Chicago

Modiano, Raimonda * 1973; Diploma, 1968, University of Bucharest (Romania); PhD, 1973, University of California (San Diego)

Reed, Brian Matthew 2000; PhD, 2000, Stanford University

Remley, Paul Gardner * 1988; MA, 1985, University of Cambridge (UK); MPhil, 1987, Columbia University; PhD, 1990, Columbia University

Rose, Christine M. 1994, (Affiliate); AM, 1977, Boston College; PhD, 1985, Tufts University

Sale, Roger H. * 1962, (Emeritus); MA, 1954, Cornell University; PhD, 1957, Cornell University

Searle, Leroy Frank * 1977; MA, 1968, University of Iowa; PhD, 1970, University of Iowa

Shields, David Jonathan * 1988; MFA, 1980, University of Iowa

Shulman, Robert Philip * 1961, (Emeritus); MA, 1959, Ohio State University; PhD, 1959, Ohio State University

Silberstein, Sandra Valerie * 1982; MA, 1971, University of Michigan; PhD, 1982, University of Michigan

Staten, Henry Jesse * 1998; PhD, 1978, University of Texas (Austin)

Stevick, Robert David * 1962, (Emeritus); MA, 1951, University of Tulsa; PhD, 1956, University of Wisconsin (Madison)

Streitberger, William Richard * 1973; MA, 1971, University of Illinois; PhD, 1973, University of Illinois

Stygall, Gail * 1990; PhD, 1989, Indiana University

Tollefson, James William * 1980, (Emeritus); MA, 1973, Purdue University; PhD, 1978, Stanford University

Vaughan, Miceal Francis * 1973; MA, 1973, Cornell University; PhD, 1973, Cornell University

Wong, Shawn Hsu * 1984; MA, 1974, San Francisco State University; Kathleen Middlekauff 2000; PhD, 1976, University of California (San Diego)

Associate Professors

Bosworth, David Leslie * 1984; BA, 1969, Brown University; Burstein, Jessica Lee 1998; MA, 1990, University of Chicago; PhD, 1998, University of Chicago

Butwin, Joseph Mazo * 1970; MA, 1966, Harvard University; PhD, 1971, Harvard University

Chude-Sokei, Louis 2010; PhD, 1995, University of California (Los Angeles)

Cummings, Katherine M. * 1985; MA, 1979, Montclair State University; PhD, 1985, University of Wisconsin (Madison)

Feld, Andrew E. 2006; MFA, 1998, University of Houston; Griffith, John W. * 1968; PhD, 1969, University of Oregon; Guerra, Juan Cruz * 1990; MA, 1983, University of Illinois; PhD, 1992, University of Illinois

Harkins, Gillian Hannah 2002; PhD, 2002, University of California (Berkeley)

Ibrahim, Habiba 2006; PhD, 2005, State University of New York (Albany)

Knight, Jeffrey Todd 2011; MPhil, 2007, Cambridge University (UK); PhD, 2009, Northwestern University

Laguardia, Eric Henry * 1961, (Emeritus); AM, 1955, Columbia University; PhD, 1961, University of Iowa

LaPorte, Charles P. 2005; MA, 1997, University of Virginia; PhD, 2004, University of Michigan

Longyear, Christopher Rudston * 1972, (Emeritus); MA, 1955, University of Michigan; PhD, 1961, University of Michigan

Moore, Colette 2005; PhD, 2004, University of Michigan

Motha, Mary Natasha Suhanthie 2008; MEd, 1995, University of Maryland; PhD, 2004, University of Maryland

Mussetter, Sally Ann * 1978, (Emeritus); MA, 1962, Ohio State University; PhD, 1975, Cornell University

Palomo, Dolores Josephine * 1971, (Emeritus); MA, 1966, Wayne State University; PhD, 1972, State University of New York (Buffalo)

Patterson, Mark Raymond * 1981; PhD, 1981, Princeton University

Reddy, Chandan C. 2001; MA, 1995, Columbia University; MPhil, 1999, Columbia University; PhD, 2004, Columbia University

Shields, Juliet D. 2008; MA, 1999, University of Pennsylvania; PhD, 2004, University of Pennsylvania

Simpson, Caroline Chung * 1994; MA, 1989, University of Houston; PhD, 1994, University of Texas (Austin)

Smith, Eugene Herbert * 1958, (Emeritus); MA, 1954, University of Washington; PhD, 1963, University of Washington

Sonenberg, Maya * 1993; MA, 1984, Brown University; Stanton, Robert Bruce * 1956, (Emeritus); MA, 1950, University of Missouri (Kansas City); PhD, 1953, Indiana University

Triplett, Pimone E. 2006; MFA, 1990, University of Iowa

Webster, John M. * 1972; MA, 1969, University of California (Berkeley); PhD, 1974, University of California (Berkeley)

Weinbaum, Alys Eve 1998; MA, 1990, University of Sussex (UK); MA, 1992, Columbia University; PhD, 1998, Columbia University

Assistant Professors

Bou Ayash, Nancy 2013; MA, 2006, American University of Beirut (Lebanon); PhD, 2013, University of Louisville

Buckroyd, Peter 2014, (Affiliate); MA, 1970, McMaster University (Canada); PhD, 1974, McMaster University (Canada)

Chaney, Eve Christine 1991, (Affiliate); MA, 1993, University of Washington; PhD, 1998, University of Washington

Griffith, Malcolm Anstett * 1966, (Emeritus); MA, 1962, Ohio State University; PhD, 1966, Ohio State University

Malone, Erin C. 1995, (Affiliate); MFA, 1996, University of Washington

Rai, Candice Samjhana 2008; MA, 2001, University of Illinois; PhD, 2008, University of Illinois

Sandhu, Priti 2010; MA, 2003, Lancaster University (UK); PhD, 2010, University of Hawaii

Taylor, Jesse Oak 2013; MA, 2005, University of Wisconsin (Madison); PhD, 2010, University of Wisconsin (Madison)

Villegas, Julie Elizabeth 1986, (Affiliate); MA, 1990, University of Washington; PhD, 1997, University of Washington

Senior Lecturers

Beyer, Catharine Hoffman 1984; MA, 1970, University of Michigan

Gillis-Bridges, Kimberlee Lynne 1989; MA, 1990, University of Washington

Laufenberg, Henry J. 2003; MA, 1994, University of Washington; MA, 1996, San Francisco State; PhD, 2001, University of California (Riverside)

Liu, Michelle Su-Mei 2001; MA, 1996, Yale University; PhD, 2003, Yale University

Matthews, Carrie Robertson 2008; MA, 2001, University of North Carolina; PhD, 2007, University of North Carolina

McCue, Frances A. 1991; MFA, 1988, University of Washington; MEd, 1996, Columbia University; EdD, 2001, Columbia University

O'Neill, John Joseph 1985; MA, 1986, University of Washington

Popov, Nikolai Borissov 1982; PhD, 1994, University of Washington

Stein, Holly 1990; MEd, 1992, University of Washington; PhD, 2000, University of Washington

Wacker, Norman J. 1979; MA, 1976, University of Washington; PhD, 1986, University of Washington

Lecturers

Brenner, Patricia Jenkins 1983; MA, 1976, University of Arkansas

George, Elizabeth Laurie * 1991; MA, 1980, University of Oregon; PhD, 1984, University of Oregon

Mc Namara, Robert James 1985; MA, 1975, Colorado State University; PhD, 1985, University of Washington

Simmons-O'Neill, Elizabeth 1985; MA, 1982, University of Washington; PhD, 1988, University of Washington

Stansbury, Heather Lyn 2001; MA, 2003, University of Washington; PhD, 2008, University of Washington

Van Buren, Amy Noel 1998; PhD, 2012, University of Washington

Gender, Women, and Sexuality Studies

Professors

Bose, Christine Ellen 2014, (Affiliate); PhD, 1973, Johns Hopkins University

Brainard, Suzanne Gage 1987, (Affiliate); MA, 1968, Ohio State University; PhD, 1972, Ohio State University

Ginorio, Angela Beatriz * 1981, (Emeritus); MA, 1971, University of Puerto Rico; PhD, 1979, Fordham University

Jacobs, Sue-Ellen * 1974, (Emeritus); MA, 1966, University of Colorado (campus unspecified); PhD, 1970, University of Colorado (campus unspecified)

Ramamurthy, Priti 1997; MBA, 1978, Indian Institute of Management, India; MRP, 1982, Syracuse University; PhD, 1995, Syracuse University

Yee, Shirley Jo-Ann * 1988; MA, 1983, Ohio State University; PhD, 1987, Ohio State University

Associate Professors

Habell-Pallan, Michelle 1998; MA, 1993, University of California (San Diego); MA, 1994, University of California (San Diego); PhD, 1997, University of California (Santa Cruz)

Ross, Luana K. 1999; MSW, 1981, Portland State University; PhD, 1992, University of Oregon

Swarr, Amanda L. 2005; MA, 1998, University of Minnesota; PhD, 2003, University of Minnesota

Welland, Sasha 2004; MA, 1998, University of California (Santa Cruz); PhD, 2005, University of California (Santa Cruz)

Assistant Professors

Barbas, Samantha 2006, (Affiliate); PhD, 2000, University of California (Berkeley)

Boyer, Debra Kay 1988, (Affiliate); MA, 1983, University of Washington; PhD, 1986, University of Washington

Fraczek, Claire Elizabeth 2002, (Affiliate); MEd, 2005, University of Washington; PhD, 2011, University of Washington

Pope-Levison, Priscilla 2007, (Affiliate); MDiv, 1983, Duke University; PhD, 1989, University of St. Andrews (UK)

Segall, Kimberly 2006, (Affiliate); PhD, 2000, Northwestern University

Lecturer

Lee, Regina Yung 2014; MA, 2007, University of Alberta, Canada; PhD, 2013, University of California (Riverside)

Geography

Professors

Beyers, William B. * 1962, (Emeritus); PhD, 1967, University of Washington

Braden, Kathleen 1989, (Affiliate); MA, 1974, University of Washington; PhD, 1981, University of Washington

Brown, Michael Peter * 1997; MA, 1990, University of British Columbia (Canada); PhD, 1994, University of British Columbia (Canada)

Chan, Kam Wing * 1991; MSc, 1983, University of Hong Kong; PhD, 1988, University of Toronto (Canada)

Elwood-Faustino, Sarah A. 2006; MA, 1996, University of Minnesota; PhD, 2000, University of Minnesota
England, Kim Victoria Louise 1999; MA, 1984, Ohio State University; PhD, 1988, Ohio State University
Herbert, Steven Kelly 2000; MA, 1987, University of Minnesota; PhD, 1995, University of California (Los Angeles)
Jarosz, Lucy Antonia * 1990; MA, 1979, University of Wisconsin; PhD, 1990, University of California (Berkeley)
Krumme, Gunter * 1970, (Emeritus); PhD, 1966, University of Washington

Lawson, Victoria Anne * 1986; MA, 1982, Ohio State University; PhD, 1986, Ohio State University
Mayer, Jonathan David * 1977; MA, 1975, University of Michigan; PhD, 1977, University of Michigan
Mitchell, Katharyne Wilcox 1993; MA, 1989, University of California (Berkeley); PhD, 1993, University of California (Berkeley)

Morrill, Richard L. * 1955, (Emeritus); MA, 1957, University of Washington; PhD, 1959, University of Washington
Nyerges, Timothy Lee * 1985; MA, 1976, Ohio State University; PhD, 1980, Ohio State University

Sparke, Matthew Brookman * 1995; MA, 1991, University of British Columbia (Canada); PhD, 1996, University of British Columbia (Canada)

Velikonja, Joseph * 1964, (Emeritus); PhD, 1948, State University (Italy)

Associate Professors

Chang, Kuei-Sheng * 1966, (Emeritus); MA, 1950, University of Michigan; PhD, 1955, University of Michigan
Conway, Richard Scott Jr. 1975, (Affiliate); MBA, 1971, University of Washington; MA, 1972, University of Pennsylvania; PhD, 1976, University of Pennsylvania

Kakiuchi, Hiroaki George * 1957, (Emeritus); MA, 1953, University of Michigan; PhD, 1957, University of Michigan
Withers, Suzanne Davies 1997; MA, 1988, Queen's University At Kingston (Canada); PhD, 1992, University of California (Los Angeles)

Assistant Professors

Bergmann, Luke Robert 2011; MA, 2006, University of Minnesota; PhD, 2012, University of Minnesota
Biermann, Christine Patricia 2014; MS, 2009, University of Tennessee; PhD, 2014, Ohio State University
Ybarra, Megan 2014; PhD, 2010, University of California (Berkeley)

Lecturer

Hannah, Joseph J. 1992; MA, 1989, Cornell University; PhD, 2007, University of Washington

Germanics

Professors

Ames, Eric Christopher 2000; MA, 1993, University of Washington; PhD, 2000, University of California (Berkeley)
Ammerlahn, Hellmut H. * 1963, (Emeritus); Abitur, 1957, Taunusschule Gymnasium; MA, 1960, University of Vermont; PhD, 1965, University of Texas (Austin)
Bansleben, Manfred Wolf * 1988, (Emeritus); PhD, 1979, Vienna University of Technology
Barrack, Charles M. * 1968; MA, 1966, University of Washington; PhD, 1969, University of Washington
Behler, Diana Ipsen * 1969, (Emeritus); MA, 1966, University of Washington; PhD, 1970, University of Washington
Brown, Jane Kurshan * 1988, (Emeritus); MPhil, 1969, Yale University; PhD, 1971, Yale University
Gray, Richard Terrence * 1991; MA, 1976, University of Cincinnati; PhD, 1981, University of Virginia

Prutti, Brigitte * 1991; MA, 1987, University of Colorado (campus unspecified); DPhil, 1988, University of Graz (Austria); PhD, 1991, University of California (Irvine)
Voyles, Joseph Bartle * 1965, (Emeritus); MA, 1962, Indiana University; PhD, 1965, Indiana University
Wilke, Sabine * 1988; PhD, 1986, University of Mainz (Germany)

Associate Professors

Block, Richard 2004; MA, 1979, University of Washington; PhD, 1998, Northwestern University
Brandl, Klaus Karl 1991; MA, 1987, University of Texas (unspecified); PhD, 1991, University of Texas (Austin)
McLean, Sammy Kay * 1967, (Emeritus); MA, 1957, University of Michigan; PhD, 1963, University of Michigan

Assistant Professors

Canfield-Budde, David A. 1995, (Affiliate); MA, 1997, University of Washington; PhD, 2004, University of Washington
Tilghman, Heidi Rauscher 1988, (Affiliate); MA, 1989, University of Washington; PhD, 1989, University of Washington
Wiggins, Ellwood Holler 2012; MA, 2003, St. John's College (New Mexico); MA, 2006, Johns Hopkins University; PhD, 2011, Yale University

Lecturer

Terrasi, Shayna Kye-hee 2014; MA, 2004, San Francisco State; PhD, 2011, University of California (Los Angeles)

History

Professors

Alden, Dauril * 1959, (Emeritus); MA, 1952, University of California (Berkeley); PhD, 1959, University of California (Berkeley)
Bacharach, Jere L. * 1967, (Emeritus); MA, 1962, Harvard University; PhD, 1967, University of Michigan
Baiklin, Jordanna 2001; MA, 1994, Stanford University; PhD, 1998, Stanford University
Behlmer, George Kinkel * 1979; MA, 1972, Stanford University; PhD, 1977, Stanford University
Bergquist, Charles Wylie * 1989, (Emeritus); MA, 1968, Stanford University; PhD, 1973, Stanford University
Conlon, Frank F. * 1968, (Emeritus); MA, 1963, University of Minnesota; PhD, 1969, University of Minnesota
Ebrey, Patricia Buckley * 1997; MA, 1970, Columbia University; PhD, 1975, Columbia University
Felak, James Ramon * 1989; MA, 1985, Indiana University; PhD, 1989, Indiana University
Ferrill, Arther L. * 1964, (Emeritus); MA, 1961, University of Illinois; PhD, 1964, University of Illinois
Findlay, John Moorman * 1987; MA, 1978, University of California (Berkeley); PhD, 1982, University of California (Berkeley)
Fowler, Wilton Bonham * 1969, (Emeritus); MA, 1962, Yale University; PhD, 1966, Yale University
Gil, Carlos Brambila * 1974, (Emeritus); MA, 1963, Georgetown University; PhD, 1975, University of California (Los Angeles)
Glenn, Susan A. * 1993; MA, 1975, University of California (San Diego); PhD, 1983, University of California (Berkeley)
Gregory, James Noble * 1993; MA, 1977, University of California (Santa Barbara); PhD, 1983, University of California (Berkeley)
Guy, Robert Kent * 1980, (Emeritus); MA, 1974, Harvard University; PhD, 1981, Harvard University
Hankins, Thomas Leroy * 1964, (Emeritus); MAT, 1958, Harvard University; PhD, 1964, Cornell University

Johnson, Richard Rigby * 1972; MA, 1965, University of California (Berkeley); PhD, 1972, University of California (Berkeley)
Jonas, Raymond Anthony * 1985; MA, 1980, University of California (Davis); PhD, 1985, University of California (Berkeley)
Joshel, Sandra Rae 1993; MA, 1970, Rutgers University; PhD, 1977, Rutgers University
Kirkendall, Richard Stewart * 1988, (Emeritus); MS, 1953, University of Wisconsin (Madison); PhD, 1958, University of Wisconsin (Madison)
Levy, Fred Jacob * 1960, (Emeritus); AM, 1956, Harvard University; PhD, 1960, Harvard University
Rafael, Vicente L. 2003; MA, 1982, Cornell University; PhD, 1984, Cornell University
Rorabaugh, William Joseph * 1976; MA, 1970, University of California (Berkeley); PhD, 1976, University of California (Berkeley)
Saum, Lewis Oliver * 1965, (Emeritus); MA, 1959, University of Missouri; PhD, 1962, University of Missouri
Schmidt, Benjamin 1996; MA, 1988, Harvard University; PhD, 1994, Harvard University
Sears, Laurie Jo * 1989; MA, 1977, University of Arizona; PhD, 1986, University of Wisconsin (Madison)
Stacey, Robert Charles 1988; MA, 1978, Yale University; MPhil, 1979, Yale University; PhD, 1983, Yale University
Stacey, Robin Chapman * 1988; MA, 1979, Yale University; MLitt, 1982, Oxford University (UK); MPhil, 1983, Yale University; PhD, 1986, Yale University
Taylor, Quintard * 1995; MA, 1971, University of Minnesota; PhD, 1977, University of Minnesota
Thomas, Carol Sue Guggenheim * 1964; MA, 1961, Northwestern University; PhD, 1965, Northwestern University
Thomas, Lynn Marie 1997; MA, 1989, Johns Hopkins University; MA, 1993, Northwestern University; PhD, 1997, University of Michigan
Toews, John Edward * 1979; MA, 1968, Harvard University; PhD, 1973, Harvard University
Ullman, Joan Connelly * 1966, (Emeritus); MA, 1953, Bryn Mawr College; PhD, 1963, Bryn Mawr College
Waugh, Daniel Clarke * 1972, (Emeritus); MA, 1965, Harvard University; PhD, 1972, Harvard University
Young, Glennys Jeanne * 1992; MA, 1983, University of California (Berkeley); PhD, 1989, University of California (Berkeley)

Associate Professors

Campbell, Elena 2007; MA, 1994, St. Petersburg State University (Russia); MA, 1996, European University; PhD, 1999, Russian Academy of Sciences (Russia)
Dhavan, Purnima 2005; MA, 1998, University of Virginia; PhD, 2003, University of Virginia
Hevly, Bruce William * 1989; PhD, 1987, Johns Hopkins University
Jung, Moon-Ho 2001; MA, 1995, Cornell University; PhD, 2000, Cornell University
Nash, Linda L. 1993; MS, 1989, University of California (Berkeley); PhD, 2000, University of Washington
O'Mara, Margaret Pugh 2007; MA, 2002, University of Pennsylvania; PhD, 2002, University of Pennsylvania
O'Neil, Mary Rose * 1980; MA, 1971, Stanford University; PhD, 1982, Stanford University
Rodríguez-Silva, Ileana M. 2004; MA, 1997, University of Wisconsin (Madison); PhD, 2004, University of Wisconsin (Madison)
Smallwood, Stephanie 2006; PhD, 1999, Duke University
Thurtle, Phillip Stevens 1998; MA, 1994, Stanford University; PhD, 1999, Stanford University
Walker, Joel Thomas 1997; MA, 1994, Princeton University; PhD, 1998, Princeton University

Warren, Adam W. 2004; MA, 2000, University of California (San Diego); PhD, 2004, University of California (San Diego)
 Werrett, Simon Roy Edward 2002, (Affiliate); MPhil, 1996, Cambridge University (UK); PhD, 2000, Cambridge University (UK)

Assistant Professors

Bet-Shlmon, Arbella Herutha 2006; MA, 2006, University of Michigan; AM, 2008, Harvard University; PhD, 2012, Harvard University

Spafford, David 2007, (Affiliate); MA, 2006, University of California (Berkeley); PhD, 2006, University of California (Berkeley)

Lecturers

Garcia, Chad Daniel 2007; MA, 2007, Indiana University; PhD, 2012, University of Washington

Osborn, Julie Annette Rigg 2007; MA, 2007, University of Hawaii; PhD, 2013, University of Washington

Roberts, Nathan E 2005; MA, 2007, University of Washington

Urbanski, Charity Leah 2008; MA, 1999, University of California (Berkeley); PhD, 2007, University of California (Berkeley)

International Studies

Professors

Aloisi, Jonathan Mark 2009, (Affiliate); MA, 1982, University of Michigan; MA, 1998, National War College

Anchordoguy, Marie Christine * 1989; MBA, 1982, University of California (Berkeley); PhD, 1986, University of California (Berkeley)

Bachman, David Mark * 1991; MA, 1977, Stanford University; PhD, 1984, Stanford University

Butow, Robert J. C. * 1960, (Emeritus); MA, 1948, Stanford University; PhD, 1953, Stanford University

Chiro, Daniel * 1974; PhD, 1973, Columbia University

Dong, Wonmo 2001, (Affiliate); MA, 1961, University of Kentucky; PhD, 1965, Georgetown University

Dong, Yue 1996; MA, 1989, Beijing University, China; MA, 1991, University of Oregon; PhD, 1996, University of California (San Diego)

Ellings, Richard James 1984, (Affiliate); MA, 1976, University of Washington; PhD, 1983, University of Washington

Fuller, James Leslie 1979, (Affiliate); MS, 1972, University of Florida; PhD, 1975, University of Florida

Godoy, Angelina Snodgrass 2002; MA, 1997, University of California (Berkeley); PhD, 2001, University of California (Berkeley)

Graham, Thomas 2003, (Affiliate); JD, 1961, Harvard University

Ha, Yong-Chool 2003; MA, 1978, Kent State University; PhD, 1985, University of California (Berkeley)

Hamilton, Gary Glen 1993; MA, 1970, University of Washington; PhD, 1975, University of Washington

Hanley, Susan Bell * 1970, (Emeritus); MA, 1964, Yale University; PhD, 1971, Yale University

Hellmann, Donald Charles * 1967, (Emeritus); MA, 1960, University of California (Berkeley); PhD, 1964, University of California (Berkeley)

Jaffee, Martin Steven * 1987, (Emeritus); MA, 1974, Florida State University; PhD, 1980, Brown University

Kasaba, Resat * 1985; MA, 1979, State Univ of New York (Binghamton); PhD, 1986, State Univ of New York (Binghamton)

Lacey, Michael J. 2002, (Affiliate); MPhil, 1974, George Washington University; PhD, 1979, George Washington University

Lavelly, William Roger * 1985; MA, 1977, University of California (Berkeley); PhD, 1982, University of Michigan

Legters, Lyman H. * 1966, (Emeritus); MA, 1956, Boston University; PhD, 1958, Freie University of Berlin (Germany)

Meeker, Michael Elliot 2006, (Affiliate); MA, 1966, University of Chicago; PhD, 1970, University of Chicago

Migdal, Joel Samuel * 1980; MA, 1968, Harvard University; PhD, 1972, Harvard University

Mines, Mattison 2007, (Affiliate); MA, 1965, University of Washington; PhD, 1969, Cornell University

Pekkanen, Robert J. 2004; MA, 1992, Harvard University; PhD, 2002, Harvard University

Pekkanen, Saadia 2004; MA, 1988, Columbia University; PhD, 1996, Harvard University

Poznanski, Kazimierz * 1987; MA, 1969, University of Warsaw (Poland); PhD, 1974, University of Warsaw (Poland)

Pyle, Kenneth Birger * 1964; PhD, 1965, Johns Hopkins University

Rouyer, Alwyn R. 2003, (Affiliate); MA, 1966, Georgetown University; PhD, 1971, Tulane University

Sakata, Hiromi Lorraine 1968, (Affiliate); MA, 1968, University of Washington; PhD, 1976, University of Washington

Sorensen, Clark Wesley * 1989; MA, 1974, University of Washington; PhD, 1981, University of Washington

Undem, Halvor Andrew 2011, (Affiliate); MS, 1977, University of North Dakota; PhD, 1985, Air Force Institute of Technology

Wall, Philip Roy 2009, (Affiliate); MA, 1975, University of Washington; MBA, 1978, University of Washington

Webb, Eugene * 1966, (Emeritus); MA, 1962, Columbia University; PhD, 1965, Columbia University

Wellman, James Kenneth 1997; MDiv, 1985, Princeton Theological Seminary; PhD, 1995, University of Chicago

Williams, Michael Allen * 1976; MA, 1970, Miami University (Ohio); PhD, 1977, Harvard University

Woods, Ronald E. 1992, (Affiliate); BSFS, 1961, Georgetown University

Yamamura, Koza * 1970, (Emeritus); PhD, 1964, Northwestern University

Yang, Anand Alan 2002; PhD, 1976, University of Virginia

Associate Professors

Callahan, Mary P. 1999; MSc, 1984, London School of Economics (UK); MA, 1991, Cornell University; PhD, 1996, Cornell University

Curran, Sara R. 2005; MS, 1990, North Carolina State University; PhD, 1994, University of North Carolina

Friedman, Kathie 1987; MA, 1979, State Univ of New York (Binghamton); PhD, 1992, State Univ of New York (Binghamton)

Garcia, Maria Elena 2008; MA, 1996, Brown University; PhD, 2001, Brown University

Giebel, Christoph Johannes Friedrich 1998; MA, 1989, Cornell University; MA, 1991, Cornell University; PhD, 1996, Cornell University

Jones, Christopher Downer * 1984; MA, 1969, Harvard University; PhD, 1975, Harvard University

Lang, Sabine 2002; MA, 1985, Free University Berlin; PhD, 1997, Free University Berlin

Lucero, Jose Antonio 2008; MA, 1997, Princeton University; PhD, 2002, Princeton University

Nam, Hwasook Bergquist 1993; MA, 1989, Seoul National University (Korea); PhD, 2003, University of Washington

Novetzke, Christian Lee 2007; MS, 1996, Harvard University; PhD, 2002, Columbia University

Pianko, Noam 2004; PhD, 2004, Yale University

Porter, Deborah Lynn 2002; PhD, 1989, Princeton University

Radnitz, Scott Brian 2007; PhD, 2006, Massachusetts Institute of Technology

Robinson, Cabeiri Debergh 2003; MA, 1999, Cornell University; PhD, 2005, Cornell University

Warren, Jonathan Winddance 1996; MA, 1990, University of California (Berkeley); PhD, 1997, University of California (Berkeley)

Assistant Professors

Ahuvia, Mika 2014, (Acting); MA, 2008, University of Michigan

Bessner, Daniel M. 2014; MA, 2010, Duke University; PhD, 2013, Duke University

Kale, Sunila 2007; PhD, 2007, University of Texas (Austin)

Naar, Devin Emmanuel 2011; MA, 2010, Stanford University; PhD, 2011, Stanford University

Weber, Rebecca Herman 2014, (Acting); MA, 2010, University of California (Berkeley); PhD, 2014, University of California (Berkeley)

Williams, Nathalie Elizabeth 2012; PhD, 2009, University of Michigan

Senior Lecturers

Lorenz, Frederick Michael 1999; JD, 1971, Marquette University; LLM, 1982, George Washington University

Tokuno, Kyoko 2001; MA, 1983, University of California (Berkeley); PhD, 1994, University of California (Berkeley)

Lecturers

Basic, Denis 2006; MA, 1992, University of Vienna, Austria; PhD, 2006, University of Washington

Begun, Jeffrey C. 2003; MA, 2003, University of Colorado (Denver); PhD, 2009, University of Washington

Montgomery, Scott 2002; MS, 1978, Cornell University

Law, Societies, and Justice

Professor

Beckett, Katherine Ann 2000; MA, 1989, University of California (Los Angeles); PhD, 1994, University of California (Los Angeles)

Associate Professors

Osanloo, Arzoo 2002; JD, 1993, American University; PhD, 2002, Stanford University

Rodriguez-Garavito, Cesar 2010, (Affiliate); JD, 1996, University of Los Andes Law School, Columbia; MA, 1999, National University of Colombia; MA, 2001, New York University; MS, 2003, University of Wisconsin (Madison); PhD, 2007, University of Wisconsin (Madison)

Assistant Professor

Jackson, Peter Hardin 1999, (Affiliate); BArch, 1995, Georgetown University

Lecturers

Wender, Jonathan Marcus 2006; PhD, 2004, Simon Fraser University, B.C. (Canada)

Woiak, Joanne Dawn 2001; MA, 1990, University of Toronto (Canada); PhD, 1998, University of Toronto (Canada)

Linguistics

Professors

Bender, Emily R. Menon 2003; MA, 1997, Stanford University; PhD, 2000, Stanford University

Contreras, Heles * 1964, (Emeritus); MA, 1959, Indiana University; PhD, 1961, Indiana University

Hargus, Sharon Louise * 1985; MA, 1981, University of California (Los Angeles); PhD, 1985, University of California (Los Angeles)

Herschensohn, Julia Ann Rogers 1985; MA, 1970, University of California (Santa Barbara); PhD, 1976, University of Washington

Hoard, James Ellsworth 1990, (Affiliate); MA, 1966, University of Washington; PhD, 1967, University of Washington
Kaisse, Ellen Maud * 1976; PhD, 1977, Harvard University
Klausenburger, Jurgen 1969, (Emeritus); MA, 1966, University of Michigan; PhD, 1969, University of Michigan

Newmeyer, Frederick Jaret * 1969, (Emeritus); MA, 1967, University of Rochester; PhD, 1969, University of Illinois
Tarlinskaya, Marina * 1982, (Emeritus); Diploma, 1957, Moscow Institute of Foreign Languages; PhD, 1967, Moscow Institute of Foreign Languages; DPhil, 1976, Moscow Institute of Foreign Languages

Wright, Richard Albert 1998; MA, 1993, University of California (Los Angeles); PhD, 1996, University of California (Los Angeles)

Zagona, Karen Thordis * 1987; PhD, 1982, University of Washington

Associate Professors

Aldridge, Edith 2007; MA, 1992, Sophia University (Japan); PhD, 2004, Cornell University

Citko, Barbara 2005; PhD, 2000, Stony Brook University
Evans, Betsy Erin 2007; MA, 1992, Kent State University; PhD, 2001, Michigan State University

Levow, Gina-Anne 2010; SM, 1993, Massachusetts Institute of Technology; PhD, 1998, Massachusetts Institute of Technology

Ogihara, Toshiyuki * 1991; MA, 1983, Sophia University (Japan); PhD, 1989, University of Texas (unspecified)

Wassink, Alicia Beckford 1998; PhD, 1999, University of Michigan

Xia, Fei 2005; MS, 1997, University of Pennsylvania; PhD, 2001, University of Pennsylvania

Assistant Professors

Aoki, Paul K. 1988, (Affiliate); MA, 1976, University of Washington; PhD, 1981, University of Washington

Lewis, William D. 2005, (Affiliate); MA, 1999, University of Arizona; PhD, 2002, University of Arizona

Solti, Imre 2007, (Affiliate); MD, 1992, Albert Szent-Gyorgyi Medical University; PhD, 2006, Virginia Commonwealth University

Tjalve, Michael 2009, (Affiliate); MA, 1999, University of Copenhagen (Denmark); PhD, 2007, University of London, UK

Senior Lecturer

Forshay, Lance 2007; MS, 1998, Southern Christian University

Lecturers

McGarrity, Laura Wilbur 2004; MA, 1999, Indiana University; PhD, 2003, Indiana University

Winter, Kristi Gay 2010; MA, 2008, Gallaudet University

Mathematics

Professors

Billey, Sara Cosette 2002; MA, 1991, University of California (San Diego); PhD, 1994, University of California (San Diego)

Brownell, Francis Herbert * 1950, (Emeritus); MS, 1947, Yale University; PhD, 1949, Princeton University

Bube, Kenneth Paul * 1986; MS, 1976, Stanford University; PhD, 1978, Stanford University

Burdzy, Krzysztof * 1988; MA, 1979, Maria Curie-Skłodowska University; PhD, 1984, University of California (Berkeley)

Burke, James Vincent * 1985; PhD, 1983, University of Illinois

Chen, Zhen-Qing * 1998; MS, 1987, East China Normal University; PhD, 1992, Washington University

Collingwood, David H. * 1987; PhD, 1983, University of Utah

Curjel, Caspar R. * 1964, (Emeritus); Diploma, 1954, Eidgenössische Technische Hochschule (Switz); DSc, 1960, Eidgenössische Technische Hochschule (Switz)

Duchamp, Thomas Eugene 1979; MS, 1969, University of Illinois; PhD, 1976, University of Illinois

Folland, Gerald Budge * 1973, (Emeritus); MA, 1970, Princeton University; PhD, 1971, Princeton University

Gangolli, Ramesh A. * 1962, (Emeritus); PhD, 1961, Massachusetts Institute of Technology

Goldstein, Allen Abbey * 1964, (Emeritus); MA, 1952, Georgetown University; PhD, 1954, Georgetown University
Goodearl, Kenneth Ralph * 1998, (Affiliate); MS, 1969, University of Washington; PhD, 1971, University of Washington

Graham, Charles Robin * 1984; MA, 1976, Rice University; PhD, 1981, Princeton University

Greenberg, Ralph * 1978; PhD, 1970, Princeton University
Grunbaum, Branko * 1960, (Emeritus); MA, 1954, Hebrew University (Israel); PhD, 1957, Hebrew University (Israel)

Hoffman, Christopher 1999; MS, 1994, Stanford University; PhD, 1996, Stanford University

Irving, Ronald Scott * 1980; PhD, 1977, Massachusetts Institute of Technology

Kas, Arnold * 1995, (Affiliate); PhD, 1966, Stanford University

Koblitz, Neal Irving * 1979; PhD, 1974, Princeton University

Kovacs, Sandor Jozsef 2000; MS, 1990, Eotvos Lorand University (Hungary); PhD, 1995, University of Utah

Lauter, Kristin Estella 2008, (Affiliate); MS, 1991, University of Chicago; PhD, 1996, University of Chicago

Lee, John Marshall * 1986; PhD, 1982, Massachusetts Institute of Technology

Lind, Douglas Allen * 1975, (Emeritus); MA, 1971, Stanford University; PhD, 1973, Stanford University

Marshall, Donald Eddy * 1976; MA, 1972, University of California (Los Angeles); PhD, 1976, University of California (Los Angeles)

McGovern, William Montgomery * 1990; PhD, 1987, Massachusetts Institute of Technology

Mitchell, Stephen A. * 1985; PhD, 1981, University of Washington

Morrow, James Allen 1969; PhD, 1967, Stanford University
Namioka, Isaac * 1963, (Emeritus); EE, 1948, Kobe Technical College; MA, 1953, University of Kansas; PhD, 1956, University of California (Berkeley)

Nijenhuis, Albert * 1988, (Affiliate); PhD, 1952, University of Amsterdam (Netherlands)

Novik, Isabella 2001; MS, 1996, Hebrew University (Israel); PhD, 1999, Hebrew University (Israel)

Palmieri, John Harold 1999; PhD, 1991, Massachusetts Institute of Technology

Pollack, Daniel * 1996; MS, 1986, University of Pennsylvania; PhD, 1991, Stanford University

Ragozin, David Lawrence * 1969, (Emeritus); MA, 1963, Harvard University; PhD, 1967, Harvard University

Rockafellar, Ralph Tyrrell * 1966, (Emeritus); MS, 1959, Marquette University; PhD, 1963, Harvard University

Rohde, Steffen Rudolf * 1998; MS, 1987, Technical University of Berlin (Germany); PhD, 1989, Technical University of Berlin (Germany)

Segal, Jack * 1960, (Emeritus); MS, 1957, University of Miami (Florida); PhD, 1960, University of Georgia

Smith, Hart Francis * 1991; PhD, 1989, Princeton University

Smith, Sholto Paul * 1986; MSc, 1978, University of London, UK; PhD, 1981, University of Leeds (UK)

Solomyak, Boris * 1990; MSc, 1981, Leningrad University (Russia); PhD, 1986, Leningrad University (Russia)

Stein, William A. 2006; PhD, 2000, University of California (Berkeley)

Stout, Edgar Lee * 1969, (Emeritus); MA, 1961, University of Wisconsin; PhD, 1964, University of Wisconsin

Sullivan, John Brendan * 1973, (Emeritus); PhD, 1971, Cornell University

Sylvester, John * 1987; MS, 1977, New York University; PhD, 1980, New York University

Thomas, Rekha Rachel 2000; MS, 1992, Cornell University; PhD, 1994, Cornell University

Toro, Tatiana * 1996; MS, 1989, Stanford University; PhD, 1992, Stanford University

Tuncel, Selim * 1982; MSc, 1979, University of Warwick (UK); PhD, 1982, University of Warwick (UK)

Uhlmann, Gunther A. * 1984; PhD, 1976, Massachusetts Institute of Technology

Warner, Garth William Jr. * 1966; PhD, 1966, University of Michigan

Westwater, Michael John * 1970, (Emeritus); PhD, 1967, Cambridge University (UK)

Yuan, Yu 2001; MS, 1993, Academia Sinica, China; PhD, 1998, University of Minnesota

Zhang, Jian James * 1994; MS, 1985, Fudan University (China); PhD, 1991, Massachusetts Institute of Technology

Associate Professors

Arms, Judith Meryl * 1980; MA, 1974, University of California (Berkeley); PhD, 1977, University of California (Berkeley)

Devinatz, Ethan Sander * 1991; PhD, 1985, Massachusetts Institute of Technology

Dumitriu, Ioana 2006; PhD, 2003, Massachusetts Institute of Technology

Holroyd, Alexander Edward 2007, (Affiliate); MA, 1999, University of Cambridge (UK); PhD, 2000, University of Cambridge (UK)

King, James Richard * 1974, (Emeritus); MA, 1967, University of California (Berkeley); PhD, 1969, University of California (Berkeley)

Lieblich, Max 2009; PhD, 2004, Massachusetts Institute of Technology

Lubetzky, Eyal 2008, (Affiliate); PhD, 2008, Tel Aviv University (Israel)

Monk, George Stephen * 1964, (Emeritus); PhD, 1966, University of Minnesota

Pal, Soumik 2008; MS, 2002, Indian Statistical Institute; PhD, 2006, Columbia University

Pevtsova, Julia 2005; PhD, 2002, Northwestern University

Wilson, David Bruce 2000, (Affiliate); PhD, 1996, Massachusetts Institute of Technology

Assistant Professors

Drusvyatskiy, Dmitriy 2014; MS, 2010, Cornell University; PhD, 2013, Cornell University

Nachmias, Asaf 2011, (Affiliate); MSc, 2004, Tel Aviv University (Israel); PhD, 2008, University of California (Berkeley)

Ozols, Vilnis * 1968, (Emeritus); MA, 1965, University of California (Berkeley); PhD, 1967, University of California (Berkeley)

Rothvoss, Thomas 2014; Diploma, 2006, University of Dortmund; PhD, 2009, Ecole Polytechnique Federale De Lausanne

Viray, Bianca 2014; PhD, 2010, University of California (Berkeley)

Senior Lecturers

Conroy, Matthew Michael 2001; MS, 1990, University of Lowell; PhD, 1997, University of Colorado (Boulder)

Loveless, Andrew 2005; MS, 2004, Washington State University; PhD, 2005, Washington State University

Nichifor, Alexandra 1997; MSc, 1997, Syracuse University

Perkins, Patrick Thomas 1995; PhD, 1988, University of Washington

Taggart, Jennifer Lyn 2001; MA, 1993, University of Colorado (Boulder); PhD, 1997, University of Colorado (Boulder)

Lecturers

Bekyel, Ebru 2005; PhD, 2002, Brown University

Ostroff, Jonah K. 2013; PhD, 2013, Brandeis University

Warfield, Virginia McShane 1973, (Emeritus); MA, 1965, Brown University; PhD, 1971, Brown University

Music

Professors

Bernard, Jonathan Walter * 1987; MA, 1973, Yale University; MPhil, 1975, Yale University; PhD, 1977, Yale University

Bozarth, George S. * 1978; MFA, 1973, Princeton University; PhD, 1978, Princeton University

Campbell, Patricia Shehan 1989; MM, 1975, University of Akron; PhD, 1981, Kent State University

Carlsen, James C. * 1967, (Emeritus); MA, 1958, University of Washington; PhD, 1962, Northwestern University

Collier, Thomas W. 1980; BA, 1971, University of Washington; BMus, 1971, University of Washington

Demorest, Steven McGregor * 1993, (Affiliate); MM, 1983, Westminster Choir College; PhD, 1989, University of Wisconsin (Madison)

Dempster, Stuart R. * 1968, (Emeritus); MA, 1967, San Francisco State

Dissanayake, Ellen 1998, (Affiliate); MA, 1970, University of Maryland

Durand, Joel-Francois * 1991; MM, 1984, Musikhochschule, Freiburg (Germany); PhD, 1988, State Univ of New York (Stony Brook)

Ellingson, Terry J. * 1981; MA, 1970, University of Chicago; PhD, 1979, University of Wisconsin (Madison)

Grossman, Arthur * 1968, (Emeritus); Diploma, 1955, Curtis Institute of Music

Kaplan, Abraham * 1977, (Emeritus); Diploma, 1953, Juilliard School; Diploma, 1953, Israel Academy of Sciences and Humanities, Jerusalem; Diploma, 1957, Juilliard School

Kappy, David Lawrence * 1979, (Emeritus); MM, 1971, University of Wisconsin (Madison)

Karpen, Richard Scott * 1989; MA, 1986, Stanford University; DMA, 1989, Stanford University

Kechley, Gerald Raymond * 1947, (Emeritus); MA, 1950, University of Washington

Lundquist, Barbara Cooke Reeder * 1966, (Emeritus); MS, 1959, Montana State University; DMA, 1973, University of Washington

McCabe, Robin Lue 1987; MMUS, 1973, Juilliard School; DMA, 1978, Juilliard School

Morlot, Ludovic 2012, (Affiliate); DMus, 2000, Royal Academy of Music (London)

Morrison, Steven Joseph 1997; MM, 1988, University of Wisconsin (Madison); PhD, 1995, Louisiana State University

Rahn, John * 1975, (Emeritus); Diploma, 1967, Juilliard School; MFA, 1972, Princeton University; PhD, 1974, Princeton University

Salzman, Timothy Owen * 1987; MM, 1979, Northern Illinois University

Seales, Marc Anthony 1980; BA, 1978, Western Washington University

Sheppard, Craig Douglass * 1993; MSc, 1971, Juilliard School

Siki, Bela * 1965, (Emeritus); Diploma, 1945, Franz Liszt Music Academy; Diploma, 1948, Conservatoire De Musique (Switzerland)

Smith, William Overton * 1966, (Emeritus); MA, 1952, University of California (campus unspecified)

Starr, Lawrence 1977; PhD, 1973, University of California (Berkeley)

Storch, Laila * 1968, (Emeritus); BA, 1964, Wilkes College

Terry, Carole Ruth * 1979; MM, 1973, University of Rochester; DMA, 1977, Stanford University

Associate Professors

Benshoof, Kenneth Wayne 1963, (Emeritus); MA, 1963, San Francisco State

Boers, Geoffrey Paul 1996; MS, 1985, Portland State University; DMA, 1987, University of Arizona

Dudley, Shannon Kingdon 1996; MA, 1988, University of California (Berkeley); PhD, 1997, University of California (Berkeley)

Harper, Thomas Lee 1998; MM, 1976, University of Arkansas

Jussila, Clyde F. 1971, (Emeritus); MS, 1951, Kansas State University

Michaelian, Patricia * 1984, (Emeritus); Diploma, 1970, Curtis Institute of Music; Diploma, 1971, Curtis Institute of Music

Pampin, Juan Carlos 1999; MA, 1995, National Conservatory of Music, France; PhD, 2000, Stanford University; DMA, 2000, Stanford University

Rosinbum, Ralph Rambo 1942, (Emeritus); MA, 1948, University of Washington

Rumph, Stephen Charles 2002; MA, 1992, University of California (Berkeley); PhD, 1997, University of California (Berkeley)

Schuyler, Philip Daniel 1999, (Emeritus); MA, 1974, University of Washington; PhD, 1979, University of Washington

Sunardi, Christina Michelle 2007; MA, 2003, University of California (Berkeley); PhD, 2007, University of California (Berkeley)

Taricani, JoAnn * 1980; MA, 1977, University of Pennsylvania; PhD, 1986, University of Pennsylvania

Velinzon, Alexander 2014, (Affiliate); MEnvSc, 1998, Juilliard School

Vu, Cuong 2007; BM, 1993, New England Conservatory of Music

Watras, M. Melia 2004; MM, 1995, Indiana University

Wyers, Giselle E. 2006; MM, 1996, Westminster Choir College; PhD, 2000, University of Arizona

Assistant Professors

Anderson, Joseph Lloyd 2013, (Affiliate); MM, 2003, University of Birmingham (UK); PhD, 2003, University of Birmingham (UK)

Hodge, Huck John 2008; MA, 2004, Columbia University; DMA, 2008, Columbia University

Roberts, John Christopher 1992, (Affiliate); MA, 2007, University of Washington; PhD, 2012, University of Washington

Sercombe, Laurel 1979, (Affiliate); MA, 1977, University of Washington; PhD, 2001, University of Washington

Shin, Donna Young 2007; MM, 1999, New England Conservatory of Music; DMA, 2007, Eastman School of Music

Lecturers

Berry, Michael 2011; MM, 2000, Temple University; PhD, 2007, City University of New York

Cobb, Brian Allen 2003; MM, 2000, University of Massachusetts; DMA, 2006, University of Washington

Farley, Alison 2009; Biomedical Engineering Degree, 2003, University of Kansas; MM, 2009, University of Louisville; PhD, 2014, University of Washington

Hanford, John Cavanaugh 2004; MA, 1997, University of Washington; PhD, 2003, University of Washington

Harreld, Nicole R 2009; MM, 2014, University of Washington

Near Eastern Languages and Civilization

Professors

Cirtautas, Ilse Dorothea * 1968; Abitur, 1944, Gymnasium, Treuburg (East Prussia); PhD, 1958, University of Hamburg (Germany)

Heer, Nicholas Lawson * 1965, (Emeritus); PhD, 1955, Princeton University

Noegel, Scott B. 1995; MA, 1993, Cornell University; PhD, 1994, Cornell University

Reid, Donald M. 2006, (Affiliate); PhD, 1969, Princeton University

Sokoloff, Naomi B. * 1985; MA, 1979, Princeton University; PhD, 1980, Princeton University

Ziadeh, Farhat J. * 1966, (Emeritus); LLB, 1940, University of London, UK

Associate Professors

Brown, Jonathan Ac 2006, (Affiliate); PhD, 2006, University of Chicago

Deyoung, Terri Lynn * 1991; MA, 1981, American University in Cairo; PhD, 1988, University of California (Berkeley)

Elkhafaifi, Hussein M. 2004; MA, 1977, University of Utah; PhD, 1985, University of Utah

Kuru, Selim Sirri 1999; MA, 1993, Bogazici University (Istanbul); PhD, 2000, Harvard University

Assistant Professors

Alavi, Samad Josef 2013; MA, 2006, University of Chicago

Mahmood, Hamza 2013; MA, 2011, Cornell University; PhD, 2014, Cornell University

Lecturers

Badiee, Maryam 2012; MA, 1996, Islamic Azad University (Tehran)

Benson, Susan E. 2005; MA, 1983, University of Utah

Martin, Gary Dean 2001; MA, 2003, University of Washington; PhD, 2007, University of Washington

Mawkanuli, Talant 2008; MA, 1988, Xinjiang University (China); PhD, 1999, Indiana University

Romano, Tovi 2009; BEd, 1990, Levinski College of Education (Israel)

Selover, Stephanie LeSan 2014; MA, 2008, University of Chicago; PhD, 2015, University of Chicago

Shams, Shahrzad 2009; MA, 1995, California State University, Fullerton

Philosophy

Professors

Blake, Michael I. 2005; PhD, 1998, Stanford University

BonJour, Laurence Alan * 1977, (Emeritus); PhD, 1969, Princeton University

Clatterbaugh, Kenneth C. * 1966, (Emeritus); PhD, 1966, Indiana University

Coburn, Robert Craig * 1970, (Emeritus); MA, 1958, Harvard University; PhD, 1958, Harvard University

Cohen, Saul Marc * 1973, (Emeritus); PhD, 1967, Cornell University

Fine, Arthur I. 2001, (Emeritus); MS, 1960, Illinois Institute of Technology; PhD, 1963, University of Chicago

Gardiner, Stephen M. 2004; MA, 1993, University of Colorado (Boulder); PhD, 1999, Cornell University

Hankinson Nelson, Lynn 2002; PhD, 1987, Temple University

Keyt, David * 1957, (Emeritus); MA, 1953, Cornell University; PhD, 1955, Cornell University

Marks, Charles Emil * 1966, (Emeritus); PhD, 1972, Cornell University

Moore, Ronald Melville * 1977; PhD, 1971, Columbia University

Potter, Karl Harrington * 1970, (Emeritus); MA, 1952, Harvard University; PhD, 1955, Harvard University

Roberts, Jean Valerie * 1991; MA, 1978, University of Pittsburgh; PhD, 1982, University of Pittsburgh

Rosenthal, Michael 2002; MA, 1996, University of Chicago; PhD, 1996, University of Chicago

Talbott, William Johnson 1989; PhD, 1976, Harvard University

Wylie, Margaret Alison 2005; MA, 1979, State Univ of New York (Binghamton); PhD, 1982, State Univ of New York (Binghamton)

Associate Professors

Goering, Sara L. 2003; MA, 1994, University of Colorado (Denver); PhD, 1998, University of Colorado (Denver)

Manchak, John Byron 2009; PhD, 2009, University of California (Irvine)

Mishalani, James Karam * 1963, (Emeritus); MA, 1958, Brown University; PhD, 1961, Brown University

Smith, Angela Marie 1999, (Affiliate); PhD, 1999, Harvard University

Weller, Cass Jordan 1990; MA, 1981, University of Pittsburgh; PhD, 1983, University of Pittsburgh

Woody, Andrea Isaacs 1997; PhD, 1996, University of Pittsburgh; PhD, 1997, University of Pittsburgh

Assistant Professors

Berk, Mary 2009, (Affiliate); MA, 2000, University of Denver; PhD, 2004, University of Denver

Dumas, Bob Alan 2002, (Affiliate); CPH, 1984, University of California (Berkeley); PhD, 1992, University of California (Berkeley)

Keyt, Christine Mullikin 1977, (Affiliate); MA, 1970, University of Wisconsin; MA, 1978, University of Washington; PhD, 1980, University of Washington

Klein, Eran 2012, (Affiliate); PhD, 2002, Georgetown University; MD, 2004, Georgetown University

Lee, Carole Jane 2008; PhD, 2006, University of Michigan
Lone, Jana Mohr 1992, (Affiliate); JD, 1985, George Washington University; MA, 1990, University of Washington; PhD, 1996, University of Washington

Lucian, Miriam Laura 1972, (Affiliate); MS, 1970, Harvard University; PhD, 1970, Harvard University

Marshall, Colin Robert 2013; MA, 2007, New York University; PhD, 2010, New York University

Mayo-Wilson, Conor Andrew 2014; MS, 2009, Carnegie Mellon University; PhD, 2012, Carnegie Mellon University

Schellenberg, Ingra 2007; MA, 2000, Queen's University (UK); MA, 2003, University of North Carolina, Chapel Hill; PhD, 2006, University of North Carolina, Chapel Hill

Lecturers

Baker, Ann Michelle 1981; MA, 1983, University of Washington; PhD, 1990, University of Washington

Nichols, Lauren Hartzell 2009; PhD, 2009, Stanford University

Physics

Professors

Adelberger, Eric George * 1970, (Emeritus); PhD, 1967, California Institute of Technology

Alberg, Mary Ann 1974, (Affiliate); MS, 1970, University of Washington; PhD, 1974, University of Washington

Andreev, Anton 2004; MA, 1993, Johns Hopkins University; PhD, 1996, Massachusetts Institute of Technology

Baker, Marshall * 1962, (Emeritus); PhD, 1958, Harvard University

Balantekin, Akif Baha 1997, (Affiliate); MS, 1976, Middle East Technical University (Turkey); MPhil, 1979, Yale University; PhD, 1982, Yale University

Bardeen, James Maxwell * 1966, (Emeritus); PhD, 1965, California Institute of Technology

Barrett, Bruce Richard 2000, (Affiliate); MS, 1964, Stanford University; PhD, 1967, Stanford University

Bertsch, George Frederick * 1992; PhD, 1965, Princeton University

Bichsel, Hans 1958, (Affiliate); PhD, 1951, University of Basel (Switzerland)

Boulware, David George * 1965, (Emeritus); MA, 1960, Harvard University; PhD, 1962, Harvard University

Bowles, Thomas Joseph 1995, (Affiliate); PhD, 1978, Princeton University

Boynton, Paul E. * 1970, (Emeritus); PhD, 1967, Princeton University

Brown, Lowell S. * 1968, (Emeritus); MA, 1958, Harvard University; PhD, 1961, Harvard University

Bulgac, Aurel * 1993; MSc, 1973, Leningrad State University; PhD, 1977, Leningrad Nuclear Physics Inst (Russia)

Burnett, Thompson Humphrey * 1975, (Emeritus); PhD, 1968, University of California (San Diego)

Cahn, John Werner 1984, (Affiliate); PhD, 1953, University of California (Berkeley)

Chaloupka, Vladimir * 1980; PhD, 1975, University of Geneva (Switzerland)

Cleveland, Bruce Taylor 2001, (Affiliate); PhD, 1970, Johns Hopkins University

Cobden, David Henry 2001; MSc, 1987, St. Andrews College; PhD, 1992, Cambridge University (UK)

Cook, Victor * 1963, (Emeritus); PhD, 1962, University of California (Berkeley)

Cramer, John Gleason Jr. * 1964, (Emeritus); MA, 1959, Rice University; PhD, 1961, Rice University

Dehmelt, Hans Georg * 1955, (Emeritus); MA, 1948, University of Gottingen (Germany); PhD, 1950, University of Gottingen (Germany)

Den Nijs, Marcel P. M. * 1981; PhD, 1979, Katholieke University (Netherlands)

Doe, Peter J. * 1994, (Research); MSc, 1974, University of Durham (UK); PhD, 1977, University of Durham (UK)

Elliott, Steven Ray * 1995, (Affiliate); MS, 1984, University of California (Irvine); PhD, 1987, University of California (Irvine)

Fortson, Edward Norval * 1963, (Emeritus); PhD, 1964, Harvard University

Friedman, William Albert 2004, (Affiliate); PhD, 1966, Massachusetts Institute of Technology

Garcia, Alejandro 1986; PhD, 1991, University of Washington

Goussiou, Anna 2007; PhD, 1995, University of Wisconsin (Madison)

Gundlach, Jens Horst 1984; PhD, 1990, University of Washington

Halpern, Isaac * 1953, (Emeritus); PhD, 1948, Massachusetts Institute of Technology

Hastings, Matthew 2014, (Affiliate); PhD, 1997, Massachusetts Institute of Technology

Heckel, Blayne Ryan * 1983; MA, 1978, Harvard University; PhD, 1981, Harvard University

Henley, Ernest Mark * 1954, (Emeritus); PhD, 1952, University of California (Berkeley)

Heron, Paula 1995; MS, 1992, University of Ottawa (Canada); PhD, 1995, University of Western Ontario (Canada)

Hertzog, David W. 2008; MS, 1979, College of William And Mary; PhD, 1983, College of William And Mary

Ingalls, Robert L. * 1966, (Emeritus); MS, 1960, Carnegie Institute of Technology; PhD, 1962, Carnegie Institute of Technology

Kaplan, David B. * 1994; PhD, 1985, Harvard University

Karch, Andreas 2002; MA, 1996, University of Texas (Austin); PhD, 1998, Humboldt University (Germany)

Levanyuk, Arkady 2013, (Affiliate); PhD, 1964, Moscow State University (Russia); DSc, 1977, Academy of Science (Ussr)

Lubatti, Henry J. * 1969; MS, 1963, University of Illinois; PhD, 1966, University of California (Berkeley)

Magierski, Piotr 1998, (Affiliate); MSc, 1992, Technical University of Warsaw (Poland); PhD, 1995, Technical University of Warsaw (Poland)

McDermott, Lillian C. * 1967; MA, 1956, Columbia University; PhD, 1959, Columbia University

Miller, Gerald Alan * 1975; SM, 1968, Massachusetts Institute of Technology; PhD, 1972, Massachusetts Institute of Technology

Mockett, Paul Markley * 1972, (Emeritus); PhD, 1965, Massachusetts Institute of Technology

Nelson, Ann E. * 1994; MA, 1981, Harvard University; PhD, 1984, Harvard University

Nordtvedt, Kenneth 2003, (Affiliate); PhD, 1964, Stanford University

Olmstead, Marjorie Ann * 1991; MA, 1979, Swarthmore College; MA, 1982, University of California (Berkeley); PhD, 1985, University of California (Berkeley)

Puff, Robert David * 1962, (Emeritus); PhD, 1960, Harvard University

Reddy, Sanjay Kumar 1998; MSc, 1993, Indian Institute of Technology (India); PhD, 1998, State Univ of New York (Stony Brook)

Rehr, John Jacob * 1974; PhD, 1972, Cornell University

Riedel, Eberhard Karl * 1975, (Affiliate); Diploma, 1961, University of Zu Koln (Germany); Diploma, 1964, University of Zu Koln (Germany); PhD, 1966, Technical University of Munich (Germany)

Robertson, Robert G. Hamish * 1994; MA, 1965, Oxford University (UK); PhD, 1971, McMaster University (Canada)

Rosenberg, Leslie 2005; MS, 1980, San Francisco State; PhD, 1985, Stanford University

Rothberg, Joseph Eli * 1969, (Emeritus); MA, 1958, Columbia University; PhD, 1963, Columbia University

Savage, Martin John * 1996; MSc, 1985, University of Auckland (New Zealand); PhD, 1990, California Institute of Technology

Schick, Michael * 1969; MS, 1964, Stanford University; PhD, 1967, Stanford University

Seidler, Gerald Todd 1996; MA, 1991, University of Chicago; PhD, 1993, University of Chicago

Shaffer, Peter Scott 1985; PhD, 1993, University of Washington

Sharpe, Stephen Roger * 1986; PhD, 1983, University of California (Berkeley)

Snover, Kurt Albert * 1972, (Emeritus); MS, 1968, Stanford University; PhD, 1969, Stanford University

Sorensen, Larry Brice * 1983; MS, 1974, University of Illinois; PhD, 1979, University of Illinois

Spivak, Boris * 1991; PhD, 1978, Leningrad Polytechnic Institute (Russia)

Stern, Edward Abraham * 1965, (Emeritus); PhD, 1955, California Institute of Technology

Storm, Derek W. * 1979, (Emeritus); PhD, 1970, University of Washington

Strassler, Matthew James 2002, (Affiliate); PhD, 1993, Stanford University

Stubbs, Christopher William * 1981, (Affiliate); MS, 1983, University of Washington; PhD, 1988, University of Washington

Thouless, David James * 1980, (Emeritus); PhD, 1958, Cornell University

Trainor, Thomas A. * 1973, (Research); PhD, 1973, University of North Carolina

Van Bibber, Karl Albert 2007, (Affiliate); PhD, 1976, Massachusetts Institute of Technology

Van Dyck, Robert Spaulding Jr. * 1971, (Emeritus); PhD, 1971, University of California (Berkeley)

Van Kolck, Ubirajara Lourencao 1993, (Affiliate); MSc, 1987, Instituto De Fisica Teorica (Brazil); PhD, 1993, University of Texas (unspecified)

Vilches, Oscar E. * 1968, (Emeritus); PhD, 1966, National University of Cuyo (Argentina)

Watts, Gordon Thomas 1999; PhD, 1995, University of Rochester

Weitkamp, William George * 1964, (Emeritus); MS, 1961, University of Wisconsin (Madison); PhD, 1965, University of Wisconsin (Madison)

Wettlaufer, John Scott 1987, (Affiliate); PhD, 1991, University of Washington

Wilkerson, John Franklin * 1994, (Affiliate); MS, 1979, University of North Carolina; PhD, 1982, University of North Carolina

Wilkes, Richard Jeffrey * 1974; MS, 1969, University of Wisconsin; PhD, 1974, University of Wisconsin (Madison)

Williams, Robert Walter * 1959, (Emeritus); MA, 1943, Princeton University; PhD, 1948, Massachusetts Institute of Technology

Witten, Edward 2014, (Affiliate); MA, 1974, Princeton University; PhD, 1976, Princeton University

Yaffe, Laurence Gregory * 1988; MS, 1977, Princeton University; PhD, 1980, Princeton University

Associate Professors

Beane, Silas Robert III 1999; PhD, 1994, University of Texas (Austin)

Blinov, Boris B. 2005; Diploma, 1995, Moscow State University (Russia); PhD, 2000, University of Michigan

Gupta, Subhadeep 2003; PhD, 2003, Massachusetts Institute of Technology

Morales, Miguel 2008; PhD, 2002, University of California (Santa Cruz)

Roche, Kenneth John 2008, (Affiliate); MS, 2002, University of Tennessee

Assistant Professors

Detwiler, Jason Albert 2005; PhD, 2005, Stanford University

Forbes, Michael 2004, (Affiliate); MSc, 2000, University of British Columbia (Canada); PhD, 2005, Massachusetts Institute of Technology

Fu, Kai-Mei Camilla 2010; PhD, 2007, Stanford University
Hsu, Shih-Chieh 2012; MS, 2001, National Taiwan University; PhD, 2008, University of California (San Diego)

Laumann, Christopher Richard 2013; MSc, 2004, University of Edinburgh (UK); PhD, 2010, Princeton University

Miller, Michael L. 1999, (Affiliate); PhD, 2004, Yale University

Mueller, Peter 2012, (Affiliate); PhD, 2003, Johannes Gutenberg University, Germany

Schwenk, Achim 2003, (Affiliate); Diploma, 1997, University of Heidelberg (Germany); MA, 1999, State Univ of New York (Stony Brook); PhD, 2002, State Univ of New York (Stony Brook)

Tolich, Nikolai Rubin 2007; MSc, 1999, University of Auckland (New Zealand); PhD, 2005, Stanford University

Wiggins, Paul Alexander 2010; PhD, 2005, California Institute of Technology

Xu, Xiaodong 2010; PhD, 2008, University of Michigan

Senior Lecturers

Pengra, David B. 1986; MS, 1988, University of Washington; PhD, 1991, University of Washington

Robertson, Charles Edward 1977, (Emeritus); MS, 1963, University of Washington; MS, 1981, University of Washington

Lecturers

Messina, Donna L. 1994; MEd, 1988, Seattle University

Pedigo, Robert Daryl 1995; MA, 1972, Stanford University; PhD, 1977, University of Texas (Austin)

Political Science

Professors

Barreto, Matthew A. 2005; MS, 2003, University of California (Irvine); PhD, 2005, University of California (Irvine)

Bennett, Walter Lance * 1974; MPhil, 1973, Yale University; PhD, 1974, Yale University

Brass, Paul Richard * 1965, (Emeritus); MA, 1959, University of Chicago; PhD, 1964, University of Chicago

Caporaso, James Albert * 1988; MA, 1965, Villanova University; PhD, 1968, University of Pennsylvania

Fraga, Luis Ricardo 2007, (Affiliate); MA, 1981, Rice University; PhD, 1984, Rice University

Gill, Anthony James * 1994; MA, 1989, University of California (Los Angeles); PhD, 1994, University of California (Los Angeles)

Goldberg, Ellis Jay * 1985, (Emeritus); MA, 1970, University of California (Berkeley); PhD, 1983, University of California (Berkeley)

Gore, William J. * 1951, (Emeritus); MA, 1950, University of Southern California; PhD, 1952, University of Southern California

Hartsock, Nancy Carolyn Mosher * 1984, (Emeritus); MA, 1967, University of Chicago; PhD, 1972, University of Chicago

Levi, Margaret Anne * 1974, (Emeritus); PhD, 1974, Harvard University

Lovell, George Ivan 2001; MA, 1990, University of North Carolina; PhD, 1997, University of Michigan

Majeski, Stephen John * 1984; MA, 1975, University of New Hampshire; PhD, 1981, Indiana University

May, Peter Jeffrey * 1979; MPP, 1976, University of California (Berkeley); PhD, 1979, University of California (Berkeley)

Mayerfeld, Jason Matthew * 1991; MA, 1988, Princeton University; PhD, 1992, Princeton University

Mc Cann, Michael William * 1982; MA, 1976, University of California (Berkeley); PhD, 1983, University of California (Berkeley)

Mc Crone, Donald James * 1979, (Emeritus); PhD, 1966, University of North Carolina

Mercer, Jonathan Loveridge * 1996; MIA, 1987, Columbia University; PhD, 1993, Columbia University

Prakash, Aseem 2002; MBA, 1988, Indian Institute of Management, India; PhD, 1997, Indiana University

Reshetar, John Stephen * 1957, (Emeritus); MA, 1946, Harvard University; PhD, 1950, Harvard University

Smith, Mark Alan 1997; PhD, 1997, University of Minnesota

Taylor, Michael John * 1985, (Emeritus); MSc, 1965, University of Essex (UK); PhD, 1976, University of Essex (UK)

Wilkerson, John David * 1990; MA, 1986, University of Arizona; MA, 1989, University of Rochester; PhD, 1991, University of Rochester

Associate Professors

Adolph, Christopher A. 2004; MA, 2000, Harvard University; PhD, 2005, Harvard University

Cichowski, Rachel Aileen 2001; MA, 1997, University of California (Irvine); PhD, 2001, University of California (Irvine)

Di Stefano, Christine * 1985; MA, 1984, University of Massachusetts; PhD, 1984, University of Massachusetts

Kier, Elizabeth Lavelly * 1998; MA, 1985, Columbia University; PhD, 1992, Cornell University

Litfin, Karen Therese * 1991; MA, 1978, University of Maryland; PhD, 1992, University of California (Los Angeles)

Parker, Christopher S. 2006; MA, 1996, University of Chicago; PhD, 2001, University of Chicago

Turner, Jack III 2007; MPhil, 2001, University of Cambridge (UK); PhD, 2006, Princeton University

Whiting, Susan Hayes * 1994; PhD, 1995, University of Michigan

Assistant Professors

Arnold, Jeffrey Bernard 2014, (Acting); MA, 2012, University of Rochester

Francis, Megan Ming 2014; MA, 2005, Princeton University; PhD, 2008, Princeton University

Long, James Dunaway IV 2012; MSc, 2004, University of London, UK

Menaldo, Victor 2009; MA, 2003, Claremont Graduate School; PhD, 2009, Stanford University

Thorpe, Rebecca 2010; PhD, 2009, University of Maryland

Lecturer

Sanders, Rachel Leigh 2007; MA, 2010, University of Washington; PhD, 2013, University of Washington

Psychology

Professors

Aylward, Elizabeth Hoppes 1997, (Affiliate); MA, 1976, University of Connecticut; PhD, 1982, Cornell University

Baer, John S. * 1985, (Research); MS, 1982, University of Oregon; PhD, 1986, University of Oregon

Barash, David P. * 1973; MA, 1968, University of Wisconsin (Madison); PhD, 1970, University of Wisconsin (Madison)

Bassok, Maria 1997; MA, 1978, Hebrew University (Israel); PhD, 1984, Hebrew University (Israel)

Becker, Joseph * 1965, (Emeritus); MA, 1952, George Washington University; PhD, 1958, Duke University

Beecher, Michael Donovan * 1978; MA, 1965, Boston University; PhD, 1970, Boston University

Bernstein, Ilene Lyn * 1972, (Emeritus); MA, 1967, Columbia University; PhD, 1972, University of California (Los Angeles)

Boynton, Geoffrey 2006; MA, 1989, University of California (Santa Barbara); PhD, 1994, University of California (Santa Barbara)

Brenowitz, Eliot A. * 1987; PhD, 1982, Cornell University

Buck, Steven Louis 1976; MA, 1974, University of California (San Diego); PhD, 1976, University of California (San Diego)

Casseday, John Herbert * 1996, (Emeritus); MA, 1963, Indiana University; PhD, 1970, Indiana University

Cauce, Ana Mari 1986; MS, 1979, Yale University; PhD, 1984, Yale University

Covey, Ellen * 1996; MS, 1976, University of Houston; PhD, 1980, Duke University

Dawson, Geraldine * 1985, (Emeritus); PhD, 1979, University of Washington

Diaz, Jaime * 1978; MA, 1972, University of California (Los Angeles); PhD, 1975, University of California (Los Angeles)

Fiedler, Fred Edward * 1969, (Emeritus); AM, 1947, University of Chicago; PhD, 1949, University of Chicago

Fine, Ione 2007; MA, 1996, University of Rochester; PhD, 1999, University of Rochester

Foster, Robin Lea 1989, (Affiliate); PhD, 1992, University of Washington

George, William Henry * 1990; PhD, 1982, University of Washington

Gottman, John Mordechai * 1986, (Emeritus); MS, 1964, Massachusetts Institute of Technology; MA, 1967, University of Wisconsin; PhD, 1971, University of Wisconsin

Greenwald, Anthony G. * 1986; AM, 1961, Harvard University; PhD, 1963, Harvard University

Guralnick, Michael J. 1986; MS, 1964, Lehigh University; PhD, 1967, Lehigh University

Ha, James * 1990, (Research); MA, 1983, Wake Forest University; PhD, 1989, Colorado State University

Hunt, Earl Busby * 1966, (Emeritus); PhD, 1960, Yale University

Kahn, Peter H. 2000; MA, 1984, University of California (Berkeley); PhD, 1988, University of California (Berkeley)

Kim, Jeansok J. 2003; MA, 1989, University of California (Los Angeles); PhD, 1991, University of California (Los Angeles)

Kohlenberg, Robert Joseph * 1968; MS, 1963, University of Wisconsin; PhD, 1968, University of California (Los Angeles)

Kyes, Randall Charles * 1993, (Research); MA, 1985, Bucknell University; PhD, 1989, University of Georgia

Lengua, Liliana Josephine 1993; PhD, 1994, Arizona State University

Linehan, Marsha Marie * 1977; MA, 1970, Loyola University (campus unspecified); PhD, 1971, Loyola University (campus unspecified)

Lockard, Joan Saliba * 1962, (Emeritus); MS, 1961, San Diego State College; PhD, 1963, University of Wisconsin (Madison)

Loftus, Elizabeth Jane Fishman * 1973, (Affiliate); MA, 1967, Stanford University; PhD, 1970, Stanford University
Loftus, Geoffrey Russell * 1972; PhD, 1971, Stanford University

Mc Mahon, Robert Joseph * 1987, (Emeritus); MS, 1977, University of Georgia; PhD, 1979, University of Georgia

Meltzoff, Andrew 1974; PhD, 1976, Oxford University (UK)

Mizumori, Sheri Jane Yayoi 2000; MS, 1983, University of California (Berkeley); PhD, 1985, University of California (Berkeley)

Olavarria, Jaime Francisco * 1990; MD, 1974, State University of Chile; PhD, 1984, University of California (Berkeley)

Osterhout, Lee E. * 1991; MS, 1987, Tufts University; PhD, 1990, Tufts University

Sackett, Gene Paul * 1970, (Emeritus); MA, 1961, Claremont Graduate School; PhD, 1963, Claremont Graduate School

Sanquist, Thomas Frederick 1991, (Affiliate); MA, 1975, University of California (Los Angeles); PhD, 1980, University of California (Los Angeles)

Sarason, Barbara R. * 1966, (Emeritus); MA, 1954, Iowa State University; PhD, 1956, Indiana University

Sarason, Irwin G. * 1956, (Emeritus); MA, 1953, University of Iowa; PhD, 1955, Indiana University

Shoda, Yuichi * 1996; PhD, 1990, Columbia University

Simoni, Jane Marie 2001; MA, 1988, University of California (Los Angeles); PhD, 1990, University of California (Los Angeles)

Smith, Ronald Edward * 1969; MA, 1964, Southern Illinois University; PhD, 1968, Southern Illinois University

Smoll, Frank Louis * 1970; MS, 1966, University of Wisconsin; PhD, 1970, University of Wisconsin

Stone, Wendy 2009; MS, 1978, University of Miami (Florida); PhD, 1981, University of Miami (Florida)

Zoellner, Lori Ann 2000; MA, 1992, University of California (Los Angeles); PhD, 1997, University of California (Los Angeles)

Associate Professors

Beauchaine, Theodore Patrick 2000, (Affiliate); MA, 1997, State Univ of New York (Stony Brook); PhD, 2000, State Univ of New York (Stony Brook)

Bricker, Jonathan Baruch 1997, (Affiliate); MS, 1999, University of Washington; PhD, 2003, University of Washington

Brown, Jonathon David * 1989; PhD, 1986, University of California (Los Angeles)

Cheryan, Sapna 2007; PhD, 2007, Stanford University
Dorsey, Shannon 2007; MS, 2003, University of Georgia; PhD, 2003, University of Georgia

Flaherty, Brian P. 2005; MS, 1997, Pennsylvania State University; PhD, 2003, Pennsylvania State University

Joslyn, Susan L. 1988; MS, 1994, University of Washington; PhD, 1995, University of Washington

Kaiser, Cheryl Robin 2006; MA, 1999, University of Vermont; PhD, 2001, University of Vermont

Kenney, Nancy Jane * 1976; MA, 1972, University of Virginia; PhD, 1974, University of Virginia

Kerr, Frances Beth * 1968, (Emeritus); MS, 1968, University of North Carolina; MSPE, 1969, University of North Carolina; MA, 1973, University of Oregon; PhD, 1974, University of Oregon

King, Kevin Michael 2007; MA, 2002, Arizona State University; PhD, 2007, Arizona State University

Miyamoto, John Michael * 1984; MA, 1978, University of Michigan; PhD, 1985, University of Michigan

Murray, Scott O. 2005; MA, 1997, University of Hawaii; PhD, 2002, University of California (Davis)

Norris, Jeanette 1985, (Affiliate); MS, 1980, University of Washington; PhD, 1983, University of Washington

Repacholi, Betty Mae 2001; MS, 1986, University of West Australia; PhD, 1996, University of California (Berkeley)

Rose, Richard Michael * 1966, (Emeritus); MA, 1961, University of Pennsylvania; PhD, 1964, University of Pennsylvania

Sisneros, Joseph A. 2003; MA, 1989, California State University, Long Beach; PhD, 1999, Florida Institute of Technology

Sommerville, Jessica Alice 2002; MA, 2000, University of Chicago; PhD, 2002, University of Chicago

Assistant Professors

Ambinder, Michael Scott 2010, (Affiliate); MA, 2005, University of Illinois; PhD, 2008, University of Illinois

Bentson, Kathleen L. 1989, (Affiliate); PhD, 1997, University of Washington

Bernstein, Daniel Mark 2001, (Affiliate); MA, 1995, Brock University (Canada); PhD, 2001, Simon Fraser University, B.C. (Canada)

Brewer, Devon D. 1985, (Affiliate); MA, 1992, University of California (Irvine); PhD, 1994, University of California (Irvine)

Catz, Sheryl Lynn 2003, (Affiliate); MA, 1991, College of William And Mary; PhD, 1997, Louisiana State University

Crockett, Carolyn Martha 1971, (Affiliate); PhD, 1971, University of Washington

Finocchio, Dom V. 1969, (Emeritus); MS, 1952, University of Pittsburgh; PhD, 1954, University of Pittsburgh

Leonesio, Roger Jacob 1987, (Affiliate); MS, 1985, University of Washington; PhD, 1993, University of Washington

Leu, Janxin 2006, (Affiliate); MA, 1997, Stanford University; PhD, 2004, University of Michigan

McLaughlin, Katie Anne 2012; MS, 2004, Pennsylvania State University; MPhil, 2006, Yale University; PhD, 2008, Yale University

Olson, Kristina Reiss 2012; MA, 2005, Harvard University; PhD, 2008, Harvard University

Plaks, Jason E. 2001, (Affiliate); MA, 1997, Columbia University; MPhil, 1999, Columbia University; PhD, 2000, Columbia University

Prat, Chantel Spring 2010; MA, 2001, University of California (San Diego); PhD, 2004, University of California (San Diego)

Reid, Melissa Jamila 1997, (Affiliate); PhD, 1997, State Univ of New York (Stony Brook)

Reynolds, Sarah Katherine 1997, (Affiliate); MA, 1994, University of Iowa; PhD, 1999, University of Iowa

Sedlins, Mara 2003, (Affiliate); PhD, 2012, University of Washington

Wood, Jason 2007, (Affiliate); PhD, 2003, University of California (Davis)

Worlein, Julie May 1986, (Affiliate); PhD, 1993, University of Washington

Senior Lecturer

Passer, Michael Warren * 1977; MA, 1972, University of California (Los Angeles); PhD, 1977, University of California (Los Angeles)

Lecturers

Fagan, Corey N. * 1989; MA, 1982, University of Massachusetts; PhD, 1988, University of Massachusetts

Little, Laura Margaret 1997; JD, 1981, University of Texas (unspecified); MS, 1993, University of New Mexico; PhD, 1998, University of New Mexico

Montoya, Heidi Dylani 2003; PhD, 2010, University of Washington

Nelson, Dana C. 1993; PhD, 2005, University of Washington

Savelli, Sonia 2001; PhD, 2009, University of Washington

Voorhies, Ann C. 1999; PhD, 2006, University of Washington

Romance Languages and Literature

Professors

Anderson, Farris Furman * 1967, (Emeritus); MA, 1962, Duke University; PhD, 1968, University of Wisconsin

Geist, Anthony Leo 1987; MA, 1969, University of California (Berkeley); PhD, 1978, University of California (Berkeley)

O'Hara, Edgar * 1989; MA, 1985, Catholic University; PhD, 1989, University of Texas (unspecified)

Rafferty, Ana Maria Gomez-Bravo 2012; MA, 1986, Universidad Autonoma de Madrid; PhD, 1991, University of California (Berkeley)

Associate Professors

Collins, Douglas P. * 1980; MA, 1972, University of Missouri; PhD, 1978, University of Missouri

Dale, Robert Charles * 1963, (Emeritus); MA, 1960, University of Wisconsin

Delcourt, Denyse * 1990; MA, 1980, University of Montreal (Canada); PhD, 1987, University of Montreal (Canada)

Fernandez Dobao, Ana 2007; MA, 1999, University of Santiago, Spain; PhD, 2005, University of Santiago, Spain

Gaylard, Susan L. 2005; MA, 1999, University of California (Berkeley); PhD, 2004, University of California (Berkeley)

Gilbert, Donald W. 2002; MA, 1991, University of California (Berkeley); PhD, 1997, University of California (Berkeley)

Mackenzie, Louisa 2001; MA, 1997, University of California (Berkeley); PhD, 2001, University of California (Berkeley)

Mercer, Leigh 2005; MA, 1998, University of Texas (Austin); PhD, 2004, Boston University

Petersen, Suzanne Helen * 1973, (Emeritus); MA, 1967, University of Wisconsin; PhD, 1976, University of Wisconsin (Madison)

Sbragia, Albert John * 1989; MA, 1983, University of California (Berkeley); PhD, 1988, University of California (Berkeley)

Shipley, George Arthur * 1967, (Emeritus); MA, 1962, Harvard University; PhD, 1967, Harvard University

Turnovsky, Geoffrey 2006; MA, 1995, Columbia University; PhD, 2001, Columbia University

Watts, Richard Henry 2009; MA, 1993, Yale University; MPhil, 1994, Yale University; PhD, 1998, Yale University

Assistant Professors

Albarran, Raquel 2012, (Acting); MA, 2008, University of Pennsylvania

Arduini, Beatrice 2012; MA, 2005, Indiana University; PhD, 2008, Indiana University

Smith, Maya Angela Davis 2013; MA, 2005, New York University

Senior Lecturers

Leporace, Giuseppe 1987; MA, 1989, University of Washington

Mazzola, Claudio 2000; MA, 1982, University of Washington; PhD, 1986, University of Washington

Meyer, Hedwige Marie 1988; MA, 1992, University of Washington

Raneda Cuartero, Maria Inmaculada 1997; MA, 1994, University of Wisconsin (Madison)

Vilavella, Helene 1984; MA, 1983, University of Paris (France); MA, 1986, University of Washington; PhD, 1996, University of Washington

Yowell, Donna Lynne * 1988, (Emeritus); MA, 1982, University of California (Berkeley); PhD, 1987, University of California (Berkeley)

Lecturers

Baraboi, Otilia Georgera 2001; MA, 2003, University of Washington; PhD, 2010, University of Washington

Bodden, Rodney Vernon 1965, (Emeritus); MA, 1961, University of Toronto (Canada); PhD, 1969, University of Wisconsin (Madison)

Fernandez, Victor Orlando 2014; MA, 2008, University of Montreal (Canada)

Fox, Joan H. 1984, (Emeritus); MA, 1973, University of British Columbia (Canada)

Gillman, Maria 1990; MA, 1986, Oregon State University

Gonzalez, Jorge 1988; MM, 1986, University of Wisconsin

Jaffee, Samuel Jay 2013; MA, 2006, Washington University; PhD, 2013, University of California (Irvine)

Markley, Phillip Lynn 1994; MA, 1982, Ohio State University; MA, 1984, Ohio State University; PhD, 1994, University of Texas (Austin)

Shaw, Aimie Maureen 2010; MA, 2007, University of Victoria (Canada)

Taradel, Ruggero M. 2003; BA, 1992, University of Rome (Italy)

Tassone, Giuseppe 1997; BA, 1997, University of Washington

Witte, Anna B. 2003; MA, 1986, University of Texas (Austin); PhD, 1991, University of Texas (Austin)

Scandinavian Studies

Professors

Gavel Adams, Ann-Charlotte * 1986; MA, 1968, University of Uppsala (Sweden); MA, 1975, Linköping University (Sweden); PhD, 1990, University of Washington

Hjort, Anne Mette 2008, (Affiliate); MA, 1985, McGill University (Canada); PhD, 1989, Ecole des Hautes Etudes en Sciences Sociales, Paris

Ingebritsen, Christine 1992; MA, 1986, Columbia University; PhD, 1993, Cornell University

Kelertas, Violeta 2008, (Affiliate); PhD, 1984, University of Wisconsin (Madison)

Leiren, Terje Ivan * 1977; MA, 1970, California State University, campus unspecified; PhD, 1978, North Texas State University

Nestingen, Andrew 1997; MA, 1999, University of Washington; PhD, 2001, University of Washington

Sjavik, Jan Ivar * 1978; MA, 1976, Harvard University; PhD, 1979, Harvard University

Stecher, Marianne Tranberg * 1986; MA, 1981, University of Washington; PhD, 1990, University of California (Berkeley)

Steene, Birgitta Kerstin * 1955, (Emeritus); MA, 1955, University of Washington; PhD, 1960, University of Washington; PhD, 1966, University of Uppsala (Sweden)

Associate Professors

Bergusson, Claudia Jean 1999, (Affiliate); MA, 1987, University of Minnesota; MA, 1992, Lesley College; PhD, 2003, University of Washington

Graden, Lizette 2012, (Affiliate); PhD, 2003, University of Stockholm (Sweden)

Hanson, Katherine Jane 1977, (Affiliate); MA, 1970, University of Washington; PhD, 1978, University of Washington

Rees, Ellen Rebecca 1988, (Affiliate); MA, 1992, University of Washington; PhD, 1995, University of Washington

Sehmsdorf, Henning Kurt * 1967, (Emeritus); MA, 1964, University of Chicago; PhD, 1968, University of Chicago

Smidchens, Guntis I. 1993; MA, 1988, Indiana University; PhD, 1996, Indiana University

Assistant Professors

Larson, Katherine Louise 2014, (Affiliate); MPA, 1976, University of Washington; PhD, 2011, University of Washington

Lund, Jens 1988, (Affiliate); MA, 1975, Bowling Green State University; PhD, 1983, Indiana University

Magnusson, Brian K. 1965, (Affiliate); MA, 1967, University of Washington; PhD, 1988, University of Wisconsin (Madison)

Norlen, Paul Richard 1991, (Affiliate); MA, 1992, University of Washington; PhD, 1995, University of Washington

Purs, Aldis Edvards 2006, (Affiliate); MA, 1992, University of Toronto (Canada); PhD, 1998, University of Toronto (Canada)

Stolen, Marianne 1997, (Affiliate); PhD, 1990, University of Washington

Senior Lecturer

Dubois, la G. 1989; MA, 1981, University of California (Los Angeles); PhD, 1991, University of Washington

Slavic Languages and Literatures

Professors

Augerot, James Edward 1960, (Emeritus); MA, 1959, New Mexico Highlands University; PhD, 1968, University of Washington

Crnkovic, Gordana * 1993; MA, 1991, Stanford University; PhD, 1993, Stanford University

Diment, Galya * 1989; MA, 1978, Claremont Graduate School; PhD, 1987, University of California (Berkeley)

Dziwerek, Katarzyna Anna * 1993; MA, 1984, University of Illinois; MA, 1985, University of Lodz (Poland); MA, 1987, University of California (San Diego); PhD, 1991, University of California (San Diego)

Kapetanac, Davor * 1970, (Emeritus); MA, 1954, University of Zagreb (Croatia); PhD, 1972, University of Zagreb (Croatia)

Associate Professors

Alaniz, Jose 2003; PhD, 2003, University of California (Berkeley)

Coats, Herbert S. * 1968, (Emeritus); MA, 1964, Fordham University; PhD, 1970, University of Illinois

Ekeltschik, Serguei 2009, (Affiliate); PhD, 2000, University of Alberta, Canada

Henry, Barbara Jane 2003; MA, 1990, University of London, UK; DPhil, 1997, Oxford University (UK)

West, James D. * 1972; MA, 1969, University of Cambridge (UK); PhD, 1970, University of Cambridge (UK)

Senior Lecturers

Belic, Bojan 2005; MA, 2000, University of Illinois; PhD, 2005, Ohio State University

Holdsworth, Nora 1963, (Emeritus); BA, 1965, University of Washington

Polack, Zoya M. 1973; MA, 1975, University of Washington

Lecturers

Soldanova, Jaroslava M. 1998, (Emeritus); MA, 1977, Palackeho University, Czech Republic

Zaitseva, Valentina A. 2005; MA, 1988, Harvard University; PhD, 1992, Harvard University

Sociology

Professors

Borgatta, Edgar F. * 1980, (Emeritus); MA, 1949, New York University; PhD, 1952, New York University

Burstein, Paul * 1985, (Emeritus); MA, 1971, Harvard University; PhD, 1974, Harvard University

Campbell, Frederick Lawrence * 1966, (Emeritus); MA, 1962, University of Michigan; PhD, 1967, University of Michigan

Crowder, Kyle 1988; PhD, 1997, State University of New York (Albany)

Crutchfield, Robert Douglas * 1979; MA, 1976, Vanderbilt University; PhD, 1980, Vanderbilt University

Guest, Avery Mason * 1972, (Emeritus); MS, 1964, Columbia University; MA, 1967, University of Wisconsin (Madison); PhD, 1970, University of Wisconsin (Madison)

Hargens, Lowell Lavern 2002, (Emeritus); MA, 1969, University of Wisconsin (Madison); PhD, 1971, University of Wisconsin (Madison)

Hechter, Michael * 1970, (Emeritus); PhD, 1972, Columbia University

Herting, Jerald Roy * 1996; MA, 1977, State Univ of New York (Stony Brook); PhD, 1987, University of Washington

Hirschman, Charles * 1987; MA, 1969, University of Wisconsin (Madison); PhD, 1972, University of Wisconsin (Madison)

Howard, Judith A. * 1982; MA, 1977, University of Oregon; PhD, 1982, University of Wisconsin (Madison)

Kiser, Edgar Vance * 1988; MA, 1980, University of Arizona; PhD, 1987, University of Arizona

Laslett, Barbara 2004, (Affiliate); MA, 1959, University of Chicago; PhD, 1969, University of Washington

Marx, Gary Trade 2000, (Affiliate); MA, 1962, University of California (Berkeley); PhD, 1966, University of California (Berkeley)

Matsueda, Ross Lawrence * 1998; MA, 1980, University of California (Santa Barbara); PhD, 1984, University of California (Santa Barbara)

Morris, Wanda Martina 2000; MA, 1986, University of Chicago; PhD, 1989, University of Chicago

Opp, Karl-Dieter 2003, (Affiliate); MA, 1963, University of Cologne (Germany); PhD, 1967, University of Cologne (Germany)

Pfaff, Steven James * 1999; MA, 1994, University of North Carolina; MA, 1995, University of North Carolina; PhD, 1999, New York University

Reskin, Barbara F. 2002, (Emeritus); MA, 1970, University of Washington; PhD, 1973, University of Washington

Schmitt, David R. * 1968, (Emeritus); MA, 1962, Washington University; PhD, 1963, Washington University

Schwartz, Pepper Judith Jean * 1972; MA, 1968, Washington University; MPhil, 1970, Yale University; PhD, 1974, Yale University

Scott, Joseph Walter * 1985, (Emeritus); MA, 1959, Indiana University; PhD, 1963, Indiana University

Tolnay, Stewart Emory 2000; MA, 1975, University of Washington; PhD, 1981, University of Washington

Van Den Bergh, Pierre Louis * 1965, (Emeritus); MA, 1953, Stanford University; MA, 1959, Harvard University; PhD, 1960, Harvard University

Wager, Leonard Wesley * 1954, (Emeritus); MA, 1952, University of Washington; PhD, 1959, University of Chicago

Weis, Joseph George * 1974; MCrim, 1969, University of California (Berkeley); DCrim, 1974, University of California (Berkeley)

Associate Professors

Brines, Julie Ellen * 1993; MA, 1985, Harvard University; PhD, 1990, Harvard University

Clark, Samuel J. 2004; MA, 1995, University of Pennsylvania; PhD, 2001, University of Pennsylvania

Harris, Alexes 1995; MA, 1999, University of California (Los Angeles); PhD, 2002, University of California (Los Angeles)

Lee, Hedwig 2009; MA, 2005, University of North Carolina; PhD, 2009, University of North Carolina

Rosenfeld, Jake Hoffmann 2007; MA, 2004, Princeton University; PhD, 2007, Princeton University

Stovel, Katherine Wellesley 1997; MA, 1994, University of North Carolina; PhD, 1999, University of North Carolina

Assistant Professors

Cubbins, Lisa Ann 1983, (Affiliate); MS, 1986, University of Washington; PhD, 1992, University of Washington

Eger, Maureen A 2002, (Affiliate); MA, 2000, Stanford University; MA, 2005, University of Washington; PhD, 2010, University of Washington

Gonzales, Roberto G. 2008, (Affiliate); AM, 1999, University of Chicago; MA, 2004, University of California (Irvine); PhD, 2008, University of California (Irvine)

Jackson, Julie Elizabeth 1988, (Affiliate); MA, 1996, University of Washington; PhD, 2010, University of Washington

Melber, Barbara Desow 1970, (Affiliate); MA, 1969, University of Chicago; PhD, 1974, University of Chicago

Mulcahy, Michael J. 2007, (Affiliate); MA, 1993, Ruhr Universität Bochum (Germany); MA, 1998, University of Arizona; PhD, 2004, University of Arizona

Quinn, Sarah 2010; MA, 2006, University of California (Berkeley); PhD, 2010, University of California (Berkeley)

Schoenberg, Ronald James 1991, (Affiliate); MS, 1972, University of Washington; PhD, 1975, University of Washington

Zagheni, Emilio 2014; MA, 2006, University of California (Berkeley); MA, 2008, University of California (Berkeley); PhD, 2010, University of California (Berkeley)

Senior Lecturers

Pitchford, Susan R. * 1987; MA, 1990, University of Washington; PhD, 1994, University of Washington

Lecturers

Kistner, Kelly M. 2005; MA, 2008, University of Washington; PhD, 2014, University of Washington

Speech and Hearing Sciences

Professors

Coggins, Truman Earl * 1974; MS, 1971, University of Redlands; PhD, 1976, University of Wisconsin (Madison)

Folsom, Richard C. * 1976; MS, 1970, Portland State University; PhD, 1979, University of Washington

Kuhl, Patricia Katherine 1976; MA, 1971, University of Minnesota; PhD, 1973, University of Minnesota

Minifie, Fred Delwin * 1971, (Emeritus); MA, 1962, University of Iowa; PhD, 1963, University of Iowa

Olswang, Lesley Barrett * 1977, (Emeritus); MA, 1971, University of Illinois; PhD, 1978, University of Washington

Prins, David * 1969, (Emeritus); MA, 1957, University of Michigan; PhD, 1961, University of Michigan

Stoel-Gammon, Caroline * 1977, (Emeritus); MA, 1968, Stanford University; PhD, 1974, Stanford University

Tremblay, Kelly Louise 1998; MSc, 1987, Dalhousie University (Canada); PhD, 1998, Northwestern University

Werner, Lynne A. * 1986; MA, 1980, Loyola University (campus unspecified); PhD, 1980, Loyola University (campus unspecified)

Wilson, Wesley Raymond * 1963, (Emeritus); MA, 1961, University of Redlands; PhD, 1969, University of Washington

Associate Professors

Bierer, Julie A. 2005; PhD, 2001, University of Michigan; MS, 2003, San Francisco State

Burns, Edward McKee * 1984, (Emeritus); MS, 1966, University of Arizona; PhD, 1977, University of Minnesota

Carpenter, Robert L. * 1970, (Emeritus); MA, 1965, Northwestern University; PhD, 1969, Northwestern University

Cooker, Harry Sidney * 1976, (Emeritus); MA, 1961, University of Iowa; PhD, 1963, University of Iowa

Eadie, Tanya L. 2003; MS, 1999, University of Western Ontario (Canada); PhD, 2003, University of Western Ontario (Canada)

Kendall, Diane Lynne 2008; MA, 1989, California State University, Fullerton; PhD, 1999, University of Pittsburgh

Max, Ludo 2009; MA, 1992, Katholieke Universiteit Leuven (Belgium); PhD, 2000, Kent State University

Moon, Christine Marie 1998, (Affiliate); MA, 1983, Columbia University; PhD, 1985, Columbia University

Spencer, Kristie A. 1999; MS, 1992, University of Pittsburgh; PhD, 2003, University of Washington

Stecker, George Christopher 2005, (Affiliate); MA, 1998, University of California (Berkeley); PhD, 2000, University of California (Berkeley)

Assistant Professors

Kover, Sara 2014; MS, 2007, University of Wisconsin (Madison); PhD, 2012, University of Wisconsin (Madison)

Lee, Adrian KC 2011; ScD, 2007, Massachusetts Institute of Technology

Peter, Beate 1998, (Affiliate); MA, 1981, Justus-Liebig University (Germany); MS, 2001, University of Washington; PhD, 2006, University of Washington

Sullivan, Jessica Renee 2010; MS, 2000, Lamar University; PhD, 2010, University of Texas (Dallas)

Senior Lecturers

Dowden, Patricia Ann 1981; MS, 1980, University of Washington; PhD, 1992, University of Washington

Harney, Martha L. 1988; MS, 1984, University of Washington

Miller, Robert Michael 1976, (Emeritus); MA, 1969, University of Redlands; PhD, 1976, University of Washington

Nevdahl, Martin 1993; MS, 1984, University of Washington

Lecturers

Alarcon, Nancy Burge 1988; MS, 1981, University of Wisconsin (Madison)

Anderson, Susan Jean 2007; MA, 1989, University of Northern Colorado; AD, 2005, Pennsylvania College of Optometry

Burns, Michael Ian 2008; MA, 2000, California State University, Fresno; PhD, 2013, University of Washington

Dunlap, Julie Ann 1992; MS, 1995, University of Washington

Gray, Jennifer Lynn 2011; MSPA, 1979, University of Washington; AuD, 2009, Arizona School of Health Sciences

Illich, Lisa Louise 2006; MS, 1992, University of Montana

Miller, Christi Wise 2007; MA, 2001, University of Texas (Austin)

Snow, Laura A. 1995; MA, 1996, University of Washington; PhD, 2007, University of Washington

Thorne, John Carl 2003; MA, 1989, New Mexico State University; MS, 1997, University of New Mexico; PhD, 2010, University of Washington

Statistics

Professors

Bookstein, Fred L. 2005; MA, 1971, Harvard University; PhD, 1977, University of Michigan

Drton, Mathias 2001; Diploma, 2000, University of Augsburg (Germany); PhD, 2004, University of Washington

Gneiting, Tilmann Joachim 1997, (Affiliate); MA, 1992, Boston University; PhD, 1997, Bayreuth University (Germany)

Guttorp, Peter * 1980; MA, 1976, University of California (Berkeley); PhD, 1980, University of California (Berkeley)

Handcock, Mark Stephen 2000, (Affiliate); PhD, 1989, University of Chicago

Hoff, Peter David 2000; MS, 1994, University of Wisconsin; PhD, 2000, University of Wisconsin

Longini, Ira M. 2006, (Affiliate); MS, 1973, University of Florida; PhD, 1977, University of Minnesota

Mason, David Michael 1989, (Affiliate); MA, 1972, University of Washington; PhD, 1977, University of Washington

Meek, Christopher 2010, (Affiliate); MS, 1994, Carnegie Mellon University; PhD, 1996, Carnegie Mellon University

Perlman, Michael D. * 1979; MS, 1965, Stanford University; PhD, 1967, Stanford University

Raftery, Adrian Elmes * 1985; MSc, 1977, Trinity College (Ireland); Doct, 1980, Universite De Paris Vi (France)

Richardson, Thomas Stuart * 1996; MS, 1995, Carnegie Mellon University; PhD, 1996, Carnegie Mellon University

Rudas, Tamas 2004, (Affiliate); MSc, 1978, Eotvos Lorand University (Hungary); PhD, 1985, Eotvos Lorand University (Hungary)

Sampson, Paul David * 1981, (Research); MS, 1974, Brown University; PhD, 1979, University of Michigan

Scholz, Friedrich-Wilhelm * 1972, (Affiliate); Diploma, 1966, University of Göttingen (Germany); PhD, 1971, University of California (Berkeley)

Shorack, Galen Richard * 1965; MA, 1962, University of Oregon; PhD, 1965, Stanford University

Stuetzle, Werner * 1984; PhD, 1977, Swiss Federal Institute of Technology

Thompson, Elizabeth Alison * 1985; MA, 1974, University of Cambridge (UK); PhD, 1974, Cambridge University (UK)
 Wakefield, Jonathan Clive * 1999; PhD, 1992, University of Nottingham (UK)

Wellner, Jon August * 1983; PhD, 1975, University of Washington

Zeh, Judith E. * 1961, (Emeritus); MS, 1969, University of Washington; PhD, 1979, University of Washington

Associate Professors

Altschul, Roberto Eduardo 1977, (Affiliate); MSc, 1969, Case Western Reserve University; PhD, 1973, Case Western Reserve University

Dobra, Adrian 2006; MS, 1996, University of Bucharest (Romania); PhD, 2001, Carnegie Mellon University

Erosheva, Elena Aleksandrovna 2002; MS, 1998, Utah State University; PhD, 2002, Carnegie Mellon University

Gottardo, Raphael 2002, (Affiliate); MS, 2001, Portland State University; PhD, 2005, University of Washington

Meila-Predoviciu, Marina 2000; MS, 1985, University Politehnica of Bucharest (Romania); PhD, 1999, Massachusetts Institute of Technology

Minin, Volodymyr 2007; MS, 2002, University of Idaho; MS, 2004, University of California (Los Angeles); PhD, 2007, University of California (Los Angeles)

Witten, Daniela Mottel 2010; MS, 2006, Stanford University; PhD, 2010, Stanford University

Assistant Professors

Chiu, Grace Shung-Lai 2003, (Affiliate); MSc, 1996, University of British Columbia (Canada); PhD, 2002, Simon Fraser University, B.C. (Canada)

Fox, Emily Beth 2012; MEng, 2005, Massachusetts Institute of Technology; EE, 2008, Massachusetts Institute of Technology; PhD, 2009, Massachusetts Institute of Technology

Lindstrom, Johan Ludwig 2009, (Affiliate); MSc, 2003, Lund University; PhD, 2008, Lund University

McCormick, Tyler Harris 2011; MA, 2008, Columbia University; MS, 2008, University of Connecticut; MPhil, 2010, Columbia University; PhD, 2011, Columbia University

Narayanan, Hariharan 2012; MS, 2006, University of Chicago (Illinois); PhD, 2009, University of Chicago (Illinois)

Reynolds, Joel Howard 1989, (Affiliate); MS, 1989, University of California (Los Angeles); PhD, 1996, University of Washington

Lecturers

Cardoso, Tamre 1989; MS, 1985, California State University, Long Beach; PhD, 2004, University of Washington

Grove, Ranjini 2011; MS, 1993, Cornell University; PhD, 1995, Cornell University

Marzban, Caren 2001; PhD, 1988, University of North Carolina, Chapel Hill

Morita, June Gloria 1981; MA, 1978, University of California (Berkeley); PhD, 1984, University of California (Berkeley)

College of Built Environments

Architecture

Professors

Badanes, Steven Paul * 1988; MArch, 1971, Princeton University

Bonsteel, David Le Van 1963, (Emeritus); MArch, 1964, University of Washington

Bosworth, Thomas Lawrence 1968, (Emeritus); MA, 1954, Oberlin College; MArch, 1960, Yale University

Ching, Francis D.K * 1985, (Emeritus); BArch, 1966, University of Notre Dame

Finrow, Jerry Victor * 1995, (Emeritus); MArch, 1968, University of California (Berkeley)

Hildebrand, Grant 1964, (Emeritus); MArch, 1964, University of Michigan

Jacobson, Phillip Lee 1962, (Emeritus); MArch, 1969, Finnish Institute of Technology

Johnston, Norman John * 1960, (Emeritus); MCP, 1959, University of Pennsylvania; PhD, 1964, University of Pennsylvania

Kolb, Keith Robert 1952, (Emeritus); MArch, 1950, Harvard University

Loveland, Joel Eugene * 1980; MArch, 1980, University of California (Los Angeles)

Lovett, Wendell Harper 1948, (Emeritus); MArch, 1948, Massachusetts Institute of Technology

Miller, David Edward * 1985; MArch, 1972, University of Illinois

Millet, Marietta * 1976, (Emeritus); MArch, 1972, Massachusetts Institute of Technology

Ochsner, Jeffrey Karl * 1987; MArch, 1976, Rice University

Oshima, Ken Tadashi 2005; MArch, 1993, University of California (Berkeley); MPhil, 1998, Columbia University; PhD, 2003, Columbia University

Prakash, Vikramaditya * 1996; MA, 1989, Cornell University; PhD, 1994, Cornell University

Pyatok, Michael * 1990, (Emeritus); MArch, 1967, Harvard University

Seligmann, Claus Arthur * 1964, (Emeritus); DipArc, 1951, London Polytechnic (UK)

Small, Robert E. 1965, (Emeritus); MArch, 1955, University of Oregon

Streissguth, Daniel Michener * 1955, (Emeritus); MArch, 1949, Massachusetts Institute of Technology

Sutton, Sharon Egretta * 1998; MArch, 1973, Columbia University; MPhil, 1981, City University of New York; MA, 1982, City University of New York; PhD, 1982, City University of New York

Associate Professors

Albrecht, Robert George * 1960, (Emeritus); MSCE, 1960, Massachusetts Institute of Technology

Anderson, Alex Thomas 1998; MArch, 1990, University of Pennsylvania; MS, 1995, University of Pennsylvania; PhD, 1997, University of Pennsylvania

Borys, Ann Marie 2006; MArch, 1988, Syracuse University; PhD, 1998, University of Pennsylvania

Cohan, Peter Scott 1989; MFA, 1977, Northern Illinois University; MArch, 1984, University of Washington

Corser, Robert 2008; MArch, 1993, University of Virginia; MDes, 2003, Harvard University

Deines, Katrina Louise * 1978, (Emeritus); MA, 1975, University of Minnesota; MArch, 1979, University of Washington

Donnette, James Joseph * 1966, (Emeritus); MArch, 1969, University of Washington

Griggs, James K. S. 2008; MArch, 1984, Yale University

Heerwagen, Dean Reese * 1975; MS, 1967, Massachusetts Institute of Technology; MArch, 1971, Massachusetts Institute of Technology

Heerwagen, Judith Hannula 1981, (Affiliate); PhD, 1982, University of Washington

Huber, Nicole 2005; MArch, 2001, Universität Der Künste, Berlin

Huppert, Ann C. 2008; MA, 1992, University of Virginia; PhD, 2001, University of Virginia

Iarocci, Louisa Maria 2004; MA, 1992, Washington University; MA, 1994, Washington University; PhD, 2003, Boston University

Inanici, Mehlika Nur 2005; MSc, 1995, Middle East Technical University (Turkey); MSc, 2002, University of Michigan; PhD, 2004, University of Michigan

Johnson, Brian Robert 1978; MArch, 1981, University of Washington

Jones, Susan Hannen * 1991, (Affiliate); MArch, 1988, Harvard University

Latourelle, Evelyn Elaine Day * 1975, (Emeritus); MArch, 1964, Yale University

McLaren, Brian Lloyd 2001; MSc, 1986, Columbia University; PhD, 2001, Massachusetts Institute of Technology

Merlino, Kathryn Rogers 1999; MArch, 1999, University of Virginia

Minah, Galen Franklin * 1970; MArch, 1968, University of Pennsylvania

Mohler, Richard Ernest Johnson 1986; MArch, 1984, University of Pennsylvania

Pena, Robert Bernard 2007; MArch, 1987, University of California (Berkeley)

Sasanoff, Robert * 1963, (Emeritus); MCP, 1968, University of California (Berkeley)

Simonen, Kathrina Lois 2009; MS, 1991, University of California (Berkeley); MArch, 1992, University of California (Berkeley)

Assistant Professors

Golden, Elizabeth M. 2009; MSAcct, 1994, Columbia University

Hutchison, Robert Scott 1995, (Affiliate); MArch, 1996, University of Washington

Proksch, Gundula 2008; DipArc, 1997, Tech University of Braunschweig (Germany); MArch, 2000, Cornell University

Sprague, Tyler Stevens 2004; MS, 2006, University of Washington; PhD, 2013, University of Washington

Strauss, David Michael 1991, (Affiliate); MArch, 1985, University of Washington; MS, 1992, University of Pennsylvania; PhD, 1999, University of Pennsylvania

Senior Lecturers

Nicholls, James Keith 1995; BA, 1982, University of Alberta, Canada; BArch, 1986, University of British Columbia (Canada)

Zuberbuhler, Douglas Ralph 1967, (Emeritus); MArch, 1968, University of Washington

Lecturers

Anderson, Charles Holt 1989; MArch, 1984, Columbia University

Brachvogel, Peter William 2004; MArch, 1984, University of Michigan

Dee, Jennifer 1982; MArch, 1984, University of Washington

Gregga, Kailin Marie 2000; MArch, 2007, Parsons School of Design

Hudacek, David John 1985; MArch, 1988, University of Washington

Maul, Thomas Boyer 2006; MArch, 1996, University of Washington

Riske, Casey Jon 2011; BArch, 1984, North Dakota State University; BS, 1984, North Dakota State University

Stettler, Daniel Dominic 2004; MA, 1993, University of Oregon

Swain, Judith Dexter 1991; MArch, 1987, University of Oregon

Villanueva, Ray Glen 2006; MArch, 2007, University of Washington

West, Penelope 1995; MArch, 2001, University of Washington

Wong, Gail Lynn 1991; MArch, 1987, University of Washington

Construction Management

Professors

Bender, William John 2014; MSCE, 1989, Oregon State University; PhD, 2000, University of Maryland

Daniali, Saeed 1997; MSCE, 1972, Strasbourg School for Water and Environment Engineering (France); PhD, 1975, University of Lille (France)

Schaufelberger, John Edgar 1994; MSCE, 1970, University of Illinois; PhD, 1971, University of Illinois

Associate Professors

Lin, Ken-Yu 2008; MS, 1999, National Taiwan University; PhD, 2005, University of Illinois (Urbana)

Abdel Aziz, Ahmed 2002; MSc, 1992, Zagazig University (Egypt); PhD, 2000, University of British Columbia (Canada)

Dossick, Carrie Sturts 2005; MS, 1998, Columbia University; PhD, 2001, Columbia University

Goldblatt, Steven Melvin 1982, (Emeritus); JD, 1977, Golden Gate University

Kim, Yong-Woo 2007; MS, 1999, University of California (Berkeley); PhD, 2002, University of California (Berkeley)

Migliaccio, Giovanni Ciro 2010; MS, 2000, Politecnico di Bari (Italy); MS, 2007, University of Texas (Austin); PhD, 2007, University of Texas (Austin)

Nemati, Kamran Mostashar 1998; MS, 1982, University of California (Irvine); MEng, 1985, University of California (Berkeley); MCP, 1989, University of California (Berkeley); PhD, 1994, University of California (Berkeley)

Torrence, Gerard Rutgers 1954, (Emeritus); MS, 1950, Massachusetts Institute of Technology

Assistant Professor

El-Anwar, Omar Hossam 2009, (Affiliate); MSc, 2005, Cairo University (Egypt); PhD, 2009, University of Illinois (Urbana)

Lecturers

Bjork, Larry David 2011; BS, 1969, University of Washington

Holm, Arnold Leonard 1993; BS, 1980, University of Washington; BA, 1984, University of Washington

Nyrop, Karin Lisa 1997; JD, 1984, University of Puget Sound

Landscape Architecture

Professors

Buchanan, Robert Thomas * 1970, (Emeritus); MLA, 1956, Harvard University

Haag, Richard 1958, (Emeritus); MLArch, 1952, Harvard University

Hou, Jeffrey 2001; MArch, 1993, University of Pennsylvania; MArch, 1994, University of California (Berkeley); PhD, 2001, University of California (Berkeley)

Jones, Grant Richard 1970, (Affiliate); MLA, 1966, Harvard University

Schauman, Sally * 1979, (Emeritus); MS, 1971, University of Michigan

Winterbottom, Daniel M. * 1993; MLA, 1988, Harvard University

Associate Professors

Horner, Richard Ray * 1981, (Emeritus); MD, 1966, University of Pennsylvania; PhD, 1978, University of Washington
Johnson, Julie Marie 1995; MCP, 1988, Massachusetts Institute of Technology

Manzo, Lynne Catherine 2001; MA, 1988, City University of New York; PhD, 1994, City University of New York

Robertson, Iain McNaughton * 1982; MLA, 1975, University of Pennsylvania

Rottle, Nancy Dawn 2001; MLA, 1987, University of Oregon
Way, Thaisa 2007; MArch, 1991, University of Virginia; PhD, 2005, Cornell University

Yocom, Kenneth P. 2000; MLA, 2002, University of Washington; PhD, 2007, University of Washington

Assistant Professors

Diers, James Alan 2003, (Affiliate); BA, 1975, Grinnell College

Gastil, Raymond Wesley 2010, (Affiliate); MArch, 1991, Princeton University

Spencer, Benjamin Robinson 2008; MLA, 2004, University of Virginia

Senior Lecturers

Parrett, Julie Lynne 2002; MLA, 1997, University of Pennsylvania

Smith, Luanne 1993; MLA, 1984, University of Oregon

Lecturers

Krtak, Srna 2014; MS, 2014, University of Zagreb (Croatia)

Umbanhowar, Elizabeth Ann 2000; MLA, 2007, University of Washington

Urban Design and Planning

Professors

Alberti, Marina * 1996; PhD, 1992, Massachusetts Institute of Technology

Bell, Earl Jennings * 1966, (Emeritus); PhD, 1965, University of California (Berkeley)

Blanco, Hilda Joan * 1996, (Emeritus); MRP, 1984, University of California (Berkeley); PhD, 1989, University of California (Berkeley)

Dermisi, Sofia 2014; Diploma, 1998, University of Thessaly (Greece); MA, 1999, Harvard University; PhD, 2002, Harvard University

Kasprisin, Ronald J. * 1980; MUP, 1968, University of Washington

Lindell, Michael Keith 2014, (Affiliate); PhD, 1975, University of Colorado (Boulder)

Ludwig, Richard Lowell * 1971, (Emeritus); MUP, 1965, University of Washington; PhD, 1971, University of Pittsburgh

Miller, Donald Harlan * 1970; MCP, 1960, University of California (Berkeley); PhD, 1972, University of California (Berkeley)

Mugerauer, Robert 2000; PhD, 1973, University of Texas (Austin)

Purcell, Mark Hamilton 1999; MA, 1995, University of California (Los Angeles); PhD, 1998, University of California (Los Angeles)

Shen, Qing 2009; MA, 1986, University of British Columbia (Canada); PhD, 1993, University of California (Berkeley)

Untermann, Richard Karl 1971, (Emeritus); MLA, 1967, Harvard University

Vernez-Moudon, Anne * 1980; DSc, 1987, Ecole Polytechnique Federale De Lausanne

Associate Professors

Abramson, Daniel Benjamin 2001; MArch, 1992, Massachusetts Institute of Technology; MCP, 1992, Massachusetts Institute of Technology; PhD, 1998, Tsinghua University (China)

Bae, Chang-Hee Christine 1996; MRP, 1986, State University of New York (Albany); PhD, 1994, University of Southern California

Born, Branden Michael 2003; MS, 1998, University of Wisconsin (Madison); PhD, 2003, University of Wisconsin (Madison)

Chalana, Manish 2004; MArch, 1995, School of Planning & Architecture (India); MArch, 1999, Pennsylvania State University; PhD, 2005, University of Colorado (campus unspecified)

Rolfe, George Richard 1984; MArch, 1968, University of Pennsylvania; MCP, 1968, University of Pennsylvania

Ryan, Dennis Michael * 1974, (Emeritus); MCP, 1968, University of Pennsylvania; PhD, 1976, University of Pennsylvania

Tovar, Joseph W. 2003, (Affiliate); MUP, 1979, University of Washington

Turner, Ronald C. 2005, (Affiliate); BA, 1953, Pratt Institute
Westerlund, Frank Victor * 1971, (Emeritus); MUP, 1971, University of Washington; PhD, 1977, University of Washington

Wolfe, Charles Robert 1994, (Affiliate); MRP, 1982, Cornell University; JD, 1984, University of Oregon

Assistant Professors

Bitter, Christopher 2009; MA, 1996, University of Arizona; PhD, 2008, University of Arizona

Meisner, Jennifer Ann 1990, (Affiliate); MArch, 1994, University of Washington

Sheridan, Frances Amelia 2001, (Affiliate); MS, 1973, Oregon State University; MUP, 1994, University of Washington

Whittington, Janice Marie 2005; MA, 1993, Calif Polytechnic State (San Luis Obis); PhD, 2008, University of California (Berkeley)

Senior Lecturer

Campbell, Christopher David 2000; MA, 1994, University of California (Los Angeles); PhD, 2002, University of California (Los Angeles)

Foster School of Business

Accounting

Professors

Bowen, Robert M. * 1978, (Emeritus); MBA, 1971, Washington University; PhD, 1978, Stanford University
Burgstahler, David Curtis * 1980; PhD, 1981, University of Iowa

Dukes, Roland Edward * 1979; MBA, 1970, Stanford University; PhD, 1974, Stanford University

Heath, Loyd Curtis * 1962, (Emeritus); MBA, 1953, Northwestern University; PhD, 1965, University of California (Berkeley)

Hodge, Frank Douglas 2000; MBA, 1996, Indiana University; PhD, 2000, Indiana University

Jiambalvo, James * 1977; MAS, 1973, University of Illinois; PhD, 1977, Ohio State University

Matsumoto, Dawn A. 1993; PhD, 1998, University of Washington

Mueller, Gerhard G. * 1960, (Emeritus); MBA, 1957, University of California (Berkeley); PhD, 1961, University of California (Berkeley)

Noreen, Eric Warren * 1976, (Emeritus); MBA, 1974, Stanford University; PhD, 1976, Stanford University

Palmrose, Zoe-Vonna 2011, (Acting); MBA, 1978, University of Washington; PhD, 1982, University of Washington

Ramanathan, Kavasseri Vaidianatha * 1969, (Emeritus); MBA, 1962, Northwestern University; PhD, 1969, Northwestern University

Sefcik, Stephan E. * 1986; MAS, 1976, University of Illinois; PhD, 1983, University of Illinois

Shevlin, Terrence James 1985, (Emeritus); MA, 1981, Monash University (Australia); PhD, 1986, Stanford University

Sundem, Gary Lewis * 1971, (Emeritus); MBA, 1969, Stanford University; PhD, 1971, Stanford University

Associate Professors

Ge, Weili 2006; MBA, 2001, Washington University; PhD, 2006, University of Michigan

McVay, Sarah Elizabeth 2012; PhD, 2004, University of Michigan, Ann Arbor

Shores, Donna Jo * 1986; MS, 1980, University of Wisconsin (Madison); PhD, 1986, Stanford University

Thornock, Jacob 2010; MAcc, 2006, Brigham Young University; PhD, 2010, University of North Carolina

Assistant Professors

Blackburne, Terrence Patrick 2014; MA, 2003, Stanford University; PhD, 2014, University of Pennsylvania

Curtis, Asher 2012; MCom, 2003, University of New S. Wales (Australia); PhD, 2007, University of New S. Wales (Australia)

Demerjian, Peter 2013; MBA, 2002, College of William And Mary; PhD, 2007, University of Michigan

Patrick, Paige 2013; MAIS, 2002, Arizona State University
Quinn, Phillip James 2014; PhD, 2014, University of Iowa
Tanlu, Lloyd J. 2008; MA, 1999, Brandeis University; PhD, 2009, Harvard University

Senior Lecturers

Gillick, James Vincent 1986, (Emeritus); BBA, 1957, Manhattan College

Resler, William Moncrieff 1979; JD, 1972, University of Washington; LL.M., 1973, New York University

Rice, Steven James 1975, (Emeritus); MS, 1971, Oklahoma State University; PhD, 1974, University of Texas (Austin)

Wells, William Lloyd 1988, (Emeritus); MBA, 1973, Syracuse University; MPACC, 1989, University of Washington

Lecturers

Dimeo, Michael 2005; MS, 1977, Wichita State University
Phillips, Thomas E. 1991; MBA, 1992, University of Washington

Reich, Jane M. 2003; MBA, 1979, Boston University

Weber, Elizabeth L. 2007; MTAX, 2012, University of Washington

Finance and Business Economics

Professors

Bessembinder, Hendrik 2003, (Affiliate); MBA, 1978, Washington State University; PhD, 1986, University of Washington

Bradford, William Donald 1994; MBA, 1968, Ohio State University; PhD, 1972, Ohio State University

Brown, Stephen 2009, (Affiliate); MBA, 1974, University of Chicago; PhD, 1976, University of Chicago

Frost, Peter Ayars * 1969, (Emeritus); MA, 1961, University of California (Los Angeles); PhD, 1966, University of California (Los Angeles)

Haley, Charles Wallace * 1966, (Emeritus); MBA, 1964, Stanford University; PhD, 1968, Stanford University

Harford, Jarrad 2001; MS, 1995, University of Rochester; PhD, 1998, University of Rochester

Hess, Alan Carter * 1967, (Emeritus); MS, 1967, Carnegie Institute of Technology; PhD, 1969, Carnegie Institute of Technology

Higgins, Robert Carlisle * 1967, (Emeritus); MBA, 1965, Harvard University; PhD, 1969, Stanford University

Kamara, Avraham * 1984; MSc, 1978, Hebrew University (Israel); MPhil, 1981, Columbia University; PhD, 1986, Columbia University

Karpoff, Jonathan Mark * 1983; MA, 1980, University of California (Los Angeles); PhD, 1982, University of California (Los Angeles)

Malatesta, Paul Henry * 1980; MS, 1976, University of Rochester; PhD, 1982, University of Rochester

Schall, Lawrence Delano * 1968; PhD, 1969, University of Chicago

Associate Professors

Bond, Alan Philip 2013; MA, 1999, University of Chicago; PhD, 1999, University of Chicago

Dewenter, Kathryn Louise * 1992; MA, 1985, Stanford University; MBA, 1985, Stanford University; PhD, 1993, University of Chicago

Duchin, Ran 2012; MBA, 2003, Hebrew University (Israel); PhD, 2008, University of Southern California

Koski, Jennifer Lynch * 1991; MBA, 1987, Harvard University; PhD, 1991, Stanford University

Rice, Edward Morton * 1979; MBA, 1973, University of Rochester; PhD, 1978, University of California (Los Angeles)

Siegel, Stephan 2005; MPhil, 2002, Columbia University; PhD, 2006, Columbia University

Assistant Professors

Brogaard, Jonathan A. 2011; PhD, 2012, Northwestern University

Gilbert, Thomas 2008; MS, 2002, Imperial College; MS, 2005, University of California (Berkeley); PhD, 2008, University of California (Berkeley)

Hrdlicka, Christopher Michael 2010; AM, 2005, Washington University; PhD, 2010, University of Chicago

Schulz, Florian 2014; Diploma, 2005, Johann Wolfgang Goethe Universität, Frankfurt am Main (Germany); MBA, 2006, University of Iowa; MSc, 2008, London Business School (UK); PhD, 2014, University of California (Los Angeles)

Westerfield, Mark W. 2012; PhD, 2004, Massachusetts Institute of Technology

Senior Lecturers

Glassman, Debra Ann 1989; MS, 1979, University of Wisconsin; PhD, 1980, University of Wisconsin (Madison)

Seslen, Tracey 2012; PhD, 2003, Massachusetts Institute of Technology

Young, Lance A. 2003; MBA, 1997, University of Washington; MS, 1999, University of Rochester; PhD, 2005, University of Rochester

Lecturer

Maloy, Frances Jeanne 1986; MA, 1985, Southern Illinois University; PhD, 1999, University of Washington

Information Systems and Operations Management

Professors

Chiu, John S. Y. * 1960, (Emeritus); MS, 1955, University of Kentucky; PhD, 1960, University of Illinois

Dey, Debabrata * 1997; MS, 1989, Syracuse University; MS, 1992, University of Rochester; PhD, 1994, University of Rochester

Klasterin, Theodore D. * 1974; PhD, 1973, University of Texas (Austin)

Moinzadeh, Kamran * 1984; MS, 1982, Stanford University; PhD, 1985, Stanford University

Siegel, Andrew Francis * 1982; MS, 1975, Stanford University; PhD, 1977, Stanford University

Tamura, Hirokuni * 1967, (Emeritus); MS, 1961, University of Michigan; PhD, 1967, University of Michigan

Tan, Yong 1987; MS, 1988, University of Washington; PhD, 1993, University of Washington; PhD, 2000, University of Washington

Associate Professors

Fan, Ming 2002; MA, 1991, University of Akron; PhD, 1999, University of Texas (Austin)

Hillier, Mark Stanton * 1993; MS, 1991, Stanford University; PhD, 1994, Stanford University

Jain, Apurva 1999; MS, 1989, National Inst Training Engin (Bombay); PhD, 1999, Purdue University

Zhou, Yongpin 2000; MA, 1995, Johns Hopkins University; MA, 1997, University of Pennsylvania; PhD, 2000, University of Pennsylvania

Assistant Professors

Chen, Shi 2013; MS, 2008, Tsinghua University (China)
Iravani, Foad 2012; MSc, 2007, University of Toronto (Canada); PhD, 2012, University of California (Los Angeles)

Mamani, Hamed 2008; PhD, 2008, Massachusetts Institute of Technology

Wagner, Michael R. 2012; MEng, 2001, Massachusetts Institute of Technology; PhD, 2006, Massachusetts Institute of Technology

Wu, Jianqing 2014, (Acting); MBA, 2009, Purdue University

Senior Lecturers

Burrows, William Edward 1968, (Emeritus); MBA, 1972, University of Washington

Ou, Shaosong 2007; MA, 1999, University of Illinois; PhD, 2006, University of Southern California

Parameswaran, Manoj 2010; MTech, 1994, Indian Institute of Science (India); PhD, 1999, University of Texas (Austin)
 Pilcher, Martha Geraldine * 1987; MS, 1978, Georgia Institute of Technology; PhD, 1985, Georgia Institute of Technology

Studer-Ellis, Erich 2009; MBA, 1986, Indiana University; PhD, 1996, Duke University

Management and Organization

Professors

Avolio, Bruce 2008; MA, 1978, University of Akron; PhD, 1981, University of Akron

Boeker, Warren * 1998; PhD, 1987, University of California (Berkeley)

Chen, Xiao-Ping 1999; MEd, 1988, Hangzhou University; MA, 1992, University of Illinois; PhD, 1998, University of Illinois

Henning, Dale Ansgar * 1955, (Emeritus); MBA, 1949, University of Pennsylvania; PhD, 1954, University of Illinois

Hill, Charles William Leslie * 1988; PhD, 1983, University of Manchester (UK)

Huber, Vandra Lee * 1987; MS, 1978, University of Utah; MBA, 1981, Indiana University; DBA, 1982, Indiana University

Jones, Thomas Morgan 1977; MBA, 1970, University of Washington; PhD, 1977, University of California (Berkeley)

Kast, Fremont Ellsworth * 1951, (Emeritus); MBA, 1949, Stanford University; DBA, 1956, University of Washington

Kotha, Suresh * 1996; MARCH, 1982, Rensselaer Polytechnic Institute; MBA, 1983, Rensselaer Polytechnic Institute; MS, 1986, Rensselaer Polytechnic Institute; PhD, 1988, Rensselaer Polytechnic Institute

Lee, Thomas William 1983; MA, 1977, Bowling Green State University; PhD, 1984, University of Oregon

Mitchell, Terence Robert * 1969, (Emeritus); MA, 1967, University of Illinois; PhD, 1969, University of Illinois

Moxon, Richard Williams * 1971, (Emeritus); MS, 1964, Stanford University; DBA, 1973, Harvard University

Newell, William T. * 1960, (Emeritus); MBA, 1955, University of Denver; PhD, 1962, University of Texas (unspecified)

Nolan, Richard Lewis 2004, (Emeritus); MBA, 1963, University of Washington; PhD, 1966, University of Washington

Steensma, Harvey Kevin 2000; MBA, 1988, Washington State University; PhD, 1996, Indiana University

Vesper, Karl Hampton * 1969, (Emeritus); MBA, 1960, Harvard University; MS, 1966, Stanford University; PhD, 1969, Stanford University

Associate Professors

Bigley, Gregory Allan 2000; MBA, 1991, University of California (Irvine); PhD, 1995, University of California (Irvine)

Buck, Vernon Ellis * 1968, (Emeritus); MS, 1960, Cornell University; PhD, 1963, Cornell University

Johnson, Michael D. 2006; MA, 1999, University of Phoenix; PhD, 2006, Michigan State University

Kienast, Philip Kenneth * 1970, (Emeritus); MLIR, 1966, Michigan State University; PhD, 1972, Michigan State University

Reynolds, Scott Jason 2002; MA, 1995, Brigham Young University; PhD, 2002, University of Minnesota

Sirmon, David 2012; MBA, 1997, University of Montana; PhD, 2004, Arizona State University

Strong, Dennis Fulton * 1956, (Emeritus); PhD, 1959, University of Washington

Umphress, Elizabeth 2011; PhD, 2003, Tulane University

Wickman, James Allen * 1953, (Emeritus); MBA, 1954, University of Washington; DBA, 1961, University of Washington

Assistant Professors

Barnes, Christopher 2013; MBA, 2003, Webster University; PhD, 2009, Michigan State University

Fehr, Ryan 2010; MA, 2007, University of Maryland; PhD, 2010, University of Maryland

Hallen, Benjamin Lee 2014; MS, 2002, University of Virginia; PhD, 2007, Stanford University

Pahnke, Emily 2010; MBA, 2000, Brigham Young University; MA, 2010, Stanford University; PhD, 2010, Stanford University

Tan, David 2013; PhD, 2009, Emory University

Welsh, David Thomas 2014; JD, 2010, University of Utah; PhD, 2014, University of Arizona

Senior Lecturer

Fong, Christina Ting 2003; MA, 2000, Stanford University; PhD, 2003, Stanford University

Lecturers

Huwe, Ruth Ann 1990; MA, 1990, San Diego State University; PhD, 1995, University of Washington

McCormack, Timothy Brian 2014; JD, 1997, University of Oregon

Palmanteer-Holder, Nancy Lynn 2001; MEd, 1999, Washington State University

Preston, Susan Louise 1987; JD, 1985, Seattle University

Reynolds, Jane 1989; MBA, 1995, University of Washington; PhD, 1995, University of Washington

Marketing and International Business

Professors

Agrawal, Nidhi 2011; MBA, 1999, Mudra Institute of Communications (India); PhD, 2006, New York University

Erickson, Gary * 1980, (Emeritus); MBA, 1973, Stanford University; PhD, 1978, Stanford University

Etcheson, Warren Wade * 1954, (Emeritus); MA, 1951, State University of Iowa; PhD, 1956, State University of Iowa

Forehand, Mark Robeck 1997; PhD, 1997, Stanford University

Jain, Shailendra 2008; MBA, 1984, Indian Institute of Management, India; MPhil, 1992, New York University; PhD, 1995, New York University

MacLachlan, Douglas Lee * 1970, (Emeritus); MBA, 1965, University of California (Berkeley); MA, 1970, University of California (Berkeley); PhD, 1971, University of California (Berkeley)

Mizik, Natalie V. 1996; MS, 1995, Moscow State Institute of International Relations (Russia); PhD, 2002, University of Washington

Moinpour, Reza * 1966, (Emeritus); MBA, 1966, Ohio State University; PhD, 1970, Ohio State University

Narver, John Colin * 1966, (Emeritus); MBA, 1960, University of California (Berkeley); PhD, 1965, University of California (Berkeley)

Palmatier, Robert W. 2007; MSEE, 1984, Georgia Institute of Technology; MBA, 1989, Georgia Institute of Technology; PhD, 2004, University of Missouri

Schlosser, Ann Elizabeth 2000; MA, 1995, University of Illinois; PhD, 1997, University of Illinois

Spratlen, Thaddeus Hayes * 1972, (Emeritus); MA, 1957, Ohio State University; PhD, 1962, Ohio State University

Sullivan, Jeremiah Joseph * 1975, (Emeritus); MA, 1967, New York University; PhD, 1970, New York University; MBA, 1975, University of Washington

Yalch, Richard Frank * 1971; MS, 1970, Carnegie Mellon University; PhD, 1974, Northwestern University

Associate Professors

Rutz, Oliver 2011; MBA, 2003, University of California (Los Angeles); PhD, 2007, University of California (Los Angeles)

Shulman, Jeffrey D. 2006; PhD, 2006, Northwestern University

Assistant Professors

Borah, Abhishek 2013; MA, 2005, University of Delhi (India); PhD, 2013, University of Southern California

Dunn, Lea 2014; PhD, 2014, University of British Columbia (Canada)

Sayed Rosh Khar, Seyed Amin 2014; MSc, 2009, Carnegie Mellon University; PhD, 2012, Carnegie Mellon University

Yoganarasimhan, Hema 2014; MA, 2006, Yale University; MPhil, 2008, Yale University; PhD, 2009, Yale University

Zhang, Zaozao 2010; MPhil, 2007, Columbia University; PhD, 2011, Columbia University

Senior Lecturers

Beard, Oleta 1981; MBA, 1980, University of Washington

Kalitzki, Judith Ann 1974; PhD, 1979, University of Washington

Stearns, Elizabeth P. 1995; MBA, 1978, New York University

Lecturers

Matthews, Martha Nixon 1992; MA, 1986, University of Central Florida; PhD, 1994, University of North Carolina

Nevraumont, Edward Jules 2014; MS, 1999, Queen's University At Kingston (Canada); MBA, 2005, University of Pennsylvania

Rhodes, John Henry 1998; BA, 1961, University of Washington

Turner, Daniel J. 1999; MBA, 1993, Washington University; PhD, 2001, Northwestern University

Whelan, John Frederick 1985; MA, 1977, Yale University

School of Dentistry

Professors

Abolofia, Jeff Steve 1976, (Affiliate); DDS, 1975, University of Washington

Albright, Steven J. 1987, (Affiliate); DDS, 1978, Marquette University

Anderson, Howard Sam 1954, (Affiliate); DDS, 1951, University of Washington

Assael, Leon A. 2005, (Affiliate); DMD, 1975, Harvard University

Barrett, Ernest Earl 1971, (Affiliate); DDS, 1969, University of Washington

Bassett, Kathy B. 2014, (Affiliate); MS, 1980, Eastern Washington University; MEd, 1997, Lesley College

Becker, William 1994, (Affiliate); DDS, 1961, Marquette University; MSD, 1966, Baylor College of Medicine

Beikler, Thomas 2006, (Affiliate); MD, 1995, Ludwig-Maximilians University (Germany); DDS, 1999, Julius Maximilians University (Germany); PhD, 2004, Westfalian-Wilhelms-University, Germany

Beirne, Owen Ross * 1985; DMD, 1972, Harvard University; PhD, 1976, University of California (San Francisco)

Berg, Joel H. 2000; DDS, 1983, University of Iowa; MS, 1985, University of Iowa

Bhuta, Prakash H. 2008, (Affiliate); MS, 1970, Maharaja Sayajirao University, India; PhD, 1976, University of Louisiana

Bolender, Charles Loeck * 1959, (Emeritus); DDS, 1956, University of Iowa; MS, 1957, University of Iowa

Bollen, Anne-Marie 1990; DDS, 1984, University of Brussels (Belgium); MSD, 1986, University of Michigan; PhD, 1990, University of Michigan

Bordin, Sandra F. * 1973, (Research); PhD, 1966, University of Ferrara (Italy)

Brouns, John J.A. 2000, (Affiliate); DDS, 1977, University of Nijmegen; DMD, 1984, Utrecht University; PhD, 1992, University of Nijmegen

Brudvik, James Silvester * 1979, (Emeritus); DDS, 1957, University of Minnesota

Butson, Timothy James 1992, (Affiliate); DMD, 1982, University of Pennsylvania; MSD, 1992, University of Washington

Cameron, Cheryl Ann 1979; MEd, 1978, University of Kentucky; PhD, 1986, University of Washington; JD, 1994, Seattle University

Case, Judd Alan 2008, (Affiliate); MS, 1980, Humboldt State University; PhD, 1986, University of California (Riverside)

Chan, Daniel Chi Ngai 2008; DMD, 1979, University of The Philippines; MS, 1984, University of Iowa; DDS, 1988, University of Iowa

Chen, Chih-Kuang Casey 2005, (Affiliate); DDS, 1980, National Taiwan University; PhD, 1990, State University of New York (Buffalo); DDS, 1992, Loma Linda University

Chen, Ssu-Kuang Curtis 1989; DDS, 1986, National Taiwan University; MSD, 1989, University of Washington; PhD, 1993, University of Washington

Chung, Kwok-Hung 2006; DDS, 1979, National Defense Medical Center; MS, 1985, Northwestern University; PhD, 1987, Northwestern University

Cohenca, Nestor 2005, (Affiliate); DDS, 1990, National Univ of Asuncion (Paraguay)

Coldwell, Susan Elaine 1994; MA, 1990, University of Pennsylvania; PhD, 1994, University of Pennsylvania

Croll, Theodore P. 2004, (Affiliate); DDS, 1973, Temple University

Dahl, Ronald David 1983, (Affiliate); DDS, 1983, University of Washington

Dale-Crunk, Beverly Ann 1968, (Emeritus); PhD, 1968, University of Michigan

Darveau, Richard P. * 1989; MS, 1977, Northern Illinois University; PhD, 1981, Washington State University

Davis, John Sullivan 1993, (Affiliate); DDS, 1978, University of Washington

De Rouen, Timothy Allen 1975, (Emeritus); MS, 1969, Virginia Polytechnic Institute and State University; PhD, 1971, Virginia Polytechnic Institute and State University

Decker, Jay Donovan 1964, (Affiliate); DDS, 1960, University of Washington; MSD, 1964, University of Washington

Dierks, Eric Jackson 2005, (Affiliate); DMD, 1974, University of Louisville; MD, 1979, University of Louisville

Dodson, Thomas B. 2013; MPH, 1984, Harvard University; DMD, 1984, Harvard School of Dental Medicine

Domoto, Peter K. * 1968, (Emeritus); DDS, 1964, University of California (San Francisco); MPH, 1975, University of Washington

Drangsholt, Mark Thomas 1985; DDS, 1984, University of Washington; MPH, 1992, University of Washington; PhD, 2004, University of Washington

Dworkin, Samuel Franklin * 1974, (Emeritus); DDS, 1958, New York University; PhD, 1969, New York University

Engel, L. David 1972, (Affiliate); DDS, 1967, University of Minnesota; MS, 1969, University of Washington; PhD, 1976, University of Washington

Fales, Martha H. * 1959, (Emeritus); MA, 1968, University of Michigan; PhD, 1975, University of Michigan

Farrell, Charles Vincent 1990, (Affiliate); DMD, 1964, University of Oregon

Fey, Michael Robert 1977, (Affiliate); DDS, 1975, University of Washington; MSD, 1978, University of Washington

Frank, Richard Pearson * 1971, (Emeritus); DDS, 1962, University of Iowa; MSD, 1968, University of Washington

Gehrig, John Duane * 1954, (Emeritus); DDS, 1946, University of Minnesota; MSD, 1951, University of Minnesota

Gooris, Peter J. 1985, (Affiliate); DDS, 1982, University of Groningen (Netherlands); MD, 1992, University of Groningen (Netherlands)

Gordon, Sara Christine 2003; DDS, 1985, Dalhousie University (Canada); MS, 1996, University of Western Ontario (Canada)

Gunsolus, Roy Mathew III 1985, (Affiliate); DDS, 1969, University of Washington

Hairfield, William Michael 1991, (Affiliate); DDS, 1980, University of Washington; MS, 1987, University of North Carolina; MSD, 1992, University of Washington

Hall, Stanton Harris * 1974, (Affiliate); MS, 1967, Northwestern University; DDS, 1967, Northwestern University; PhD, 1974, University of Washington

Hammond, Rockwell Jr. 1985, (Affiliate); DMD, 1979, University of Oregon

Harper, Roger Jon 1977, (Affiliate); DDS, 1975, Case Western Reserve University

Harrington, Gerald W. * 1969, (Emeritus); DDS, 1959, St Louis University; MSD, 1969, University of Washington

Heintz, Philip Howard 2013, (Affiliate); MS, 1967, University of Washington; PhD, 1972, University of Washington

Herring, Susan Weller 1990; PhD, 1971, University of Chicago

Hollender, Lars Gosta * 1984, (Emeritus); DDS, 1958, University of Lund (Sweden)

Huang, Gregory Ju-Kwei 1987; DMD, 1987, University of Florida; MSD, 1989, University of Washington

Hujoel, Philippe Pierre 1985; DDS, 1984, University of Brussels (Belgium); MSD, 1986, University of Washington; PhD, 1993, University of Washington

Isquith, Louis 1972, (Affiliate); DDS, 1969, University of Washington

Ive, John Charles 1979, (Affiliate); DDS, 1977, University of Washington; MSD, 1979, University of Washington

Izutsu, Kenneth T. * 1970, (Emeritus); PhD, 1970, University of Washington

Johnson, Glen Howard 1978; MSE, 1977, University of Washington; DDS, 1978, University of Washington; MS, 1983, University of Michigan

Johnson, Robert Howard * 1981, (Emeritus); DDS, 1962, McGill University (Canada); MSD, 1964, Indiana University

Kegel, Walter Wilfred 1977, (Affiliate); BS, 1971, University of Witwatersrand (S. Africa)

Kemper, James Robert 1998, (Affiliate); DDS, 1974, University of Washington

Kennedy, Linda Mann 2012, (Affiliate); PhD, 1980, Harvard University

King, Gregory Joseph 1996, (Emeritus); DMD, 1969, Tufts University; MDSc, 1976, Harvard University

Kitchel, Alan Douglas 1995, (Affiliate); DDS, 1970, University of Washington

Kois, John Constantine 1985, (Affiliate); DMD, 1977, University of Pennsylvania; MSD, 1982, University of Washington

Kronstrom, Mats Henrik 2006; DDS, 1980, Lund University; PhD, 1999, Malmö University

Le Resche, Linda Ann * 1983; ScD, 1977, Johns Hopkins University

Leggott, Penelope Jane * 1993; BDents, 1969, University of Bristol (UK); MSc, 1980, University of Illinois

Leroux, Brian * 1991; MSc, 1985, University of British Columbia (Canada); PhD, 1989, University of British Columbia (Canada)

Lewis, Christopher Stanley 1984, (Affiliate); DDS, 1984, University of Washington

Libman, Warren Jay 1990, (Affiliate); DDS, 1986, McGill University (Canada); MSD, 1990, University of Washington

Little, Robert M. * 1969, (Emeritus); DDS, 1966, Northwestern University; MSD, 1970, University of Washington; PhD, 1974, University of Washington

Lovdahl, Paul Eston 1998, (Affiliate); DDS, 1970, Marquette University; MSD, 1976, University of Washington

Maebo, Randall M. 1996, (Affiliate); DDS, 1989, University of Washington

Martin, Michael Donald 1986; DMD, 1979, University of Kentucky; MPH, 1989, University of Washington; PhD, 1993, University of Washington; MSD, 1994, University of Washington

Matsumoto, Toyohiko 1988, (Affiliate); DDS, 1988, University of Missouri

McGraw, James Carroll 1969, (Affiliate); DDS, 1966, Western Reserve

McHugh, James William 1976, (Affiliate); DDS, 1973, University of Washington

McLean, Kenneth J. 1974, (Affiliate); DDS, 1960, University of Washington

Milgrom, Peter M. 1974; DDS, 1972, University of California (San Francisco)

Moberly, David Kent 1980, (Affiliate); DMD, 1980, Southern Illinois University

Moore, John William 1975, (Affiliate); DDS, 1974, University of Washington; MSD, 1979, University of Washington

Morrison, Kenneth Nelson * 1948, (Emeritus); DDS, 1943, University of Toronto (Canada); MSD, 1952, University of Washington

Morton, Thomas Henry Jr. * 1975, (Emeritus); DDS, 1972, Creighton University; MSD, 1975, University of Washington

Mouradian, Wendy Elyse 1977, (Emeritus); MS, 1973, Massachusetts Institute of Technology; MD, 1977, Columbia University

Murphy, Jerome G. Jr. 1990, (Affiliate); DDS, 1987, University of Washington

Myall, Robert William * 1977, (Affiliate); MD, 1975, University of British Columbia (Canada)

Natkin, Eugene * 1962, (Emeritus); DDS, 1957, New York University; MSD, 1962, University of Washington

Nicholls, Jack Ivan * 1965, (Emeritus); MAS, 1960, University of British Columbia (Canada); PhD, 1966, Purdue University

Nordlund, Dennis Paul 1978, (Affiliate); DDS, 1976, University of Washington

Nowak, Arthur John 2010, (Affiliate); DMD, 1961, University of Pittsburgh; MA, 1967, Columbia University

Oda, Dolphine * 1985; MSc, 1980, University of Manitoba (Canada)

Oswald, Robert James * 1974, (Emeritus); DDS, 1969, Medical College of Virginia

Page, Roy Christopher * 1964, (Emeritus); DDS, 1957, University of Maryland; PhD, 1967, University of Washington

Persson, Gosta Rutger * 1985, (Research); DDS, 1967, University of Lund (Sweden); PhD, 1978, University of Lund (Sweden)

Potter, Bryce Earl 2005, (Affiliate); DMD, 1967, Oregon Health Sciences University; MD, 1975, University of Washington

Raigrodski, Ariel Jacob 2004; DMD, 1991, Hebrew University (Israel); MS, 1999, Louisiana State University

Ramsay, Douglas Stuart 1983; DMD, 1983, University of Pennsylvania; PhD, 1988, University of Washington; MSW, 1990, University of Washington

Robinson, Rod David 1978, (Affiliate); DDS, 1970, Northwestern University

Rubenstein, Jeffrey Elliot 1989; DMD, 1975, Tufts University; MS, 1980, University of Texas (Houston)

Schubert, Mark McCulloch * 1974; DDS, 1974, University of Washington; MSD, 1981, University of Washington

Selipsky, Herbert * 1972, (Affiliate); HDD, 1967, University of Witwatersrand (S. Africa); MSD, 1973, University of Washington

Sheller, Barbara Lynn 1981, (Affiliate); DDS, 1981, University of Washington

Sinha, Pramod 2006, (Affiliate); MS, 1991, Marquette University; DDS, 1995, University of Oklahoma

Slayton, Rebecca Lynn 2004; MS, 1983, University of Iowa; DDS, 1992, University of Iowa; PhD, 1998, University of Iowa

Smalley, Ward Martin 1977, (Affiliate); DDS, 1977, University of Washington; MSD, 1984, University of Washington; MSD, 1986, University of Washington

Smith, Dennis Harold 1972, (Affiliate); DDS, 1971, University of Southern California; MSD, 1975, University of Washington

Somerman, Martha J. 2002, (Affiliate); MS, 1972, Hunter College; DDS, 1975, New York University; PhD, 1980, University of Rochester

Sorensen, John Alan 2012, (Acting); DMD, 1980, Tufts University; PhD, 1997, University of Copenhagen (Denmark)

Spear, Frank Michael 1985, (Affiliate); DDS, 1979, University of Washington; MSD, 1985, University of Washington

Sreebny, Leo M. 1957, (Affiliate); DDS, 1945, University of Illinois; MS, 1950, University of Illinois; PhD, 1954, University of Illinois

Steiner, David Robert 1974, (Affiliate); DDS, 1970, University of Washington; MSD, 1974, University of Washington

Stoelinga, Paul J. W. 1972, (Affiliate); DDS, 1964, Utrecht University; MSD, 1971, Catholic University of Nijmegen; MD, 1977, Utrecht University

Stolberg, Rebecca L. 2013, (Affiliate); MS, 1997, University of Missouri

Talaber, Attila Frank 1985, (Affiliate); DMD, 1985, Tufts University

Trenor, Melvyn H. H. 1978, (Affiliate); DDS, 1972, University of Washington

Truelove, Edmond Lee * 1972; DDS, 1967, Indiana University; MSD, 1971, Indiana University

Tucker, Richard Denton 1977, (Affiliate); DDS, 1976, University of Washington

Turpin, David L. 1970, (Affiliate); DDS, 1962, University of Iowa; MSD, 1966, University of Washington

Uhlmansiek, Robert Russell 1975, (Affiliate); DDS, 1975, University of Washington

Vander Linden, Darl W. 2009, (Affiliate); MS, 1985, University of North Carolina, Chapel Hill; PhD, 1989, University of Iowa

Vitous, Nelson Frank 1973, (Affiliate); DDS, 1970, University of Washington

Ware, Thomas Daniel 1967, (Affiliate); DDS, 1964, University of Washington

Warnick, Myron Eugene * 1956, (Emeritus); DDS, 1955, University of Alberta, Canada

Wataha, John C. 2008; DMD, 1982, Oregon Health Sciences University; PhD, 1992, University of Michigan, Ann Arbor

Watson, Eileen L. 1970, (Emeritus); PhD, 1970, University of Utah

Weinstein, Philip * 1971; MA, 1968, University of Kentucky; PhD, 1971, University of Kentucky

Werner, Fred C. 1974, (Affiliate); DDS, 1973, University of Washington

West, Roger A. 1972, (Affiliate); DMD, 1968, University of Oregon

Williams, Bryan Jack 1978, (Affiliate); DDS, 1974, University of Western Ontario (Canada); MEd, 1979, University of Washington; MSD, 1979, University of Washington

Williams, Gayne Byron 1988, (Affiliate); DDS, 1978, Ohio State University

Wilson, Robert Burton 1990, (Affiliate); DVM, 1961, Washington State University; PhD, 1967, University of Toronto (Canada)

Woods, Stephen Charles 1972, (Affiliate); PhD, 1970, University of Washington

Worthington, Philip 1974, (Emeritus); MBChB, 1956, University of Liverpool (UK); BDentS, 1959, University of Liverpool (UK)

Yae, John Junghun 1989, (Affiliate); DDS, 1987, University of Washington

Associate Professors

Audia, Franco 2002, (Affiliate); DDS, 1997, Loma Linda University; MS, 2001, Loma Linda University

Aw, Tar Chee 1995; DDS, 1990, Northwestern University; MS, 1995, University of Michigan

Backman, Charles Alan 1982, (Affiliate); DDS, 1982, University of Michigan; MSD, 1985, University of Washington

Baker, Irena Mihelcic 1994, (Affiliate); DDS, 1981, University of Zagreb (Croatia)

Bales, David J. 1983, (Emeritus); DDS, 1957, University of Washington; MSD, 1972, Indiana University

Bell, Richard Bryan 2005, (Affiliate); DDS, 1995, Creighton University; MD, 1998, University of North Carolina

Bethards, Billie Norman 1986, (Affiliate); DDS, 1976, University of Washington

Bloomquist, Dale Stanford * 1972, (Emeritus); DDS, 1969, University of Washington; MS, 1972, Georgetown University

Brandal, Jeanette Lynn 1985, (Affiliate); DDS, 1982, University of Washington; MSD, 1985, University of Washington

Burnett, Dean Allen 1992, (Affiliate); DDS, 1990, Northwestern University; MS, 1992, Northwestern University

Chacon, Guillermo E. 1996, (Affiliate); DDS, 1990, University of Costa Rica

Chasteen, Joseph Edward 1989, (Emeritus); DDS, 1967, University of Michigan; MA, 1976, University of Michigan

Chi, Donald Leslie 2002; DDS, 2006, University of Washington; PhD, 2009, University of Iowa

Cohanin, Babak Robert 1996, (Affiliate); DDS, 1988, University of California (Los Angeles); MS, 1991, University of California (Los Angeles)

Davis, John M. * 1966, (Emeritus); DDS, 1961, University of Washington; MSD, 1967, University of Washington

Denny, John Michael 2004, (Affiliate); DDS, 1974, University of Washington; MS, 1987, Temple University

Dixon, Douglas Raymond 2000; DMD, 1993, University of Pittsburgh; MSD, 2001, University of Washington; PhD, 2005, University of Washington

Domisch, Henrik 2006, (Affiliate); DDS, 2002, University of Kiel (Germany); DMD, 2004, University of Kiel (Germany); PhD, 2008, University of Bonn (Germany)

Drangsholt, Ross J. 1989, (Affiliate); DDS, 1992, University of Washington; MSD, 1997, University of Washington

Egbert, Mark Allen 1982; DDS, 1981, University of Washington

Etemad-Moghadam, Ali 1997, (Affiliate); DDS, 1991, University of Washington; MS, 1995, University of Michigan

Faine, Mary Powelson 1982, (Emeritus); MS, 1975, University of Washington

Feldman, Gary Ross 2006, (Affiliate); DDS, 1973, University of Minnesota; MD, 1978, University of Washington

Fiset, Louis Oliver 1976, (Affiliate); DDS, 1970, University of Washington

Freeman, Mark Andrew 1980, (Affiliate); DDS, 1980, Ohio State University; MSD, 1993, University of Washington

Friedman, Daniel Stewart 2007, (Affiliate); DDS, 1971, Temple University

Gamborena, Jose Ignacio 1995, (Affiliate); DDS, 1989, Odontologica Dominica University, Dominican Republic; DMD, 1992, Autonoma of Nuevo Leon University, Mexico; MSD, 1996, University of Washington; FID, 1997, University of Texas (unspecified)

Gordon, Herbert P. 1966, (Affiliate); DDS, 1954, University of Pittsburgh

Grey, Kristina Alyce 2004, (Affiliate); DDS, 1996, University of The Pacific; MS, 1998, University of Washington

Higashi, Michael Roy 1999, (Affiliate); DDS, 1978, University of Washington

Hohl, Thomas Howard * 1971, (Affiliate); DDS, 1971, Loyola University (Chicago)

Hussey, George Richard 1969, (Affiliate); DDS, 1969, University of Washington

Johnson, Dennis Theron 1999, (Affiliate); DDS, 1970, University of Washington

Joondeph, Donald R. * 1969, (Emeritus); DDS, 1967, Northwestern University; MS, 1969, Northwestern University

Khayat, Philippe Georges 1995, (Affiliate); DDS, 1979, Universite of Paris VII; MS, 1986, University of Washington

Kinney, Lisa Ann 1996; DDS, 1982, Case Western Reserve University; MPH, 2002, University of Washington

Lake, Samuel Lyon 1982, (Affiliate); DDS, 1979, University of Washington; MSD, 1981, University of Washington

Leone, Paola 2002, (Affiliate); DDS, 1997, University of Bari (Italy); MSD, 2001, St. Louis University

Lepe, Xavier 1993; DDS, 1980, University of Guadalajara (Mexico); MS, 1987, Loyola University (Chicago)

Mathews, David Paul 2005, (Affiliate); DDS, 1969, University of California (Los Angeles)

McCann, Gerald Frederic 1976, (Affiliate); DDS, 1974, University of Washington; MSD, 1976, University of Washington

McLean, Jeffrey Scott 2014, (Acting); MSc, 2000, University of Guelph (Canada); PhD, 2013, University of Southern California

Merijohn, George K. 2013, (Affiliate); DDS, 1979, University of Illinois

Milledge, James Todd 2010, (Affiliate); DDS, 1988, Loma Linda University

Miller, Jade Andrew 2010, (Affiliate); DDS, 1981, University of The Pacific

Mitchell, Thomas William 1975, (Affiliate); DDS, 1972, University of Washington

Mitrani, Ricardo 1998, (Affiliate); DDS, 1990, Universidad Tecnologica De Mexico; MSD, 2000, University of Washington

Mizuha, Byron S. 1977, (Affiliate); DMD, 1971, University of Oregon; MSD, 1976, University of Washington; Cert, 1979, University of Washington

Munk, Alan Merrill 1976, (Affiliate); DDS, 1975, University of Washington

Nash, Richard Wilson 1986, (Affiliate); DDS, 1976, University of Washington

Nemitz, Jeffrey John 2003, (Affiliate); DDS, 1970, University of Washington

Noble, Peter Anthony 2000, (Affiliate); MSc, 1984, Memorial University of Newfoundland; PhD, 1994, University of Saskatchewan (Canada)

O'Neal, Robert Benford * 1995; DMD, 1971, University of South Carolina; MEd, 1974, Wayne State University; MS, 1977, Walter Reed Army Medical Center

Oviir, Tiina 1999, (Affiliate); DDS, 1986, University of Tartu (Estonia)

Patten, Sidney Roger 1972, (Affiliate); DDS, 1970, University of Washington; MSD, 1977, University of Washington

Paxton, Mark C. 2001, (Affiliate); DDS, 1980, University of Washington

Phillips, Keith Martin 1990, (Affiliate); DMD, 1987, University of Pennsylvania; MSD, 1991, University of Washington Pilot, Theodore Franklin 1992, (Affiliate); DDS, 1993, University of Washington; MSD, 1995, University of Washington

Popowics, Tracy Ellen 1997; PhD, 1997, Brown University

Pratten, Don Henry 1979, (Affiliate); DMD, 1977, Southern Illinois University; MS, 1987, University of Maryland

Presland, Richard Brian * 1989; MSc, 1982, University of Otago (New Zealand); PhD, 1987, University of Adelaide (Australia)

Quickstad, Thomas Ray 1991, (Affiliate); DDS, 1984, University of Washington

Roberts, Frank Alan 1996; DDS, 1990, University of Tennessee; PhD, 1996, University of Alabama

Rude, Thomas James 1994, (Affiliate); DDS, 1994, University of Washington

Schuler, Ralf F. 2001, (Affiliate); DDS, 1991, Friedrich Alexander University (Germany)

Shor, Alexander 2001, (Affiliate); DDS, 1992, Latvia Medical Academy; DMD, 1997, University of Pennsylvania; MSD, 2001, University of Washington

Smith, Kim Winona 1992, (Affiliate); DDS, 1986, Case Western Reserve University; MSD, 1988, Case Western Reserve University

Taves, Donald R. 2008, (Affiliate); MD, 1953, University of Washington; MPH, 1957, University of California (Berkeley); PhD, 1963, University of Rochester

Taylor, Patrick Eric 1998, (Affiliate); DDS, 1977, University of California (Berkeley); MSD, 1988, University of Washington

Toolson, Leigh Brian * 1970, (Emeritus); DDS, 1967, University of Washington; MSD, 1977, University of Washington

Van Ness, Allan L. 1973, (Affiliate); DDS, 1966, University of Washington

Vaughn, Gregory A. 2004, (Affiliate); DDS, 1999, University of The Pacific

Vorono, Andrew Anthony 2002, (Affiliate); DDS, 1979, University of Southern California

Wells, Norma Jane 1960; RDH, 1958, University of Washington; MPH, 1966, University of California (Los Angeles)

West, John David 1991, (Affiliate); DDS, 1971, University of Washington; MSD, 1975, Boston University

Winter, Robert Richard 1997, (Affiliate); DDS, 1981, Marquette University

Woloshyn, Heather Ann 1986, (Affiliate); DMD, 1986, University of Saskatchewan (Canada); MSD, 1993, University of Washington

Zhang, Hai 2004; DMD, 1992, West China University; PhD, 2002, University of Connecticut

Assistant Professors

Agnos, Peter Dan 1976, (Affiliate); DDS, 1973, University of Illinois

Akimoto, Ken Michael 2004, (Affiliate); DDS, 1989, Tokyo Medical And Dental University; MSD, 1998, University of Washington

Albather, Huda 2013, (Affiliate); DDS, 1993, Tishreen University (Syria); MPH, 2000, University of Pittsburgh; MDS, 2000, University of Pittsburgh

Alcalde, Rafael 1998, (Affiliate); DDS, 1990, Central University (Venezuela)

Alibhai, Karim Z. 2002, (Affiliate); DMD, 1994, Tufts University

Anderegg, Charles Robert Jr. 1993, (Affiliate); DDS, 1982, West Virginia University

Andrews, Scott Thompson 2003, (Affiliate); DDS, 1980, University of Washington

Atherton, David Reid 1989, (Affiliate); DDS, 1981, University of Washington

Baerg, Steven Daniel 2000, (Affiliate); DMD, 1996, Tufts University

Barbizam, Joao V. 2013, (Affiliate); DDS, 1997, Universidade de Passo Fundo (Brazil); MSc, 2001, Universidade de Sao Paulo (Brazil); PhD, 2006, Universidade Estadual Paulista, Campus de Araraquara; MSD, 2013, University of Washington

Beppu, Kenji Grant 1994, (Affiliate); DDS, 1999, University of Washington; MSD, 2005, University of Washington

Bergin, Junping 2014, (Affiliate); DDS, 1996, Fourth Military Medical Univ (China); MS, 2001, Fourth Military Medical Univ (China); DMD, 2008, Nova Southeastern University; MS, 2012, University of Washington

Berner, Gary E. 2004, (Affiliate); DDS, 1983, University of Washington

Bienenfeld, Richard Oliver 2005, (Affiliate); BS, 1972, University of Washington

Bitar, Leena L. 2004, (Affiliate); DMD, 2004, Tufts University

Bockow, Rebecca M 2003, (Affiliate); DDS, 2007, University of Washington

Boyapati, Lakshmi S. 2008, (Affiliate); MS, 2006, University of Michigan

Bradway, Steve Deane 2000, (Affiliate); DDS, 1981, University of Washington; PhD, 1991, State University of New York (Buffalo)

Burn, Amrit Kaur 2010, (Affiliate); DDS, 2005, University of Texas (San Antonio); MSD, 2007, University of Washington

Butler, Bobby Lynn 1993, (Affiliate); DDS, 1987, University of Oklahoma

Cahoon, Raymond Scott 2004, (Affiliate); DDS, 1976, University of Washington

Cannava, James Christopher 2009, (Affiliate); DMD, 2006, Oregon Health Sciences University; MPH, 2012, University of Washington; MSD, 2012, University of Washington

Carlson, Roy Willy 1993, (Affiliate); DDS, 1970, University of Maryland

Castelnuovo, Jacopo 2012, (Affiliate); DDS, 1992, University of Rome (Italy); MSD, 1999, University of Washington

Castillo, Jorge Luis 1998, (Affiliate); DDS, 1991, Univ. Peruana Cayetano Heredia (Peru); MDS, 1995, University of Connecticut; MSD, 2000, University of Washington

Chang, Julia Yu Fong 2012, (Affiliate); DDS, 1998, National Taiwan University; MS, 2003, National Taiwan University; PhD, 2011, Baylor College of Dentistry

Chen, Hua Allen 1988, (Affiliate); DDS, 1984, Peking University (China); MSD, 1997, University of Washington

Chen, Yen-Wei 2008; DDS, 1998, Taipei Medical University (Taiwan); MSD, 2008, University of Washington

Chow, Cindy Y. 2005, (Affiliate); DMD, 2005, Tufts University

Chung, Eunku 2005, (Affiliate); DDS, 1998, Seoul National University (Korea); MSD, 2005, University of Washington

Cohen, Michael 1989, (Affiliate); DDS, 1974, McGill University (Canada)

Cohen, Rachelle S. 2007, (Affiliate); DMD, 2001, University of Connecticut; MSD, 2004, University of Washington

Colic, Allen D. 2009, (Affiliate); DDS, 2003, Case Western Reserve University; MSD, 2005, Case Western Reserve University

Crinzi, Richard Alex 1981, (Affiliate); DDS, 1972, University of Washington; MS, 1977, University of Chicago

Cristea, Diana Simona 2007, (Affiliate); DDS, 2004, University of North Carolina; MSD, 2007, University of Washington

Dbouk, Hasan Moustafa 2013, (Affiliate); MSD, 2010, Loma Linda University

Deckman, James M. 2008, (Affiliate); MBA, 1968, Kent State University; DMD, 1982, Medical College of Georgia

Delecki, Christopher 1999, (Affiliate); DDS, 1977, University of Michigan; MBA, 1984, City University (unspecified); MPH, 1992, University of Michigan

Detwiler, Daryl J. 1990, (Affiliate); DDS, 1981, Loyola University (Chicago); MS, 1982, Loyola University (Chicago)

Deubner, Alan 1989, (Affiliate); DDS, 1978, University of California (San Francisco)

Dogan, Sami 2000; DDS, 1991, Ankara University (Turkey); PhD, 1997, Medical University of Hannover (Germany)

Donley, Kristi R. 1995, (Affiliate); DDS, 2000, University of The Pacific

Doppel, Diane M 1989, (Affiliate); DDS, 1988, University of Maryland; MSD, 1990, University of Washington

Duong, Janice K.T. 2012, (Affiliate); DMD, 2010, University of British Columbia (Canada)

Edmonds, Dennis Alan 1992, (Affiliate); DDS, 1975, Indiana University; MS, 1979, Indiana University

Eggertsson, Hafsteinn 2012, (Affiliate); DDS, 1989, University of Iceland; MSD, 1996, Indiana University; DDS, 2000, Indiana University; PhD, 2003, Indiana University

Eichenberger, Theron 2005, (Affiliate); DDS, 2003, University of Michigan; MSD, 2005, University of Washington

Enrico, Alberto 1998, (Affiliate); DDS, 1995, University of Washington

Etemadi, Shahin 2013, (Affiliate); DDS, 2002, Case Western Reserve University; MSD, 2005, Case Western Reserve University

Faber, Thomas Daniel 2005, (Affiliate); MS, 1986, Purdue University; DDS, 2002, University of California (Los Angeles); MSD, 2005, University of Washington

Fidler, Brett C. 1991, (Affiliate); DDS, 1975, University of Washington; MSD, 1992, University of Washington

- Flake, Natasha Marie 2006; DDS, 2005, University of Maryland; PhD, 2005, University of Maryland; MSD, 2007, University of Washington
- Fox, Julia Richman 2006, (Affiliate); DDS, 2006, University of North Carolina; MPH, 2009, University of Washington; MSD, 2009, University of Washington
- Gauger, Peter David 2008, (Affiliate); DDS, 2009, University of Washington
- Gharai, Saman 2008, (Affiliate); DDS, 1994, University of California (Los Angeles); MS, 2003, George Washington University
- Gill, Jagdeep Singh 2013, (Affiliate); DDS, 2011, Howard University
- Hart, Brian T. 1996, (Affiliate); DDS, 1987, Georgetown University
- Hou, Jack 2012, (Affiliate); DDS, 2003, University of Michigan; MDS, 2006, University of Tennessee
- Hou, Kortne K. F. 2012, (Affiliate); DDS, 2005, University of Michigan; MDS, 2008, University of Tennessee
- Howard, James Arthur 1976, (Affiliate); DDS, 1976, University of Washington
- Huey, Michael 2009, (Affiliate); DMD, 1986, Washington University
- Hull, Troy C. 2003, (Affiliate); DMD, 1998, Medical University of South Carolina; MPH, 2008, University of Washington; MSD, 2008, University of Washington
- Hyde, Gregg Matthew 2009, (Affiliate); DDS, 2000, University of Michigan
- Isdith, Kathleen 1997, (Affiliate); DDS, 1993, New York University
- Ishibe, Motoaki 2010, (Affiliate); DDS, 1997, Nihon University (Japan); MSD, 2010, University of Washington
- Ivans, Brenda Kay 2005, (Affiliate); DMD, 1991, Oregon Health Sciences University
- Janakievski, Jim 2003, (Affiliate); MS, 1991, University of Toronto (Canada); DDS, 1995, University of Toronto (Canada); MSD, 2004, University of Washington
- Johnson, James Eric 2000, (Affiliate); DDS, 1998, University of Washington
- Johnson, Warren K 1973, (Affiliate); DDS, 1965, University of Washington
- Jones, Richard T. 1990, (Affiliate); DDS, 1983, University of Washington
- Kaakko, Tarja Tuula Hannele 1996, (Affiliate); DDS, 1986, University of Kuopio (Finland)
- Kant, Karen S. 1986, (Affiliate); DDS, 1986, University of Washington
- Kanter, Jeffrey P. 1994, (Affiliate); DDS, 1985, Case Western Reserve University
- Kapadia, Hitesh 2010, (Affiliate); DDS, 2000, University of Texas (Houston); PhD, 2006, University of Texas (Houston)
- Kelly, Joseph P. 2003, (Affiliate); MPH, 2006, University of Washington; MSD, 2006, University of Washington
- Kim, Albert Edward 1978, (Affiliate); DDS, 1978, Georgetown University
- Knight, Douglas James 1991, (Affiliate); DDS, 1990, University of Washington
- Kokich, Vincent O. 1996, (Affiliate); DMD, 1996, Tufts University
- Kutcipal, Elizabeth A. 2002, (Affiliate); DDS, 2002, University of Michigan
- Kwan, Steven Chin 2006, (Affiliate); DDS, 2009, University of Washington; MSD, 2011, University of Washington
- Lane, Katherine J. 2012, (Affiliate); DMD, 2006, Oregon Health Sciences University
- Le, Mai T.H. 1991, (Affiliate); DDS, 1997, University of Washington; MSD, 2007, University of Washington
- Lebeda, Richard R. 2002, (Affiliate); MD, 1992, University of Zurich (Switzerland)
- Lee, Michelle M. 2002, (Affiliate); DMD, 2002, McGill University (Canada); MSD, 2007, University of Washington
- Lee, Seungbum 2005, (Affiliate); DDS, 2001, University of Pennsylvania; MSD, 2005, University of Washington
- Leonard, Goarik Galia 1994, (Affiliate); MD, 1984, Yerevan Zoo-Veterinary Inst (Armenia); DDS, 1984, Yerevan Zoo-Veterinary Inst (Armenia); PhD, 1990, Moscow Medical Academy (Russia)
- Likhari, Vikram 2008, (Affiliate); MS, 2007, Tufts University
- Lin, Kristine Judy Yoon 1998, (Affiliate); DDS, 1996, University of North Carolina; MS, 1998, Northwestern University; MS, 2001, University of Washington
- Lovato, Karen Frances 2012, (Affiliate); DDS, 2006, Creighton University
- Madden, Philip Walter 1982, (Affiliate); DDS, 1982, University of Washington; MPH, 1988, University of Washington
- Mandel, Matthew Arthur 2002, (Affiliate); DMD, 1968, University of Pennsylvania
- Mao, Er-Jia 1995, (Affiliate); DDS, 1983, West China University of Medical Science; MS, 1986, West China University of Medical Science; PhD, 1992, University of Sheffield (UK)
- Middaugh, Dan G. 1967, (Emeritus); DDS, 1961, University of Minnesota; MPH, 1972, University of Washington
- Miller, A. Glenn 1998, (Affiliate); DDS, 1957, University of Washington
- Mulligan, Kathleen 1988, (Affiliate); DDS, 1983, University of California (Los Angeles)
- Munson, Boyd Franklin II 1990, (Affiliate); DMD, 1986, Oregon Health Sciences University
- Myers, Garry Lewis 2007, (Affiliate); DDS, 1985, University of Texas (San Antonio)
- Nabaie, Reza 1999, (Affiliate); DDS, 2000, University of Washington
- Newman, James Edwin Jr. 2004, (Affiliate); DDS, 1977, West Virginia University
- Ney, John Peter 2006, (Affiliate); MD, 2000, Tulane University; MPH, 2011, University of Washington
- Nguyen, Dzuy Mahn 1996, (Affiliate); DDS, 1995, University of Washington
- Ormiston, J. Perry 2001, (Affiliate); DDS, 2000, University of Southern California; MSD, 2002, University of Washington
- Oskouian, Rama 1993, (Affiliate); DMD, 2000, University of Pennsylvania
- Otterholt, Dana Eric 2000, (Affiliate); DDS, 1977, University of Washington
- Palacios, Rosario Patricia 2005, (Affiliate); DDS, 1998, Univ.Nacional Mayor De San Marcos (Peru); MSD, 2005, University of Washington
- Paranjpe, Avina 2009; MS, 2004, University of California (Los Angeles); PhD, 2007, University of California (Los Angeles); MSD, 2009, University of Washington
- Patel, Jiten B. 2013, (Affiliate); DDS, 2002, Creighton University; MSD, 2005, Case Western Reserve University
- Patel, Smita 2009, (Affiliate); MS, 1996, University of South Florida; DMD, 2003, Nova Southeastern University; MS, 2006, Marquette University
- Quarnstrom, Fred Carl 1983, (Affiliate); DDS, 1964, University of Washington
- Rabin, Martin Arnold 2007, (Affiliate); DMD, 1971, Tufts University
- Reed, James Ervin 1997, (Affiliate); DDS, 1962, University of Texas (unspecified); MD, 1994, University of Cincinnati
- Reeder, David Carl 1997, (Affiliate); MD, 2003, University of Washington
- Richins, Jansen Harold 2011, (Affiliate); DDS, 2008, University of Maryland; MS, 2011, University of Oklahoma
- Riolo, Christopher S. 2013, (Affiliate); DDS, 1993, University of Michigan; MS, 1995, University of Detroit Mercy; PhD, 2005, University of Michigan
- Roberts, Susan E. 2005, (Affiliate); DDS, 2004, University of Maryland; MSD, 2006, University of Washington
- Rocheftor, Barrett Max 1999, (Affiliate); DDS, 1971, University of Washington
- Roe, Phillip 2011, (Affiliate); DDS, 2003, Loma Linda University; MS, 2009, Loma Linda University
- Samyn, Jeffrey Alan 1995, (Affiliate); DDS, 1992, University of Illinois; MSD, 1994, University of Washington
- Santiago, Jed Val 1995, (Affiliate); DDS, 2002, University of Washington
- Sarram, Shahrzad 1989, (Affiliate); DDS, 1992, University of Washington; MDS, 1995, University of Washington
- Schmidt, Kyle K. 2008, (Affiliate); DDS, 2005, Loma Linda University; MSD, 2008, University of Washington
- Sechena, John Robert 1983, (Affiliate); DDS, 1976, University of Washington
- Seminario, Ana Lucia 2007; DDS, 1997, Peruvian University Cayetano Heredia; PhD, 2006, University of Charles (Prague)
- Shahrasbi, Abdolhossein 2002, (Affiliate); DDS, 1989, Tehran University (Iran); MSD, 2001, University of Florida
- Smith-Macdonald, Erika 2008, (Affiliate); DDS, 1990, Universidad Tecnologica De Mexico; MS, 2000, University of Southern California
- Soper, Barton Leigh 2010, (Affiliate); DDS, 1995, Loma Linda University; MS, 1999, Loma Linda University
- Stieber, Jane C. 2011, (Affiliate); DDS, 2011, University of Michigan; MPH, 2014, University of Washington; MSD, 2014, University of Washington
- Swift, Maureen Louise 1991, (Affiliate); DDS, 1989, University of Iowa; MSD, 1991, University of Washington
- Swoboda, Jessica R. 2001, (Affiliate); DDS, 2004, University of Washington; MSD, 2007, University of Washington
- Tercero, Ashley Stormo 2004, (Affiliate); DDS, 2006, University of Washington
- Tidwell, John Kenneth 1988, (Affiliate); DDS, 1988, University of California (Los Angeles)
- Tollefson, Marc Dennis 2004, (Affiliate); DDS, 1976, Case Western Reserve University
- Tomala, Matthew Perry 2009, (Affiliate); DDS, 2003, University of Michigan; MSD, 2009, University of Washington
- Traficante, Frank Robert 2007, (Affiliate); DDS, 1984, University of Texas (Houston)
- Trippel, Douglas Lynn 1983, (Affiliate); DDS, 1980, University of Washington
- Verardi, Simone 2004, (Affiliate); DDS, 1998, University of Rome (Italy); MSD, 2004, University of Washington
- Vetter, Eric Ashcroft 1994, (Affiliate); DDS, 2000, University of Washington; MS, 2002, University of Washington
- Vetter, Sue Kim 1998, (Affiliate); DDS, 1999, University of Washington
- Vu, Victoria 2003, (Affiliate); DDS, 1999, Baylor College of Dentistry; MSD, 2005, University of Washington
- Wang, Derrick I 2013, (Affiliate); DMD, 1997, University of Pennsylvania
- Wang, I-Wen Emily 2014, (Affiliate); DMD, 2000, University of Pennsylvania; MS, 2003, University of Maryland
- Wang, Ya-Chun 2006, (Affiliate); DDS, 2012, University of Washington; MSD, 2014, University of Washington
- Ward, Robert Philip 1988, (Affiliate); DDS, 1971, University of Washington
- Whelan, Michael Francis 1998, (Affiliate); DDS, 1988, University of California (Los Angeles); MD, 1992, St. Louis University
- Wilson, Joseph R. 2007, (Affiliate); DMD, 2007, Arizona School of Health Sciences
- Winkler, Reid Joseph 1997, (Affiliate); DDS, 1998, University of Washington; MSD, 2006, University of Washington

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Winter, Cheryl Lynn 2007, (Affiliate); DDS, 1979, University of Washington; MSD, 1981, University of Washington
Wong, Keng Mun 2009, (Affiliate); MSD, 2002, University of Washington

Wu, Grace H. 1999, (Affiliate); DMD, 1999, Harvard School of Dental Medicine; MPH, 2005, Harvard School of Dental Medicine

Wynne, Ryan William 2000, (Affiliate); DDS, 2001, University of Washington

Yamamura, Brandon 2006, (Affiliate); DDS, 2009, University of Washington; MSD, 2011, University of Washington

Yea, Yoo-Lee 2003, (Affiliate); DDS, 2003, University of Michigan

Yeh, Yu 1996, (Affiliate); DDS, 1990, National Taiwan University; MSD, 1998, University of Washington

York, Carrie Kathleen 1990, (Affiliate); DDS, 1991, University of Washington

Youn, Helen Shin 2000, (Affiliate); DMD, 2006, Harvard School of Dental Medicine; MMSc, 2009, Harvard School of Dental Medicine

Ziad, Takish 2013, (Affiliate); BDentS, 2001, University of Salahaddin (Iraq)

Senior Lecturers

Anderson, Jens Martin 1966; DDS, 1965, University of Washington

Phillips, Sandra Linsky 1988; MPA, 1985, University of Washington

Rafferty, Katherine Louisa 1997; MA, 1991, New York University; PhD, 1996, Johns Hopkins University

Lecturers

Christensen, Rolf Molloy 1998; DDS, 1980, University of Washington

Grubbs, Robert D. 2005; MS, 1977, University of Kansas; PhD, 1981, University of Kansas

Jeffrey, Susanne Kolare 2005; DDS, 1984, Karolinska Institute (Sweden); PhD, 1990, Karolinska Institute (Sweden)

Marashi, Ahmad A. 2000; DDS, 2001, University of Washington

Pickrell, Jacqueline 1993; MS, 2001, University of Washington; PhD, 2005, University of Washington

Speed-McIntyre, Pollene 2004; MS, 1976, University of Washington; DDS, 1980, University of Washington

Stewart, Dorothy Jean 2007; DDS, 1982, University of Washington

Strand, Harvey Allen 1961, (Emeritus); DDS, 1957, University of Washington

Townsend, John Deaville 1972; DDS, 1967, McGill University (Canada); MSD, 1973, University of Washington

College of Education

Professors

Abbott, Robert Dean 1975; MS, 1968, University of Washington; PhD, 1970, University of Washington

Affleck, James Quinn * 1967, (Emeritus); MA, 1963, San Francisco State; EdD, 1968, Columbia University

Banks, James Albert 1969; MA, 1967, Michigan State University; PhD, 1969, Michigan State University

Beadie, Nancy Elizabeth 1993; MS, 1987, Syracuse University; PhD, 1989, Syracuse University

Bell, Philip Laverne 1998; MA, 1996, University of California (Berkeley); PhD, 1998, University of California (Berkeley)

Berninger, Virginia Wise 1986; MEd, 1970, University of Pittsburgh; PhD, 1981, Johns Hopkins University

Billingsley, Felix Foster 1977, (Emeritus); MA, 1966, Western Washington College; PhD, 1974, University of Washington

Bolton, Dale Leroy * 1962, (Emeritus); MS, 1953, Oklahoma State University; PhD, 1958, University of Wisconsin (Madison)

Brammer, Lawrence Martin * 1963, (Emeritus); MA, 1948, Stanford University; PhD, 1950, Stanford University

Bransford, John D. 2003, (Emeritus); PhD, 1970, University of Minnesota

Burgess, Charles Orville * 1964, (Emeritus); MS, 1958, University of Wisconsin; PhD, 1962, University of Wisconsin (Madison)

Cheney, Douglas Alan 1989; MS, 1975, University of Oregon; PhD, 1992, University of Washington

Doi, James I. * 1979, (Emeritus); MA, 1950, University of Chicago; PhD, 1952, University of Chicago

Driscoll, John Parke * 1967, (Emeritus); MS, 1950, University of California (Los Angeles); PhD, 1957, Pennsylvania State University

Edgar, Eugene Bayard 1972, (Emeritus); MA, 1968, George Peabody College; PhD, 1972, George Peabody College

Evans, Ellis Dale * 1964, (Emeritus); MEd, 1962, Indiana University; EdD, 1964, Indiana University

Forster, Jerald Ray * 1966, (Emeritus); PhD, 1966, University of Minnesota

Frederiksen, John Roland 2001, (Emeritus); MA, 1966, Princeton University; PhD, 1966, Princeton University

Gay, Geneva 1989; MA, 1969, University of Akron; PhD, 1972, University of Texas (Austin)

Gehrke, Nathalie Jean 1979, (Emeritus); MA, 1972, Northwestern University; PhD, 1976, Arizona State University

Glenn, Allen D. 1989, (Emeritus); MS, 1968, Kansas State Teacher's College; MA, 1970, University of Michigan; PhD, 1970, University of Michigan

Goodlad, John I. * 1983, (Emeritus); MA, 1946, University of British Columbia (Canada); PhD, 1949, University of Chicago; EdD, 1982, Eastern Michigan University

Haring, Norris Grover * 1965, (Emeritus); MA, 1950, University of Nebraska, campus unspecified; EdD, 1956, Syracuse University

Herrenkohl, Leslie Rupert 1996; MA, 1991, Clark University; PhD, 1995, Clark University

Hertzog, Nancy 2010; MA, 1981, University of Connecticut; PhD, 1995, University of Illinois (Urbana)

Hune, Shirley 2007; PhD, 1979, George Washington University

Hunkins, Francis Peter * 1966, (Emeritus); MEd, 1963, Boston University; PhD, 1966, Kent State University

Jarolimek, John * 1962, (Emeritus); MA, 1949, University of Minnesota; PhD, 1955, University of Minnesota

Jenkins, Joseph Robert 1978, (Emeritus); PhD, 1967, University of Minnesota

Jones, Diane Carlson 1996, (Emeritus); MA, 1969, University of Texas (unspecified); MA, 1977, Wayne State University; PhD, 1980, Wayne State University

Kaltsounis, Theodore * 1967, (Emeritus); MA, 1959, University of Wichita; PhD, 1961, University of Illinois

Kazemi, Elham 1999; MA, 1997, University of California (Los Angeles); PhD, 1999, University of California (Los Angeles)

Kerr, Donna Hanneman 1973, (Emeritus); PhD, 1973, Columbia University

Kerr, Stephen Thomson 1985, (Emeritus); MA, 1969, Columbia University; PhD, 1975, University of Washington

Knapp, Michael Sturgis 1990; MEd, 1976, Harvard University; MA, 1979, Stanford University; PhD, 1981, Stanford University

Lowenbraun, Sheila * 1968, (Emeritus); MA, 1962, Columbia University; PhD, 1969, Columbia University

Madsen, David Lawrence * 1962, (Emeritus); MA, 1954, University of Chicago; PhD, 1961, University of Chicago

Mazza, James J. 1996; MS, 1990, University of Wisconsin (Madison); PhD, 1993, University of Wisconsin (Madison)

Mc Cartin, Rosemarie Elizabeth * 1965, (Emeritus); MA, 1960, Immaculate Heart College, Ca; PhD, 1964, University of Southern California

McCutchen, Deborah 1986; MA, 1978, University of Pittsburgh; PhD, 1985, University of Pittsburgh

Mizokawa, Donald Tsuneo 1973, (Emeritus); MEd, 1969, University of Hawaii; PhD, 1974, Indiana University

Morishima, James Kenji * 1960, (Emeritus); PhD, 1967, University of Washington

Nerad, Maresi 2001; MA, 1973, Darmstadt University of Tech, Germany; PhD, 1988, University of California (Berkeley)

Nolen, Susan Bobbitt 1990; MEd, 1976, Lewis And Clark College; PhD, 1986, Purdue University

Olswang, Steven Glenn 1975, (Emeritus); JD, 1971, University of Illinois; PhD, 1977, University of Washington

Parker, Walter C. 1985; MA, 1978, University of Colorado (Denver); PhD, 1982, University of Washington

Peck, Charles A. 2003; MA, 1976, Sonoma State University; PhD, 1984, University of California (Santa Barbara)

Peckham, Percy Donald * 1968, (Emeritus); MA, 1955, University of Denver; PhD, 1968, University of Colorado (Denver)

Ryckman, David Bertrand * 1969, (Emeritus); AM, 1961, University of Chicago; EdD, 1966, University of Illinois

Sandall, Susan R. 1996; MS, 1977, University of Oregon; PhD, 1986, University of Washington

Schwartz, Ilene Sharon 1991; MA, 1986, University of Kansas; PhD, 1989, University of Kansas

Sebesta, Sam Leaton * 1963, (Emeritus); MA, 1960, Northwestern University; EdD, 1963, Stanford University

Standal, Timothy Clyde 1976, (Emeritus); MEd, 1974, Western Washington College; PhD, 1976, University of Minnesota

Stowitschek, Joseph James 1986, (Emeritus); MS, 1969, Oregon College of Education (Monmouth); EdD, 1973, Utah State University

Taylor, Catherine Sue 1991, (Emeritus); MSE, 1978, University of Kansas; PhD, 1986, University of Kansas

Taylor, Edward 1990; MA, 1983, Gonzaga University; PhD, 1994, University of Washington

Thompson, Marie Denman 1971, (Emeritus); MA, 1968, University of Washington; PhD, 1970, University of Washington

Tostberg, Robert Eugene * 1962, (Emeritus); MA, 1958, University of Wisconsin; PhD, 1960, University of Wisconsin (Madison)

Valencia, Sheila Denise Weinberg 1987; MEd, 1976, State University of New York (Buffalo); PhD, 1978, University of Colorado (Boulder)

Williams, Donald Thomas Jr. * 1966, (Emeritus); MA, 1957, Stanford University; PhD, 1963, Stanford University

Williams, Richard Charles * 1990, (Emeritus); MA, 1963, University of Minnesota; PhD, 1966, University of Minnesota

Windschittl, Mark Andrew 1996; MS, 1993, Iowa State University; PhD, 1995, Iowa State University

Zeichner, Kenneth M. 2009; MA, 1970, Syracuse University; PhD, 1976, Syracuse University

Associate Professors

Beal, Jack Lee * 1973, (Emeritus); MS, 1962, University of Kansas; PhD, 1972, University of Nebraska

Brown, Robert Lewis * 1964, (Emeritus); MEd, 1956, Trinity University, Texas; EdD, 1961, University of Arkansas

Contreras, Frances E. 2004, (Affiliate); MEd, 1995, Harvard University; PhD, 2003, Stanford University

Cook, Clayton 2010; MA, 2005, University of California (Riverside); PhD, 2008, University of California (Riverside)

Davis, Carol Ann 1998; MEd, 1989, University of Houston; EdD, 1992, University of Houston

Gallucci, Chrysan J. 1997, (Emeritus); MEd, 1988, University of Washington; PhD, 2002, University of Washington

Gray, Carol Ann * 1971, (Emeritus); MEd, 1968, Western Washington State College; PhD, 1971, University of Washington

Hansen-Krening, Nancy Margaret * 1974, (Emeritus); MEd, 1973, University of Oregon; PhD, 1974, University of Oregon

Honig, Meredith Ivy 2006; PhD, 2001, Stanford University

Hudson, Roxanne Frances 2006; MEd, 1994, Western Washington University; PhD, 2002, University of Florida

Jegatheesan, Brinda India 2006; MEd, 2000, University of Hawaii; PhD, 2005, University of Illinois

Jones, Janine 2002; MA, 1994, University of Southern California; PhD, 1999, University of Texas (Austin)

Joseph, Gail E. 2007; MEd, 1995, Western Washington University; PhD, 2001, University of Washington

Kerdeman, Deborah 1990; MEd, 1981, University of Southern California; MA, 1981, Hebrew Union College; MA, 1988, Stanford University; PhD, 1991, Stanford University

Lenges, Anita K. 1994, (Acting); MEd, 1994, University of Washington; PhD, 2004, University of Washington

Li, Min 2001; MA, 1997, Beijing Normal University (China); PhD, 2002, Stanford University

Lott, Joe 2007; MPA, 2000, Louisiana State University; PhD, 2005, Louisiana State University

McDonald, Morva Ann 2006; MA, 1999, Stanford University; PhD, 2003, Stanford University

Minstrell, James Arthur 2002, (Affiliate); MS, 1966, University of Pennsylvania; PhD, 1978, University of Washington

Plecki, Margaret L. 1994; MS, 1976, University of Illinois; PhD, 1991, University of California (Berkeley)

Smith, John Preston * 1969, (Emeritus); MEd, 1963, University of Missouri; EdD, 1969, Stanford University

Thalberg, Stanton Philip * 1965, (Emeritus); MA, 1959, University of Iowa; PhD, 1964, University of Iowa

Varghese, Manka Mary 2000; MS, 1994, University of Pennsylvania; PhD, 2000, University of Pennsylvania

Vasquez, James A. * 1975, (Emeritus); MA, 1971, University of California (Los Angeles); PhD, 1973, University of California (Los Angeles)

West, Elizabeth Anne 1998; MEd, 1994, University of Washington; PhD, 2003, University of Washington

Williamson-Lott, Joy Ann 2007; MA, 1995, University of Illinois (Urbana); PhD, 1998, University of Illinois (Urbana)

Assistant Professors

Bang, Megan 2011; PhD, 2009, Northwestern University

Barajas, Filiberto 2010; MA, 2001, Claremont Graduate School; PhD, 2009, University of California (Los Angeles)

Bashey, Husain Ismail 1964, (Emeritus); MA, 1955, University of Bombay; MA, 1960, Macmurray College; PhD, 1975, University of Oregon

Dabach, Dafney Blanca 2010; MA, 2001, University of California (Berkeley); PhD, 2009, University of California (Berkeley)

Hebard, Heather T. 2010; MA, 1999, Santa Clara University; PhD, 2010, Stanford University

Hoffman, Jennifer L. 1989; MA, 1998, Seattle University; PhD, 2006, University of Washington

Ishimaru, Ann 2012; MA, 1994, Stanford University; EdM, 2008, Harvard University; EdD, 2011, Harvard University

Jackson, Kara 2013; MA, 2005, University of Pennsylvania; PhD, 2010, University of Pennsylvania

Lewis, Jeffrey L. 2003, (Affiliate); MA, 1983, University of Rochester; PhD, 1986, University of Rochester

Lewis, Katherine Elizabeth 2013; MSc, 2003, Trinity College (Ireland); MA, 2007, University of California (Berkeley); PhD, 2011, University of California (Berkeley)

Meeker, Kathleen 2013; MEd, 2003, Ohio State University; PhD, 2010, Vanderbilt University

Rigby, Jessica Goodman 2014; MA, 2006, Stanford University; PhD, 2012, University of California (Berkeley)

Sanders, Elizabeth 2004; MEd, 2004, University of Washington; PhD, 2011, University of Washington

Schindler, Holly S. 2012; PhD, 2007, Boston College

Sun, Min 2014; MA, 2006, Beijing Normal University (China); PhD, 2011, Michigan State University

Thompson, Jessica J. 1992; MEd, 2001, University of Washington; PhD, 2006, University of Washington

Senior Lecturers

Beitlers, Anne 2014; MAT, 1999, University of Washington; PhD, 2014, New York University

Halverson, Thomas Joseph 1992; MEd, 1990, Western Washington University; PhD, 1996, University of Washington

Kimball, Kathleen Louise 1987, (Emeritus); MEd, 1972, University of Utah; EdD, 1993, University of Washington

Lindsay, Jennifer 2002; MAT, 1994, Lewis And Clark College; PhD, 2009, University of Washington

Lopez, Sara L. 2000; MEd, 2003, University of Washington

Massey, Dixie Dick 2004; MA, 2000, University of North Carolina; PhD, 2003, University of North Carolina

O'Doherty, Ann 2012; MEd, 1992, University of Texas (Austin); EdD, 2007, University of Texas (Austin)

Powell, Selma Meral 2014; MA, 1999, University of South Florida; PhD, 2012, University of Central Florida

Lecturers

Macgregor, Robert R. 2006; MEd, 1987, Central Washington University; EdD, 2012, University of Washington

Wardrop, Terri Tisha Million 2011; MEd, 1988, University of Washington

College of Engineering

Aeronautics and Astronautics

Professors

Andrews, Dana Gene 2011, (Affiliate); MS, 1967, California Institute of Technology; PhD, 1973, Stanford University

Bauer, Pascal 2007, (Affiliate); MS, 1973, Université de Poitiers (France); PhD, 1977, Université de Poitiers (France)

Bollard, Richard John Holden * 1961, (Emeritus); ME, 1949, Canterbury College; PhD, 1954, Purdue University

Bragg, Michael 2013; MS, 1977, University of Illinois (Urbana); PhD, 1981, Ohio State University

Breidenthal, Robert Edward * 1980; MS, 1974, California Institute of Technology; PhD, 1978, California Institute of Technology

Bruckner, Adam Peter * 1972; MA, 1968, Princeton University; PhD, 1972, Princeton University

Christiansen, Walter Henry * 1967, (Emeritus); PhD, 1961, California Institute of Technology

Decher, Reiner * 1967, (Emeritus); SM, 1962, Massachusetts Institute of Technology; PhD, 1968, Massachusetts Institute of Technology

Den Hartog, Daniel J. 2005, (Affiliate); MS, 1985, University of Wisconsin; PhD, 1989, University of Wisconsin

Fyfe, Ian Millar * 1959, (Emeritus); ArtC, 1950, Royal College of Science and Technology (Glasgow); MME, 1954, University of Delaware; PhD, 1957, Stanford University

Hermanson, James Carl 1986; MS, 1980, California Institute of Technology; PhD, 1985, California Institute of Technology

Hoffman, Alan Lowell * 1989, (Emeritus); PhD, 1967, California Institute of Technology

Holsapple, Keith A. * 1965; MS, 1964, University of Washington; PhD, 1965, University of Washington

Housen, Kevin R. 2003, (Affiliate); MS, 1979, University of Arizona; PhD, 1981, University of Arizona

Jarboe, Thomas Richard 1989; PhD, 1974, University of California (Berkeley)

Khalil, Gamal 1983, (Affiliate); MS, 1973, University of Washington; PhD, 1978, Florida State University

Kurosaka, Mitsuru * 1987; MS, 1961, University of Tokyo (Japan); PhD, 1968, California Institute of Technology

Lin, Kuen-Yuan * 1984; MSc, 1963, National Taiwan University; MA, 1967, Princeton University; PhD, 1970, Princeton University

Livne, Eliezer * 1990; MSc, 1982, Israel Institute of Technology; PhD, 1990, University of California (Los Angeles)

Mani, Ramani 2011, (Affiliate); MS, 1964, California Institute of Technology; PhD, 1967, California Institute of Technology

Mesbahi, Mehran 2002; MS, 1991, University of Southern California; MS, 1995, University of Southern California; PhD, 1996, University of Southern California

Parmeter, R. Reid * 1963, (Emeritus); MS, 1959, California Institute of Technology; PhD, 1963, California Institute of Technology

Rassaian, Mostafa 2009, (Affiliate); MS, 1974, Illinois Institute of Technology; PhD, 1979, Illinois Institute of Technology

Russell, David Allison * 1967, (Emeritus); MSc, 1957, California Institute of Technology; PhD, 1961, California Institute of Technology

Shumlak, Uri 1994; PhD, 1992, University of California (Berkeley)

Vagners, Juris * 1967, (Emeritus); MS, 1963, Stanford University; PhD, 1967, Stanford University

Varanasi, S. Rao 2014, (Affiliate); MS, 1961, California Institute of Technology; PhD, 1968, University of Washington

Associate Professors

Chappelle, Douglas Eugene 2001, (Affiliate); MS, 1993, University of Washington

Cummings, Mary Louise 2013, (Affiliate); MS, 1994, Naval Postgraduate School; PhD, 2004, University of Virginia

Dabiri, Dana 2002; MS, 1987, University of California (Berkeley); PhD, 1992, University of California (San Diego)

Dougherty, Robert Patrick 2010, (Affiliate); MS, 1982, Iowa State University; PhD, 1986, Iowa State University

Hill, Kristi Ann Morgansen 2002; MS, 1996, Harvard University; PhD, 1999, Harvard University

Ly, Uy-Loi * 1988, (Affiliate); MS, 1976, California Institute of Technology; PhD, 1983, Stanford University

Mattick, Arthur Thomas * 1975, (Emeritus); MS, 1971, Massachusetts Institute of Technology; PhD, 1975, Massachusetts Institute of Technology

McGeer, Brian Theodore 1997, (Affiliate); MS, 1980, Stanford University; PhD, 1984, Stanford University

Mohaghegh, Michael 1989, (Affiliate); MS, 1965, University of California (Berkeley); PhD, 1972, University of Washington

Mor, Marat 2003, (Affiliate); PhD, 2003, Israel Institute of Technology

Murphy, Susan 2008, (Affiliate); MS, 2003, City University (Bellevue)

Nelson, Chester Paul 2006, (Affiliate); BS, 1978, University of Minnesota

Paisley, David John 2006, (Affiliate); PhD, 1985, Cranfield Institute of Technology (UK); MS, 2000, Antioch University, Seattle

Schmidt, Eckart Walter 1997, (Affiliate); MS, 1962, University of Tübingen (Germany); PhD, 1964, University of Tübingen (Germany)

Slough, John Thomas * 1992, (Research); MA, 1976, Columbia University; PhD, 1981, Columbia University

Zube, Dieter M. 2005, (Affiliate); Diploma, 1990, University of Stuttgart (Germany); PhD, 1995, University of Stuttgart (Germany)

Assistant Professors

Afshari, Shahin 1998, (Affiliate); BS, 1999, University of Washington

Ferrante, Antonino 2008; MS, 1997, von Karman Institute for Fluid Dynamics; PhD, 2004, University of California (Irvine)

Lukin, Vyacheslav 2007, (Affiliate); MA, 2003, Princeton University

Narang, Anshu 2013; MS, 2008, Indian Institute of Technology (India); PhD, 2012, Texas A&M University

Stickler, Patrick B. 2004, (Affiliate); MS, 1990, Lehigh University; MS, 1998, University of Washington; PhD, 2001, University of Washington

Yang, Jinkyu 2013; MS, 2001, Stanford University; PhD, 2005, Stanford University

You, Setthivoine 2008; MSc, 1997, Imperial College; PhD, 2002, Imperial College

Lecturers

Folsom, Robert John 2014; MBA, 1991, Pepperdine University

Golingo, Raymond Peter 1989; MS, 1998, University of Washington; PhD, 2003, University of Washington

Knowlen, Carl 1983; MS, 1985, University of Washington; PhD, 1991, University of Washington

Lum, Christopher W.M. 2001; MS, 2005, University of Washington; PhD, 2009, University of Washington

Smith, Roger James 1998; MS, 1980, University of Washington; PhD, 1989, University of Washington

Chemical Engineering

Professors

Babb, Albert Leslie * 1952, (Emeritus); MS, 1949, University of Illinois; PhD, 1951, University of Illinois

Baneyx, Francois * 1992; PhD, 1991, University of Texas (Austin)

Berg, John Calvin * 1964; PhD, 1964, University of California (Berkeley)

Bowen, J. Ray * 1981, (Emeritus); MS, 1957, Massachusetts Institute of Technology; PhD, 1963, University of California (Berkeley)

Castner, David Gordon * 1986; PhD, 1979, University of California (Berkeley)

Heideger, William Joseph * 1957, (Emeritus); MSE, 1955, Princeton University; PhD, 1959, Princeton University

Hillhouse, Hugh 2010; MS, 1996, University of Washington; MS, 1999, University of Massachusetts; PhD, 2000, University of Massachusetts

Homola, Jiri 1997, (Affiliate); MS, 1988, Technical University of Prague (Czech); PhD, 1993, Academy of Science (USSR)

Jenekhe, Samson Ally 2000; MS, 1980, University of Minnesota; MA, 1981, University of Minnesota; PhD, 1985, University of Minnesota

Jiang, Shaoyi 1999; MS, 1988, Nanjing University of Technology (China); PhD, 1993, Cornell University

Lidstrom, Mary Elizabeth 1977; MS, 1975, University of Wisconsin (Madison); PhD, 1977, University of Wisconsin (Madison)

Overney, Rene Marcel * 1996; MS, 1989, University of Basel (Switzerland); PhD, 1992, University of Basel (Switzerland)

Ribe, Fred Linden * 1977, (Emeritus); PhD, 1951, University of Chicago

Schwartz, Daniel Todd 1991; MS, 1985, University of California (Davis); PhD, 1989, University of California (Davis)

Seebergh, Jill Elisabeth 1989, (Affiliate); MS, 1991, University of Washington; PhD, 1995, University of Washington

Sleicher, Charles Albert * 1960, (Emeritus); MS, 1949, Massachusetts Institute of Technology; PhD, 1955, University of Michigan

Stuve, Eric Michael * 1985; MS, 1979, Stanford University; PhD, 1983, Stanford University

Van Schalkwijk, Walter Arthur 2001, (Affiliate); MSc, 1977, Carleton University (Canada); PhD, 1983, University of Ottawa (Canada)

Woodruff, Gene Lowry * 1965, (Emeritus); MS, 1963, Massachusetts Institute of Technology; PhD, 1966, Massachusetts Institute of Technology

Associate Professors

Adler, Stuart Blake 2001; MS, 1989, University of California (Berkeley); PhD, 1993, University of California (Berkeley)

Dudgeon, Douglas 1990, (Affiliate); PhD, 1995, University of Washington

Holt, Bradley Raymond * 1984; PhD, 1984, University of Wisconsin

Krieger-Brockett, Barbara * 1975, (Emeritus); MS, 1972, Wayne State University; PhD, 1975, Wayne State University

Pozzo, Lilo D. 2007; MS, 2006, Carnegie Mellon University; PhD, 2006, Carnegie Mellon University

Subramanian, Venkat R. 2014; PhD, 2001, University of South Carolina

Tyler, Bonnie June 1986, (Affiliate); PhD, 1992, University of Washington

Assistant Professors

Carothers, James Matthew 2012; PhD, 2005, Harvard University

DeForest, Cole 2013; PhD, 2011, University of Colorado (Boulder)

Hayes, Brian Steven * 1992, (Affiliate); PhD, 1997, University of Washington

Nguyen, Felix Nhanchau 2002, (Affiliate); PhD, 2007, University of Washington

Pfaendtner, Walter James 2009; PhD, 2007, Northwestern University

Sunkel, Jorge 1992, (Affiliate); MS, 1992, University of California (Berkeley); PhD, 1998, University of Washington

Whitaker, John D. 1998, (Affiliate); PhD, 2003, University of Washington

Lecturers

Kim, Anthony Young 2014; MS, 1993, University of California (Davis); PhD, 2002, University of Washington

Newbloom, Gregory Matthew 2009; MS, 2011, University of Washington; PhD, 2014, University of Washington

Civil and Environmental Engineering

Professors

Arduino, Pedro 1997; MSCE, 1992, University of Puerto Rico; MSCE, 1996, Georgia Institute of Technology; PhD, 1996, Georgia Institute of Technology

Benjamin, Mark Millard * 1977; MS, 1973, Stanford University; PhD, 1979, Stanford University

Bogan, Richard Herbert * 1954, (Emeritus); MS, 1952, Massachusetts Institute of Technology; DSc, 1954, Massachusetts Institute of Technology

Brett, Michael T. * 1997; MSc, 1985, University of Maine; PhD, 1990, University of Uppsala (Sweden)

Brown, Colin B. * 1969, (Emeritus); PhD, 1962, University of Minnesota

Burges, Stephen J. * 1970, (Emeritus); MS, 1968, Stanford University; PhD, 1970, Stanford University

Carlson, Dale Arvid * 1955, (Emeritus); MSCE, 1951, University of Washington; PhD, 1960, University of Wisconsin (Madison)

Chang, Yu-Jung 1989, (Affiliate); MSCE, 1992, University of Washington; PhD, 1996, University of Washington

Eberhard, Marc Olivier * 1989; MS, 1986, University of Illinois; PhD, 1989, University of Illinois

Eikum, Arild Schanke 1974, (Affiliate); MSCE, 1967, University of Washington; PhD, 1973, University of Washington

Elias, Ziad Malek * 1969, (Emeritus); DSc, 1963, Massachusetts Institute of Technology

Evans, Roger James * 1966, (Emeritus); MSc, 1959, Brown University; PhD, 1965, University of California (Berkeley)

Hawkins, Neil Middleton 1968, (Affiliate); MS, 1959, University of Illinois; PhD, 1961, University of Illinois

Holtz, Robert Dean II * 1988, (Emeritus); MSCE, 1962, University of Minnesota; PhD, 1970, Northwestern University

Jacoby, Jean Marie * 1986, (Affiliate); MS, 1981, University of Washington; PhD, 1986, University of Washington

Korshin, Gregory * 1991; PhD, 1983, Chemical Engineering Institute (Russia)

Kramer, Steven Lawrence * 1984; MEng, 1979, University of California (Berkeley); PhD, 1984, University of California (Berkeley)

Larson, Timothy * 1970; MS, 1972, University of Washington; PhD, 1976, University of Washington

Lehman, Dawn Ellen 1998; MEng, 1992, University of California (Berkeley); PhD, 1998, University of California (Berkeley)

Lettenmaier, Dennis Patrick * 1973; MS, 1973, George Washington University; PhD, 1975, University of Washington

Mahoney, Joe Paul * 1978; MSCE, 1970, Texas A&M University; PhD, 1979, Texas A&M University

Malcolm, David J 2013, (Affiliate); MSc, 1969, McGill University (Canada); PhD, 1973, University of Calgary (Canada)

Mattock, Alan Hanson * 1964, (Emeritus); MSc, 1949, University of London, UK; PhD, 1955, University of London, UK

Miller, Gregory R. * 1983; MSCE, 1981, Northwestern University; PhD, 1984, Northwestern University

Nece, Ronald Elliott * 1959, (Emeritus); MS, 1951, Lehigh University; DSc, 1958, Massachusetts Institute of Technology

Niemeier, Debra 1991, (Affiliate); MSCE, 1991, University of Maine; PhD, 1994, University of Washington

Nihan, Nancy Lucille * 1973, (Emeritus); MSCE, 1967, Northwestern University; PhD, 1970, Northwestern University

Palmer, Richard Neal * 1979, (Affiliate); MS, 1973, Stanford University; PhD, 1979, Johns Hopkins University

Pavlovec, Brian 2012, (Affiliate); BS, 1982, Iowa State University

Pilat, Michael Joseph * 1967, (Emeritus); MS, 1963, University of Washington; PhD, 1967, University of Washington

Reed, Dorothy Aubrey * 1983; MSE, 1977, Princeton University; PhD, 1980, Princeton University

Reiber, Steve Harold 1983, (Affiliate); MHS, 1975, Johns Hopkins University; ME, 1977, University of Michigan; PhD, 1983, University of Utah

Roeder, Charles William * 1977; MS, 1971, University of Illinois; PhD, 1977, University of California (Berkeley)

Rutherford, George Scott 1980; MSCE, 1968, Washington State University; PhD, 1974, Northwestern University

Schneider, Jerry Bruce * 1967, (Emeritus); MCP, 1961, University of California (campus unspecified); PhD, 1966, University of Pennsylvania

Stahl, David Allan 2000; MS, 1975, University of Illinois (Urbana); PhD, 1978, University of Illinois (Urbana)

Stanton, John Francis 1978; MSCE, 1975, Cornell University; PhD, 1978, University of California (Berkeley)

Stensel, H. David * 1983; ME, 1968, Cornell University; PhD, 1971, Cornell University

Tawresey, John Godwin 1985, (Affiliate); MS, 1968, Cornell University; MBA, 1975, University of Washington

Taylor, Andrew Warren 2005, (Affiliate); MSCE, 1985, University of Washington; PhD, 1990, University of Texas (Austin)

Wang, Yinhai 1998; MSCE, 1991, Tsinghua University (China); PhD, 1998, University of Tokyo (Japan)

Welch, Eugene B. * 1962, (Emeritus); MS, 1959, Michigan State University; PhD, 1967, University of Washington

Wood, Eric Franklin 1993, (Affiliate); MS, 1972, Massachusetts Institute of Technology; ScD, 1974, Massachusetts Institute of Technology

Yearsley, John Ross 1976, (Affiliate); MSME, 1966, University of Washington; MS, 1968, Massachusetts Institute of Technology; PhD, 1989, University of Washington

Yeh, Harry Hsiu-Jen * 1983, (Affiliate); MS, 1977, Washington State University; PhD, 1983, University of California (Berkeley)

Associate Professors

Berman, Jeffrey William 2006; MS, 2003, State University of New York (Buffalo); PhD, 2006, State University of New York (Buffalo)

Chen, Qiuzi 2009; MS, 1995, New Jersey Institute of Technology; PhD, 2001, University of California (Davis)

Goodchild, Anne V. 2005; MS, 2002, University of California (Berkeley); PhD, 2005, University of California (Berkeley)

Horner-Devine, Alexander R. 2004; MEng, 1998, Stanford University; DPhil, 2003, Stanford University

Hossain, Faisal 2014; MEng, 1999, National University of Singapore; PhD, 2004, University of Connecticut

Istanbulluoglu, Erkan 2009; MS, 1998, University of Uludag (Turkey); PhD, 2003, Utah State University

Kent, Joseph Chan * 1952, (Emeritus); MS, 1948, Stanford University; PhD, 1952, University of California (Berkeley)

Keough, William M. 2011, (Affiliate); MFA, 1994, University of Houston

Lowes, Laura Nicole 2000; MS, 1999, University of California (Berkeley); PhD, 1999, University of California (Berkeley)

Lundquist, Jessica D. 2006; MS, 2000, University of California (San Diego); PhD, 2004, University of California (San Diego)

Muench, Stephen T. 1990; MSCE, 1998, University of Washington; PhD, 2004, University of Washington

Spyridakis, Dimitris Emmanuel * 1970, (Emeritus); MS, 1959, University of Wisconsin; PhD, 1965, University of Wisconsin (Madison)

Swanson, David Bryan 1989, (Affiliate); MSCE, 1991, University of Washington

Wartman, Joseph 2010; MSCE, 1996, University of California (Berkeley); MEng, 1996, University of California (Berkeley); PhD, 1999, University of California (Berkeley)

Assistant Professors

Ahmed, Kamal Mostafa 1993, (Affiliate); MSc, 1988, Cairo University (Egypt); PhD, 1999, University of Washington

Avery, Ryan P. 2002, (Affiliate); MSCE, 2005, University of Washington; PhD, 2008, University of Washington

Bassok, Alon 2003, (Affiliate); MUP, 2004, University of Washington; PhD, 2009, University of Washington

Cai, Zhenxiao 2006, (Affiliate); MS, 2006, Tsinghua University (China); MS, 2008, University of Washington; PhD, 2011, University of Washington

Chang, Kevin N. 1998, (Affiliate); MSCE, 1997, University of Washington; PhD, 2005, University of Washington

Chickadel, C. Christopher 2006, (Affiliate); MS, 2003, Oregon State University; PhD, 2007, Oregon State University

Creswell, Joel 2012, (Affiliate); MS, 2006, Yale University; PhD, 2011, University of Wisconsin (Madison)

Devries, Paul Edward 1996, (Affiliate); MSE, 1994, University of Washington; PhD, 2000, University of Washington

Dodd, Michael 2009; MSEE, 2003, Georgia Institute of Technology; PhD, 2008, Swiss Federal Institute of Technology

Kainz, Martin 2008, (Affiliate); MSc, 1995, University of Vienna, Austria; PhD, 2001, Universite du Quebec

Kaminsky, Jessica Ann 2014; PhD, 2013, University of Colorado (Boulder)

Kim, Amy Ahim 2014; MS, 2008, Illinois Institute of Technology; PhD, 2014, Texas A&M University

Kuder, Katherine G. 2006, (Affiliate); MS, 2002, Northwestern University; PhD, 2005, Northwestern University

Latch, Douglas 2012, (Affiliate); MS, 2002, University of Minnesota; PhD, 2005, University of Minnesota

Mackenzie, Donald 2013; SM, 2009, Massachusetts Institute of Technology; PhD, 2013, Massachusetts Institute of Technology

Motley, Michael R 2012; MS, 2004, Virginia Polytechnic Institute and State University; MA, 2010, Princeton University; PhD, 2011, Princeton University

Neumann, Rebecca 2010; PhD, 2009, Massachusetts Institute of Technology

Parsons, Jeffrey David * 2000, (Affiliate); MSCE, 1995, University of Illinois (Urbana); PhD, 1998, University of Illinois (Urbana)

Petroff, Catherine M. * 1993, (Affiliate); MS, 1983, Stanford University; PhD, 1993, California Institute of Technology

Rowangould, Dana 2013, (Affiliate); MS, 2009, University of California (Davis)

Shogren, Robert G 2009, (Affiliate); MBA, 2000, Gonzaga University; PhD, 2009, University of Washington

Vandenbossche, Julie M. 2008, (Affiliate); MSCE, 1995, Michigan State University; PhD, 2002, University of Minnesota

Wiebe, Richard 2014; MAS, 2009, University of Waterloo (Canada); PhD, 2012, Duke University

Lecturer

Le, Tom Ngoc 2009; MS, 2013, University of Washington

Computer Science and Engineering

Professors

Abel, Mark J 2012, (Affiliate); MS, 1980, Stanford University

Alverson, Gail Abdelnour 1986, (Affiliate); MS, 1988, University of Washington; PhD, 1990, University of Washington

Anderson, Richard John * 1986; PhD, 1985, Stanford University

Anderson, Thomas Edward * 1987; MS, 1990, University of Washington; PhD, 1991, University of Washington

Baer, Jean-Loup Edgar * 1969, (Emeritus); MS, 1963, Grenoble (France); PhD, 1968, University of California (Los Angeles)

Beame, Paul William 1987; MS, 1982, University of Toronto (Canada); PhD, 1987, University of Toronto (Canada)

Bernstein, Philip Alan 1996, (Affiliate); MSc, 1972, University of Toronto (Canada); PhD, 1975, University of Toronto (Canada)

Bershad, Brian * 1986, (Affiliate); MS, 1990, University of Washington; PhD, 1990, University of Washington

Borning, Alan H. * 1980; MS, 1974, Stanford University; PhD, 1979, Stanford University

Borriello, Gaetano 1987; MS, 1980, Stanford University; PhD, 1988, Stanford University

Briggs, Preston Pengra 1998, (Affiliate); MS, 1992, Rice University; PhD, 1992, Rice University

Burger, Douglas Christopher 2008, (Affiliate); MS, 1993, University of Wisconsin (Madison); PhD, 1998, University of Wisconsin (Madison)

Callahan, Charles David 1990, (Affiliate); MS, 1986, Rice University; PhD, 1987, Rice University

Chambers, Craig David * 1991, (Affiliate); PhD, 1992, Stanford University

Cohen, Michael F. 1998, (Affiliate); MS, 1985, Cornell University; PhD, 1992, University of Utah

Curless, Brian Lee 1998; MSEE, 1991, Stanford University; PhD, 1997, Stanford University

Cutler, David N. 1985, (Affiliate); BA, 1965, Olivet College
De Rose, Anthony David * 1985, (Affiliate); PhD, 1985, University of California (Berkeley)

Deline, Robert 2004, (Affiliate); MS, 1993, University of Virginia; PhD, 1999, Carnegie Mellon University

Domingos, Pedro Morais Delgado 1999; MS, 1992, Technical University of Lisbon (Portugal); MS, 1994, University of California (Irvine); PhD, 1997, University of California (Irvine)

Drucker, Steven Mark 2007, (Affiliate); MS, 1988, Massachusetts Institute of Technology; PhD, 1994, Massachusetts Institute of Technology

Ebeling, William Henry Carl * 1986, (Emeritus); MS, 1976, Southern Illinois University; PhD, 1986, Carnegie Mellon University

Eggers, Susan Jane * 1989, (Emeritus); PhD, 1989, University of California (Berkeley)

Ernst, Michael D. 2009; MS, 1992, Massachusetts Institute of Technology; MS, 1997, University of Washington; PhD, 2000, University of Washington

Etzioni, Oren Willi 1991; MS, 1988, Carnegie Mellon University; PhD, 1991, Carnegie Mellon University

Fishkin, Kenneth Paul 2003, (Affiliate); MS, 1983, University of California (Berkeley)

Fox, Dieter 2000; MSc, 1993, University of Bonn (Germany); PhD, 1998, University of Bonn (Germany)

Golde, Hellmut * 1959, (Emeritus); MS, 1955, Stanford University; PhD, 1959, Stanford University

Gray, Terence Eugene 1988, (Affiliate); PhD, 1978, University of California (Los Angeles)

Gribble, Steven David 2000; MS, 1997, University of California (Berkeley); PhD, 2000, University of California (Berkeley)

Halevy, Alon Yitzchak * 1998, (Affiliate); PhD, 1993, Stanford University

Illes, Judy 2008, (Affiliate); MA, 1983, McGill University (Canada); PhD, 1987, Stanford University

Jain, Kamal 2012, (Affiliate); PhD, 2000, Georgia Institute of Technology

Kahan, Simon Hersh 1986, (Affiliate); MSEE, 1985, University of California (Berkeley); PhD, 1991, University of Washington

Karlin, Anna Rochelle * 1994; PhD, 1987, Stanford University

Kautz, Henry Alexander 2000, (Affiliate); MA, 1980, Johns Hopkins University; MS, 1982, University of Toronto (Canada); PhD, 1987, University of Rochester

Kehl, Theodore Herbert * 1963, (Emeritus); MS, 1958, University of Wisconsin; PhD, 1961, University of Wisconsin (Madison)

Khuller, Samir 2011, (Affiliate); MS, 1989, Cornell University; PhD, 1990, Cornell University

Ladner, Richard Emil 1971; PhD, 1971, University of California (Berkeley)

Lazowska, Edward Delano * 1977; MSc, 1974, University of Toronto (Canada); PhD, 1977, University of Toronto (Canada)

Levy, Henry Marc * 1983; MS, 1981, University of Washington

Lewis, John Gregg 1984, (Affiliate); MA, 1968, University of California (Berkeley); PhD, 1977, Stanford University

Manber, Udi 2003, (Affiliate); MSc, 1978, Technion Israel Institute of Technology; MS, 1981, University of Washington; PhD, 1982, University of Washington

Manferdelli, John L. 2007, (Affiliate); MA, 1975, University of California (Berkeley); PhD, 1979, University of California (Berkeley)

Mead, Carver A. 2008, (Affiliate); MS, 1957, California Institute of Technology; PhD, 1960, California Institute of Technology

Perlman, Radia 2004, (Affiliate); MS, 1976, Massachusetts Institute of Technology; PhD, 1988, Massachusetts Institute of Technology

Popovic, Zoran 1999; MS, 1993, Carnegie Mellon University; PhD, 1999, Carnegie Mellon University

Rao, Rajesh Perampalli Nekkar 2000; MS, 1994, University of Rochester; PhD, 1998, University of Rochester

Reed, Daniel A. 2008, (Affiliate); MS, 1980, Purdue University; PhD, 1983, Purdue University

Ruzzo, Walter Lawrence * 1977; PhD, 1978, University of California (Berkeley)

Salesin, David Henry * 1992, (Affiliate); PhD, 1991, Stanford University

Schulte, Wolfram 2009, (Affiliate); MS, 1987, Technical University of Berlin (Germany); PhD, 1992, Technical University of Berlin (Germany); PhD, 2000, University of Ulm (Germany)

Scott, Steven Lee 2006, (Affiliate); MS, 1988, University of Wisconsin (Madison); PhD, 1992, University of Wisconsin (Madison)

Seitz, Steven Maxwell 2000; PhD, 1997, University of Wisconsin (Madison)

Shapiro, Linda Gail 1986; MS, 1972, University of Iowa; PhD, 1974, University of Iowa

Shaw, Alan Cary * 1971, (Emeritus); MS, 1962, Stanford University; PhD, 1968, Stanford University

Smith, Burton Jordan 1989, (Affiliate); MS, 1968, Massachusetts Institute of Technology; EE, 1969, Massachusetts Institute of Technology; DSc, 1972, Massachusetts Institute of Technology

Snyder, Lawrence * 1983, (Emeritus); PhD, 1973, Carnegie Mellon University

Suciu, Dan 2000; MS, 1982, Polytechnic University of Bucharest, Romania; MS, 1991, University of Bucharest (Romania); PhD, 1995, University of Pennsylvania

Szeliski, Richard Stephen 1998, (Affiliate); MAS, 1981, University of British Columbia (Canada); PhD, 1988, Carnegie Mellon University

Tanimoto, Steven L. * 1977; MSE, 1973, Princeton University; MA, 1974, Princeton University; PhD, 1975, Princeton University

Tomba, Martin Paul * 1978; MS, 1975, University of Toronto (Canada); PhD, 1978, University of Toronto (Canada)

Weld, Daniel Sabey * 1988; MS, 1984, Massachusetts Institute of Technology; PhD, 1988, Massachusetts Institute of Technology

Wetherall, David James 1999; MS, 1994, Massachusetts Institute of Technology; PhD, 1998, Massachusetts Institute of Technology

Wing, Jeannette 2013, (Affiliate); SM, 1979, Massachusetts Institute of Technology; PhD, 1983, Massachusetts Institute of Technology

Young, Paul Ruel 1983, (Emeritus); PhD, 1963, Massachusetts Institute of Technology

Zahorjan, John * 1980; MS, 1976, University of Toronto (Canada); PhD, 1980, University of Toronto (Canada)

Zhao, Feng 2006, (Affiliate); MS, 1988, Massachusetts Institute of Technology; PhD, 1992, Massachusetts Institute of Technology

Associate Professors

Balazinska, Magdalena 2006; MS, 1999, Ecole Polytechnique De Montreal (Canada); PhD, 2005, Massachusetts Institute of Technology

Benaloh, Josh 1999, (Affiliate); MPhil, 1985, University of Chicago; MS, 1985, University of Chicago; PhD, 1987, Yale University

Ceze, Luis 2007; MEng, 2002, University of San Paulo (Brazil); PhD, 2007, University of Illinois

Diorio, Christopher Joseph * 1997; MSEE, 1984, California Institute of Technology; PhD, 1997, California Institute of Technology

Fogarty, James A. 2006; MS, 2005, Carnegie Mellon University; PhD, 2006, Carnegie Mellon University

Goldman, Daniel 2001, (Affiliate); MSc, 1995, Stanford University; PhD, 2007, University of Washington

Grossman, Daniel Joseph 2003; MS, 2001, Cornell University; PhD, 2003, Cornell University

Guestrin, Carlos Ernesto 2012; EngDeg, 1998, University of Sao Paulo; MSc, 2000, Stanford University; PhD, 2003, Stanford University

Gulwani, Sumit 2012, (Affiliate); PhD, 2005, University of California (Berkeley)

Heer, Jeffrey 2013; MS, 2004, University of California (Berkeley); PhD, 2008, University of California (Berkeley)

Jones, Michael Blair 2002, (Affiliate); MS, 1988, Carnegie Mellon University; PhD, 1992, Carnegie Mellon University

Kimura, Gary Dean 1999, (Affiliate); MS, 1981, University of Washington; PhD, 1984, University of Washington

Kohn, Tadayoshi 2006; MS, 2004, University of California (San Diego); PhD, 2006, University of California (San Diego)

Krishnamurthy, Arvind 2005; MS, 1994, University of California (Berkeley); PhD, 1999, University of California (Berkeley)

Lamacchia, Brian A. 2001, (Affiliate); MS, 1991, Massachusetts Institute of Technology; PhD, 1996, Massachusetts Institute of Technology

Lamarca, Anthony George 1990, (Affiliate); MS, 1992, University of Washington; PhD, 1996, University of Washington

Larus, James Richard 1999, (Affiliate); MS, 1982, University of California (Berkeley); PhD, 1989, University of California (Berkeley)

Lee, James Russell 2006; PhD, 2005, University of California (Berkeley)

Li, Yang 2004, (Affiliate); MA, 1999, Northwest University (China); PhD, 2002, Chinese Academy of Sciences (China)

Morris, Meredith June 2008, (Affiliate); MS, 2003, Stanford University; PhD, 2006, Stanford University

Oskin, Mark Henry 2001; MS, 2000, University of California (Davis); PhD, 2001, University of California (Davis)

Patel, Shwetak Naran 2008; PhD, 2008, Georgia Institute of Technology

Popovic, Jovan 1995, (Affiliate); MS, 1999, Carnegie Mellon University; PhD, 2001, Carnegie Mellon University

Qadeer, Shaz 2005, (Affiliate); MS, 1997, University of California (Berkeley); PhD, 1999, University of California (Berkeley)

Smith, Joshua 2005; MS, 1995, Massachusetts Institute of Technology; MA, 1997, University of Cambridge (UK); PhD, 1999, Massachusetts Institute of Technology

Strauss, Karin 2007, (Affiliate); MEng, 2002, University of Sao Paulo; PhD, 2007, University of Illinois (Urbana)

Assistant Professors

Agarwal, Sameer 2006, (Affiliate); MS, 2000, Indian Institute of Technology (India); PhD, 2006, University of California (San Diego)

Agarwala, Aseem 2001, (Affiliate); MEng, 1999, Massachusetts Institute of Technology; MS, 2002, University of Washington; PhD, 2006, University of Washington

Agrawala, Maneesh 2002, (Affiliate); PhD, 2002, Stanford University

Bacon, Dave M. 2005, (Affiliate); PhD, 2001, University of California (Berkeley)

Bird, Christian Alma 2011, (Affiliate); MS, 2008, University of California (Davis); PhD, 2010, University of California (Davis)

Bo, Lie Feng 2010, (Affiliate); PhD, 2007, Xidian University (China)

Brunskill, Emma 1996, (Affiliate); MSc, 2002, Oxford University (UK); PhD, 2009, Massachusetts Institute of Technology

Cakmak, Maya 2013; MSc, 2007, Middle East Technical University (Turkey); PhD, 2012, Georgia Institute of Technology

Chamberlain, Bradford Lee 1992, (Affiliate); MS, 1995, University of Washington; PhD, 2001, University of Washington

Choi, Yejin 2014; MS, 2009, Cornell University; PhD, 2010, Cornell University

Dekel, Ofer 2011, (Affiliate); MSc, 2003, Hebrew University (Israel); PhD, 2007, Hebrew University (Israel)

Farhadi, Ali 2012; PhD, 2011, University of Illinois (Urbana)

Gollakota, Shyamnath Venkata Satyasrisai 2012; SM, 2008, Massachusetts Institute of Technology; PhD, 2013, Massachusetts Institute of Technology

Greenstein, Benjamin M. 2008, (Affiliate); MS, 1999, Temple University; PhD, 2006, University of California (Los Angeles)

Harrow, Aram Wettroth 2010, (Affiliate); PhD, 2005, Massachusetts Institute of Technology

Howe, William Gregory 2009, (Affiliate); PhD, 2006, Portland State University

Jung, Jaeyeon 2007, (Affiliate); MS, 1998, Korea Advanced Inst of Science And Tech; PhD, 2006, Korea Advanced Inst of Science And Tech

Kemelmaher, Irena 2009; MSc, 2004, Weizmann Institute For Science (Israel); PhD, 2009, Weizmann Institute For Science (Israel)

Lee, Su-In 2010; PhD, 2010, Stanford University

Livshits, Benjamin 2009, (Affiliate); MS, 2001, Stanford University; PhD, 2006, Stanford University

Mahajan, Ratul 1999, (Affiliate); MS, 2001, University of Washington; PhD, 2005, University of Washington

Mausam 2001, (Affiliate); MS, 2004, University of Washington; PhD, 2007, University of Washington

Parikh, Tapan Suryakant 1997, (Affiliate); MSc, 1999, University of Washington; PhD, 2007, University of Washington

Philippose, Matthai 1994, (Affiliate); MS, 1995, University of Washington; PhD, 2005, University of Washington

Rao, Anup 2010; PhD, 2007, University of Texas (Austin)

Ren, Xiaofeng 2010, (Affiliate); MS, 2000, Stanford University; PhD, 2006, University of California (Berkeley)

Roesner, Franziska 2009; MS, 2011, University of Washington; PhD, 2014, University of Washington

Russell, Bryan C 2011, (Affiliate); PhD, 2008, Massachusetts Institute of Technology

Singh, Mohit 2014, (Affiliate); MS, 2005, Carnegie Mellon University; PhD, 2008, Carnegie Mellon University

Smith, Noah Ashton 2014, (Affiliate); MS, 2004, Johns Hopkins University; PhD, 2006, Johns Hopkins University

Tan, Desney Swee-Leong 2007, (Affiliate); PhD, 2004, Carnegie Mellon University

Tatlock, Zachary 2013, (Acting); BS, 2007, Purdue University

Torlak, Emina 2014; MEng, 2004, Massachusetts Institute of Technology; PhD, 2009, Massachusetts Institute of Technology

Wang, Xi 2014; ME, 2008, Tsinghua University (China); PhD, 2014, Massachusetts Institute of Technology

Zettlemoyer, Luke S. 2010; PhD, 2009, Massachusetts Institute of Technology

Zimmermann, Thomas M.J. 2011, (Affiliate); MS, 2004, University of Passau (Germany); PhD, 2008, University of Saarlandes (Germany)

Senior Lecturers

Mones, Barbara 1999; MFA, 1979, Rhode Island School of Design

Perkins, John Harold Jr. 1998; MS, 1982, Cornell University

Lecturers

Anderson, Ruth Elizabeth 1991; MS, 1994, University of Washington; PhD, 2006, University of Washington

Blank, Adam David 2014; MS, 2014, Carnegie Mellon University

Hunt, David G. 2000; BA, 2000, University of Washington

McMaster, Scott David 2014; MS, 2001, Seattle University; MS, 2005, University of Maryland; PhD, 2008, University of Maryland

Obourn, Allison E. 2008; MS, 2013, University of Washington

Reges, Stuart Thomas 2004; MS, 1982, Stanford University

Electrical Engineering

Professors

Acero, Alejandro 2000, (Affiliate); ME, 1987, Rice University; PhD, 1990, Carnegie Mellon University

Afromowitz, Martin Alan * 1974; MS, 1966, School of Engr And Applied Science (Ny); PhD, 1969, Columbia University

Albrecht, Robert William * 1961, (Emeritus); MS, 1958, University of Michigan; PhD, 1961, University of Michigan

Alexandro, Frank J. * 1964, (Emeritus); MSEE, 1959, New York University; DSc, 1964, New York University

Allstot, David James 1999, (Affiliate); MSEE, 1974, Oregon State University; PhD, 1979, University of California (Berkeley)

AmirParviz, Babak 2003, (Affiliate); MSEE, 1997, University of Michigan; MS, 2001, University of Michigan; PhD, 2001, University of Michigan

Anantram, Manjeri 2008; MSc, 1989, University of Poona, India; PhD, 1995, Purdue University

Atal, Bishnu S. 2002, (Affiliate); PhD, 1968, Polytechnic Institute of Brooklyn

Atlas, Les Eugene 1983; MS, 1978, Stanford University; PhD, 1984, Stanford University

Bernard, Gary Dale * 1960, (Affiliate); MSEE, 1960, University of Washington; PhD, 1965, University of Washington

Bilmes, Jeffrey Adam * 1999; MS, 1993, Massachusetts Institute of Technology; PhD, 1999, University of California (Berkeley)

Bjorkstam, John Ludwig * 1950, (Emeritus); MS, 1952, University of Washington; PhD, 1958, University of Washington

Bohringer, Karl Friedrich 1998; MS, 1992, Cornell University; PhD, 1997, Cornell University

Camposano, Raul 2012, (Affiliate); MSEE, 1978, Universidad de Chile; PhD, 1981, Technische Universität (Germany)

Chizeck, Howard Jay * 1998; MS, 1976, Case Western Reserve University; ScD, 1982, Massachusetts Institute of Technology

Crum, Lawrence A. * 1992, (Research); MS, 1965, Ohio University; PhD, 1967, Ohio University

Cwik, Thomas A. 1997, (Affiliate); MSEE, 1981, University of Illinois; PhD, 1986, University of Illinois

Dailey, Daniel James * 1982, (Research); MS, 1982, University of Washington; PhD, 1988, University of Washington

Damborg, Mark Johannes * 1969, (Emeritus); MSEE, 1963, University of Michigan; PhD, 1969, University of Michigan

Daniels, Patricia Delvac 1973, (Affiliate); PhD, 1973, University of California (Berkeley)

Darling, Robert Bruce * 1985; MS, 1982, Georgia Institute of Technology; PhD, 1985, Georgia Institute of Technology

Deng, Li 2000, (Affiliate); MSc, 1984, University of Wisconsin; PhD, 1986, University of Wisconsin

Ding, Kung-Hau 1981, (Affiliate); MS, 1983, University of Washington; MS, 1985, University of Washington; PhD, 1989, University of Washington

Dow, Daniel G. * 1968, (Emeritus); MS, 1953, University of Michigan; PhD, 1958, Stanford University

Dunham, Scott Thayer * 1999; MSEE, 1980, Stanford University; PhD, 1985, Stanford University

Ehrenberg, John Edward * 1970, (Affiliate); MSEE, 1968, Massachusetts Institute of Technology; PhD, 1973, University of Washington

El-Sharkawi, Mohamed Ali * 1980; MS, 1977, University of British Columbia (Canada); PhD, 1980, University of British Columbia (Canada)

Goldstein, Evan 2003, (Affiliate); MA, 1977, Columbia University; MPhil, 1981, Columbia University; MS, 1986, Columbia University; PhD, 1989, Columbia University

Hannaford, Blake * 1989; MS, 1982, University of California (Berkeley); PhD, 1985, University of California (Berkeley)

Haralick, Robert Martin * 1986, (Emeritus); MSEE, 1967, University of Kansas; PhD, 1969, University of Kansas

Hassan, Amer Aref 2001, (Affiliate); MSEE, 1984, University of Kansas; PhD, 1988, University of Michigan, Ann Arbor

Hauck, Scott Alan * 1990; MS, 1992, University of Washington; PhD, 1995, University of Washington

He, Xiaodong 2012, (Affiliate); MS, 1999, Chinese Academy of Sciences; PhD, 2003, University of Missouri (Columbia)

Henderson, Thomas Ross 2002, (Affiliate); PhD, 1999, University of California (Berkeley)

Huang, Xuedong D. * 1997, (Affiliate); MS, 1984, Tsinghua University (China); PhD, 1989, University of Edinburgh (UK)

Hwang, Jenq-Neng * 1989; MSEE, 1983, National Taiwan University; PhD, 1988, University of Southern California

Ishimaru, Akira * 1953, (Emeritus); PhD, 1958, University of Washington

Jackson, Darrell Richard * 1967, (Emeritus); MSEE, 1963, University of Washington; PhD, 1966, University of Washington; PhD, 1977, California Institute of Technology

Jandhyala, Vikram 2000; MSEE, 1995, University of Illinois (Urbana); PhD, 1998, University of Illinois (Urbana)

Kirschen, Daniel Sadi 2011; MSc, 1980, University of Wisconsin (Madison); PhD, 1985, University of Wisconsin (Madison)

Kuga, Yasuo * 1983; MS, 1979, University of Washington; PhD, 1983, University of Washington

Lauritzen, Peter O. * 1965, (Emeritus); MS, 1958, Stanford University; PhD, 1961, Stanford University

Li, Mike P 2010, (Affiliate); MS, 1987, University of Alabama; MSE, 1991, University of Alabama; PhD, 1991, University of Alabama

Lin, Lih-Yuan 2003; MS, 1996, University of California (Los Angeles); PhD, 1996, University of California (Los Angeles)

Liu, Zicheng 2012, (Affiliate); MS, 1989, Chinese Academy of Sciences; PhD, 1996, Princeton University

MacMillen, Donald 2012, (Affiliate); MS, 1976, University of Rochester; PhD, 1979, University of Rochester

Malvar, Henrique Sarmiento 1999, (Affiliate); MSEE, 1979, Universidade Federal do Rio de Janeiro (Brazil); PhD, 1986, Massachusetts Institute of Technology

Mamishhev, Alexander Valentinovich * 1999; MS, 1994, Texas A&M University; PhD, 1999, Massachusetts Institute of Technology

Moritz, William E. * 1973, (Emeritus); MS, 1966, Stanford University; PhD, 1969, Stanford University

Ostendorf, Mari 1999; MSEE, 1981, Stanford University; PhD, 1985, Stanford University

Peden, Mary Irene Carswell * 1961, (Emeritus); MS, 1958, Stanford University; PhD, 1962, Stanford University

Poovendran, Raadhakrishnan 2000; MSEE, 1991, University of Michigan, Ann Arbor; PhD, 1999, University of Maryland

Porter, Robert Philip * 1985, (Emeritus); MSEE, 1965, Massachusetts Institute of Technology; PhD, 1970, Northeastern University

Rahnamai, Kourosh 2012, (Affiliate); MS, 1981, Wichita State University; PhD, 1985, Wichita State University

Ramon, Ceon 1989, (Affiliate); PhD, 1973, University of Utah

Riskin, Eve Ann 1990; MSEE, 1984, Stanford University; MS, 1986, Stanford University; PhD, 1990, Stanford University

Ritcey, James Alexander * 1985; MS, 1980, Syracuse University; PhD, 1985, University of California (San Diego)

Roy, Sumit * 1998; MA, 1985, University of California (Santa Barbara); MSEE, 1985, University of California (Santa Barbara); PhD, 1988, University of California (Santa Barbara)

Sahr, John David * 1991; PhD, 1990, Cornell University

Shi, Chuan-Jin Richard 1998; MSc, 1988, Fudan University (China); MAS, 1991, University of Waterloo (Canada); PhD, 1994, University of Waterloo (Canada)

Sigelmann, Rubens Adolpho * 1958, (Emeritus); MS, 1961, University of Washington; PhD, 1963, University of Washington

Slaney, Malcolm 2012, (Affiliate); MS, 1981, Purdue University; PhD, 1985, Purdue University

Smith, David Richard 2014, (Affiliate); PhD, 1994, University of California (San Diego)

Soma, Mani * 1982; MSEE, 1977, Stanford University; PhD, 1980, Stanford University

Spindel, Robert Charles 1987, (Emeritus); MS, 1966, Yale University; MPhil, 1968, Yale University; PhD, 1971, Yale University

Sun, Ming-Ting * 1996; MS, 1981, University of Texas (Arlington); PhD, 1985, University of California (Los Angeles)

Tashev, Ivan 2012, (Affiliate); MS, 1984, Technical University of Sofia (Bulgaria); PhD, 1990, Technical University of Sofia (Bulgaria)

Tsang, Leung * 1983; MS, 1973, Massachusetts Institute of Technology; PhD, 1976, Massachusetts Institute of Technology

Venkata, Subrahmanyam Saraswati 1979, (Affiliate); MSEE, 1966, Indian Institute of Technology (India); PhD, 1971, University of South Carolina

Wilson, Denise Michelle * 1999; MSEE, 1989, Georgia Institute of Technology; PhD, 1995, Georgia Institute of Technology

Wu, Feng 2008, (Affiliate); MS, 1996, Harbin Institute of Technology (China); PhD, 1999, Harbin Institute of Technology (China)

Yee, Sinclair Shee-Sing 1966, (Emeritus); MS, 1961, University of California (Berkeley); PhD, 1965, University of California (Berkeley)

Zhang, Zhengyou 2006, (Affiliate); MS, 1987, University of Nancy (France); PhD, 1990, University of Paris Sud XI (France)

Zick, Gregory L. 1974, (Emeritus); MS, 1972, University of Michigan; PhD, 1974, University of Michigan

Associate Professors

Baskaran, Rajashree 2006, (Affiliate); MS, 2000, Cornell University; PhD, 2003, University of California (Santa Barbara)

Braunisch, Henning 2009, (Affiliate); MS, 1995, Michigan State University; MS, 1996, University of Hannover (Germany); PhD, 2001, Massachusetts Institute of Technology

Christie, Richard Dunstan Jr. * 1989; MSEE, 1974, Rensselaer Polytechnic Institute; PhD, 1989, Carnegie Mellon University

Falk, Robert Aaron 1995, (Affiliate); MS, 1974, University of Washington; PhD, 1979, University of Washington

Fazel Sarjoui, Maryam 2007; MS, 1997, Stanford University; PhD, 2002, Stanford University

Giri, Jay * 1990, (Affiliate); MS, 1971, State Univ of New York (Stony Brook); PhD, 1977, Clark University

Helms, Ward Julian * 1964, (Emeritus); MS, 1963, University of Washington; PhD, 1968, University of Washington

Klavins, Eric 2003; MS, 1998, University of Michigan; PhD, 1998, University of Michigan

Liger, Matthieu 2011, (Affiliate); MS, 2001, California Institute of Technology; PhD, 2006, California Institute of Technology

Lind, Frank David 1990, (Affiliate); PhD, 1999, University of Washington

Matula, Thomas John * 1993, (Affiliate); MS, 1990, Washington State University; PhD, 1993, Washington State University

Mir, Hasan Saeed 2001, (Affiliate); MS, 2001, University of Washington; PhD, 2005, University of Washington

Nikitin, Pavel Viktorovich 2002, (Affiliate); MS, 1998, Utah State University; PhD, 2002, Carnegie Mellon University

Pitton, James William 1989, (Affiliate); MSEE, 1986, University of Michigan; PhD, 1994, University of Washington

Reynolds, Matthew 2013; MEng, 1999, Massachusetts Institute of Technology; PhD, 2003, Massachusetts Institute of Technology

Rosen, Jacob 1997, (Affiliate); MSc, 1993, Tel Aviv University (Israel); PhD, 1997, Tel Aviv University (Israel)

Seltzer, Michael 2012, (Affiliate); MS, 2000, Carnegie Mellon University; PhD, 2003, Carnegie Mellon University

Shmulevich, Ilya 2006, (Affiliate); MS, 1993, Purdue University; PhD, 1997, Purdue University

Wang, Xudong 2008, (Affiliate); PhD, 1997, Shanghai Jiao-tong University; PhD, 2003, Georgia Institute of Technology

Assistant Professors

Alomair, Basel 2005, (Affiliate); MS, 2003, University of Wisconsin; PhD, 2011, University of Washington

Bonde, Pramod 2012, (Affiliate); MBBS, 1993, University of Bombay; MS, 1996, University of Bombay

Burden, Samuel A. 2004, (Affiliate); PhD, 2014, University of California (Berkeley)

Chakraborty, Swagato 2001, (Affiliate); MS, 2005, University of Washington; PhD, 2005, University of Washington

Cooper, Emily Barbara 2011, (Affiliate); MEng, 2000, Massachusetts Institute of Technology; PhD, 2003, Massachusetts Institute of Technology

Eguro, Kenneth 2001, (Affiliate); MS, 2002, University of Washington; PhD, 2008, University of Washington

Farquharson, Gordon 2009, (Affiliate); MSc, 1999, University of Capetown (South Africa); PhD, 2005, University of Massachusetts

Feris, Rogerio Schmidt 2008, (Affiliate); MSc, 2001, University of Sao Paulo; PhD, 2006, University of California (Santa Barbara)

Ghosh, Chittabrata 2009, (Affiliate); MS, 2004, Indian Institute of Technology (India); PhD, 2009, University of Cincinnati

Gope, Dipanjan 2000, (Affiliate); MS, 2003, University of Washington; PhD, 2005, University of Washington

Gray, Andrew A. 2001, (Affiliate); MS, 1997, Johns Hopkins University; PhD, 2000, University of Southern California

Guo, Hsiu-Wu 2001, (Affiliate); ME, 2003, University of Washington; PhD, 2008, University of Washington

Hochberg, Michael Joseph 2007, (Affiliate); MA, 2005, California Institute of Technology; PhD, 2006, California Institute of Technology

Jaruwatanadilok, Sermsak 1998, (Affiliate); MSEE, 1997, Texas A&M University; PhD, 2003, University of Washington

Kannan, Sreeram 2014; ME, 2008, Indian Institute of Science (India); Mtech, 2012, University of Illinois; MSPH, 2012, University of Illinois

Kaplan, David L. 2004, (Affiliate); MS, 1978, University of California (Berkeley)

Louie, Henry 2004, (Affiliate); MS, 2004, University of Illinois; PhD, 2008, University of Washington

Majumdar, Arka 2013; MS, 2009, Stanford University; PhD, 2012, Stanford University

Miguel, Agnieszka C. 1997, (Affiliate); MS, 1996, Florida Atlantic University; PhD, 2001, University of Washington
Murugan, Rajen Manicon 2012, (Affiliate); MSc, 1995, University of Leeds (UK); PhD, 1999, University of Manitoba (Canada)

Nagel, Nicholas 2012, (Affiliate); MS, 1995, University of Wisconsin; MS, 1996, University of Wisconsin; PhD, 1998, University of Wisconsin

Ortega-Vazquez, Miguel 2012; EE, 2000, Instituto Tecnológico de Morelia; MSc, 2001, Autonoma of Nuevo Leon University, Mexico; PhD, 2006, University of Manchester (UK)

Putnam, Andrew 2003, (Affiliate); MS, 2006, University of Washington; PhD, 2009, University of Washington

Rudell, Jacques 2009; MSEE, 1994, University of California (Berkeley); PhD, 2000, University of California (Berkeley)

Sampigethaya, Radhakrishna G. 1999, (Affiliate); MS, 2002, University of Washington; PhD, 2007, University of Washington

Sathe, Visvesh 2013; MS, 2003, University of Michigan, Ann Arbor; PhD, 2007, University of Michigan, Ann Arbor

Schneider, Kevin 1999, (Affiliate); MSEE, 2002, University of Washington

Seelig, Georg 2009; Diploma, 1999, University of Basel (Switzerland); PhD, 2003, University of Geneva (Switzerland)

Thomas, John Rhodes 2000, (Affiliate); MSEE, 1998, University of Washington; PhD, 2006, University of Washington

Venema, Steven Craig 1991, (Affiliate); MSEE, 1994, University of Washington; PhD, 1999, University of Washington

Weiss, Dirk 2007, (Affiliate); PhD, 2000, Max Planck Institute (Berlin)

Xiao, Lin 2012, (Affiliate); ME, 1997, Beijing University of Aeronautics and Astronautics; MS, 2002, Stanford University; PhD, 2004, Stanford University

Lecturers

Chen, Tai-Chang 1991; MS, 1993, University of Washington; PhD, 1997, University of Washington

Ecker, Allan Christopher 2003; MSEE, 2005, University of Washington

Lam, Leo Li 1998; MSEE, 2000, University of Washington; PhD, 2014, University of Washington

Peckol, James Kenneth 1994; MS, 1975, University of Washington; PhD, 1985, University of Washington

Potter, William Wesley 1955, (Emeritus); MSEE, 1959, US Naval Postgraduate School

Human Centered Design and Engineering

Professors

Atman, Cynthia Jayne 1998; MS, 1983, Ohio State University; PhD, 1990, Carnegie Mellon University

Bereano, Philip Leon * 1975, (Emeritus); JD, 1965, Columbia University; MRP, 1971, Cornell University

Coney, Mary Bridget * 1976, (Emeritus); MA, 1963, University of Illinois; PhD, 1973, University of Washington

Farkas, David Kalman * 1983, (Emeritus); MA, 1969, University of Chicago; PhD, 1976, University of Minnesota

Haselkorn, Mark Paul * 1985; MA, 1973, University of Michigan; PhD, 1977, University of Michigan; MA, 1980, University of Michigan

Kolko, Beth Elise 2000; MA, 1991, University of Texas (Austin); PhD, 1994, University of Texas (Austin)

Ramey, Judith Ann * 1983, (Emeritus); MA, 1971, University of Texas (unspecified); PhD, 1983, University of Texas (unspecified)

Spyridakis, Jan Huddleston * 1977; MAT, 1972, University of Washington; PhD, 1986, University of Washington

Tsutsui, Michio * 1990; MA, 1980, University of Illinois; PhD, 1984, University of Illinois

Turns, Jennifer Anne 1999; MS, 1990, University of Virginia; PhD, 1999, Georgia Institute of Technology

Zachry, Mark R. 2006; MA, 1992, Arizona State University; PhD, 1998, Iowa State University

Associate Professors

Aragon, Cecilia 2010; MS, 1987, University of California (Berkeley); PhD, 2004, University of California (Berkeley)

Kientz, Julie A. 2008; PhD, 2008, Georgia Institute of Technology

Lee, Charlotte P. 2008; MA, 1997, San Jose State University; PhD, 2004, University of California (Los Angeles)

McDonald, David Wright 2002; MS, 1992, California State University, Hayward; MS, 1995, University of California (Irvine); PhD, 2000, University of California (Irvine)

Assistant Professors

Boyd, Suzanne Maria 1999, (Affiliate); MA, 2000, University of Washington

Hsieh, Gary 2013; PhD, 2010, Carnegie Mellon University
Munson, Sean Arthur 2010; BS, 2006, Franklin W. Olin College of Engineering

Rosner, Daniela 2013; MS, 2006, University of Chicago; PhD, 2008, University of California (Berkeley)

Starbird, Catharine 2012; BS, 1999, Stanford University

Sullivan, Kent Daniel 2007, (Affiliate); BA, 1989, Purdue University

Senior Lecturers

Davidson, Andrew Harley 2006; MSE, 1982, University of Pennsylvania

Sanocki, Elizabeth 1988; PhD, 1994, University of Washington

Wagner, Linda 2013; MS, 1998, Illinois Institute of Technology

Lecturers

Barksdale, Jeremy Totton 2014; MS, 2002, North Carolina A & T State University; MPA, 2012, Virginia Polytechnic Institute and State University; PhD, 2013, Virginia Polytechnic Institute and State University

Jenkins, Mary-Colleen 2010; MA, 1992, Ohio University

Loucks-Jaret, Christine M. 1997; MS, 1999, University of Washington

Mobrand, Kathryn A. 2005; MS, 2003, University of Washington

Spyridakis, Irini K. 2007; MS, 2010, University of Washington

Industrial Engineering

Professors

Boyle, Linda T. 1992; MS, 1994, University of Washington; PhD, 1998, University of Washington

Chaovalitwongse, Wanpracha Art 2010; MS, 2000, University of Florida; PhD, 2003, University of Florida
Furness, Thomas Adrian * 1989; PhD, 1981, University of Southampton (UK)

Kapur, Kailash Chander * 1992, (Emeritus); MTech, 1965, Indian Institute of Technology (India); MS, 1967, University of California (Berkeley); PhD, 1969, University of California (Berkeley)

Lee, John Davidson 2011, (Affiliate); MS, 1989, University of Illinois; PhD, 1992, University of Illinois

Liu, Chen-Ching 1983, (Affiliate); MSEE, 1978, National Taiwan University; PhD, 1983, University of California (Berkeley)

Storch, Richard Lee * 1975, (Emeritus); MS, 1968, Massachusetts Institute of Technology; PhD, 1978, University of Washington

Zabinsky, Zelda Barbara * 1985; MS, 1984, University of Michigan; PhD, 1985, University of Michigan

Associate Professors

Beamon, Benita Michele * 1999; MS, 1990, Cornell University; PhD, 1994, Georgia Institute of Technology

Brayman, Vladimir M. 1993, (Affiliate); MS, 1996, University of Washington; PhD, 2003, University of Washington

Drui, Albert B. * 1959, (Emeritus); MS, 1957, Washington University

Ghate, Archis Vijay 2006; MS, 2003, Stanford University; PhD, 2006, University of Michigan

Mastrangelo, Christina M. 2002; MS, 1990, Arizona State University; PhD, 1993, Arizona State University

Zak, Yevgeniy J. Eugene 1999, (Affiliate); MS, 1973, Moscow Aviation Institute, Russia; MS, 1976, Moscow State University (Russia); PhD, 1981, Moscow Inst of Physics & Tech (Russia)

Assistant Professors

Huang, Shuai 2014; PhD, 2012, Arizona State University

Liu, Shan 2013; SM, 2008, Massachusetts Institute of Technology; PhD, 2013, Stanford University

Montgomery, Stephen W. 2009, (Affiliate); MSME, 1996, Purdue University; PhD, 2000, Purdue University; MBA, 2008, University of Washington

Yen, Joyce Wen-Hwei 2000, (Affiliate); MS, 1997, University of Michigan, Ann Arbor; PhD, 2000, University of Michigan, Ann Arbor

Materials Science and Engineering

Professors

Bordia, Rajendra Kumar * 1991, (Emeritus); MS, 1981, Cornell University; PhD, 1986, Cornell University

Cao, Guozhong 1996; MS, 1985, Shanghai Institute of Ceramics, China; PhD, 1991, Eindhoven University of Technology(Neth)

Chambers, Scott Alexander 1992, (Affiliate); PhD, 1977, Oregon State University

Das, Khandelwal Bhagwan 1978, (Affiliate); MSc, 1956, Osmania University (India); MS, 1961, Purdue University; MSME, 1963, University of Illinois; PhD, 1971, University of Washington

De Yoreo, James 2013, (Affiliate); PhD, 1985, Cornell University

Dogan, Fatih * 1990, (Affiliate); MS, 1984, Technische Universität (Germany); PhD, 1989, Technische Universität (Germany)

Fisher, Robert M. * 1987, (Emeritus); PhD, 1962, Cambridge University (UK)

Henager, Charles Henry 1988, (Affiliate); PhD, 1983, University of Washington

Hinds, Bruce Jackson III 2014; MS, 1992, Northwestern University; PhD, 1996, Northwestern University

Inoue, Kanryu * 1993, (Affiliate); MS, 1971, Osaka University (Japan); PhD, 1977, Osaka University (Japan)

Jen, Alex Kwan-Yue 1999; PhD, 1984, University of Pennsylvania

Koike, Yasuhiro 2009, (Affiliate); MSE, 1979, Keio University (Japan); PhD, 1982, Keio University (Japan)

Krishnan, Kannan M. 2001; MS, 1980, State Univ of New York (Stony Brook); PhD, 1984, University of California (Berkeley)

Ohuchi, Fumio * 1992; MS, 1974, Sophia University (Japan); PhD, 1981, University of Florida

Polonis, Douglas H. * 1955, (Emeritus); MA, 1953, University of Toronto (Canada); PhD, 1955, University of British Columbia (Canada)

Rao, Yalamanchili Krishna * 1976, (Emeritus); PhD, 1965, University of Pennsylvania

Sarikaya, Mehmet 1984; MS, 1979, University of California (Berkeley); PhD, 1982, University of California (Berkeley)

Scott, William Doane * 1965, (Emeritus); MS, 1959, University of California (Berkeley); PhD, 1961, University of California (Berkeley)

Stoebe, Thomas Gaines * 1966, (Emeritus); MS, 1963, Stanford University; PhD, 1965, Stanford University

Zhang, Miqin 1999; MAS, 1994, University of Victoria (Canada); PhD, 1999, University of California (Berkeley)

Associate Professors

Arola, Dwayne Dale 1991; MS, 1991, University of Washington; PhD, 1996, University of Washington

Brush, Lucien Noyes * 1990; ME, 1984, Carnegie Mellon University; PhD, 1988, Carnegie Mellon University

Luscombe, Christine K. 2006; MSc, 2000, University of Cambridge (UK); MA, 2003, University of Cambridge (UK); PhD, 2005, University of Cambridge (UK)

Miller, Alan Dale * 1957, (Emeritus); PhD, 1967, University of Washington

Roland, Marco 2008; MS, 2000, University of London, UK; PhD, 2005, Stanford University

Stang, Robert George * 1973, (Emeritus); MS, 1965, University of California (Los Angeles); PhD, 1972, Stanford University

Yang, Jihui 2011; MS, 1991, University of Oregon; MS, 1993, Wayne State University; PhD, 2000, University of Michigan, Ann Arbor

Assistant Professors

Chikow, Toyohiro 1994, (Affiliate); MS, 1985, Waseda University (Japan); PhD, 1989, Waseda University (Japan)

Pauzauskie, Peter J. 2010; PhD, 2007, University of California (Berkeley)

Mechanical Engineering

Professors

Balise, Peter Louis Jr. * 1950, (Emeritus); MS, 1950, Massachusetts Institute of Technology

Chalupnik, James Dvorak * 1964, (Emeritus); MS, 1960, University of Texas (unspecified); PhD, 1964, University of Texas (Austin)

Cooper, Joyce Smith 1998; MS, 1992, Duke University; PhD, 1996, Duke University

Corlett, Richard Collister * 1964, (Emeritus); MME, 1958, Rensselaer Polytechnic Institute; PhD, 1963, Harvard University

Day, Emmett Elbert * 1947, (Emeritus); MS, 1947, Massachusetts Institute of Technology

Depew, Creighton Arthur * 1960, (Emeritus); MS, 1957, University of California (Berkeley); PhD, 1960, University of California (Berkeley)

Devasia, Santosh 2000; MS, 1990, University of California (Santa Barbara); PhD, 1993, University of California (Santa Barbara)

Dorri, Bijan 2014, (Affiliate); MS, 1978, University of Washington; PhD, 1983, University of Washington

Emery, Ashley Francis * 1961; MS, 1958, University of California (Berkeley); PhD, 1961, University of California (Berkeley)

Fabien, Brian Cyriacus * 1993; MSME, 1983, Columbia University; MPhil, 1990, Columbia University; PhD, 1990, Columbia University

Firey, Joseph Carl 1954, (Emeritus); MSME, 1941, University of Wisconsin

Galle, Kurt Robert * 1960, (Emeritus); MSME, 1949, Purdue University; PhD, 1951, Purdue University

Ganter, Mark Anthony * 1986; MS, 1981, University of Wisconsin; PhD, 1985, University of Wisconsin (Madison)

Gao, Dayong 2004; PhD, 1991, Concordia College

Garbini, Joseph L. 1979; MS, 1973, University of Washington; PhD, 1977, University of Washington

Gessner, Frederick Benedict * 1967, (Emeritus); MSME, 1960, Purdue University; PhD, 1964, Purdue University

Hashish, Mohamed Ahmed 2005, (Affiliate); PhD, 1977, Concordia University

Homsy, George 2013, (Affiliate); MS, 1967, University of Illinois; PhD, 1969, University of Illinois

Jorgensen, Jens Erik * 1968, (Emeritus); SM, 1963, Massachusetts Institute of Technology; DSc, 1969, Massachusetts Institute of Technology

Kobayashi, Albert Satoshi * 1958, (Emeritus); MS, 1952, University of Washington; PhD, 1958, Illinois Institute of Technology

Kramlich, John Charles * 1991; MS, 1975, Washington State University; PhD, 1980, Washington State University

Kumar, Vipin 1988; MS, 1972, University of Rhode Island; MBA, 1974, University of Rhode Island; PhD, 1988, Massachusetts Institute of Technology

Li, Jiangyu 2006; MS, 1996, University of Colorado (Boulder); MS, 1998, University of Colorado (Boulder); PhD, 1998, University of Colorado (Boulder)

Malte, Philip Charles * 1979; MSE, 1966, University of Michigan; PhD, 1971, University of Michigan

Mamidala, Ramulu * 1978; MTech, 1976, Indian Institute of Technology (India); PhD, 1982, University of Washington

McCormick, Norman J. * 1966, (Emeritus); MS, 1961, University of Illinois; PhD, 1965, University of Michigan

Pratt, David T. * 1981, (Emeritus); MS, 1962, University of California (Berkeley); PhD, 1968, University of California (Berkeley)

Reinhall, Per Gustaf * 1982; MS, 1978, California Institute of Technology; PhD, 1982, California Institute of Technology

Riley, James Joseph * 1983; PhD, 1971, Johns Hopkins University

Saito, Makoto 2012, (Affiliate); MS, 1973, Osaka University (Japan); PhD, 1998, Nagoya University (Japan)

Sanders, Daniel Gordon 2007, (Affiliate); MS, 2002, Central Washington University; PhD, 2008, University of Washington

Shen, I-Yeu * 1993; MS, 1986, National Taiwan University; PhD, 1991, University of California (Berkeley)

Sidles, John Arthur 1984, (Affiliate); PhD, 1982, University of Washington

Storti, Duane William * 1983; MS, 1981, Cornell University; PhD, 1983, Cornell University

Taggart, Raymond * 1959, (Emeritus); PhD, 1956, Queen's University (UK)

Taya, Minoru 1986; MS, 1973, Northwestern University; PhD, 1977, Northwestern University

Tuttle, Mark E. 1985; MS, 1978, Michigan Technological University; PhD, 1984, Virginia Polytechnic Institute and State University

Wilson, William Robert Dunwoody * 1999, (Emeritus); PhD, 1967, Queen's University of Belfast (Ireland)

Zhao, Gang 2014, (Affiliate); ME, 2004, University of Science and Technology of China

Associate Professors

Adee, Bruce Harvey * 1970, (Emeritus); MS, 1968, University of California (Berkeley); PhD, 1972, University of California (Berkeley)

Aliseda, Alberto 2006; MS, 1998, Universidad Politecnica; MSc, 2000, University of California (San Diego); PhD, 2004, University of California (San Diego)

Berg, Martin Conrad * 1986; MSME, 1978, University of Washington; PhD, 1986, Stanford University

Bodoia, John Rodger * 1964, (Emeritus); MS, 1957, Carnegie Institute of Technology; PhD, 1959, Carnegie Institute of Technology

Chalk, William Spencer 1957, (Emeritus); MSME, 1961, University of Washington

Chung, Jaehyun 2005; MS, 1997, Sungkyunkwan University (Korea); PhD, 2004, Northwestern University

Einstein, Daniel R. 1996, (Affiliate); PhD, 2002, University of Washington

Fried, Amy Shen 2008, (Affiliate); MS, 1994, Tongji Medical University (China); MS, 1996, University of Illinois; PhD, 2000, University of Illinois (Urbana)

Holt, Richard Edwin * 1947, (Emeritus); MS, 1957, University of Washington

Kielling, William Clayton * 1956, (Emeritus); MSME, 1959, University of Washington

Klute, Glenn Kenneth 1993, (Affiliate); MS, 1990, Pennsylvania State University; PhD, 1999, University of Washington

Ledoux, William Raymond li 1999, (Affiliate); MS, 1993, University of Pennsylvania; PhD, 1999, University of Pennsylvania

Mescher, Ann Marie 1996; MS, 1992, Ohio State University; PhD, 1995, Ohio State University

Ochoa, Jorge Alexander 2006, (Affiliate); MSME, 1987, Purdue University; PhD, 1991, Purdue University

Posner, Jonathan D 2011; MS, 1997, von Karman Institute for Fluid Dynamics; MS, 1998, University of California (Irvine); PhD, 2001, University of California (Irvine)

Scheibe, Robert Reynolds 1991, (Affiliate); MSME, 1982, University of Wisconsin; PhD, 1996, University of Washington

Shuman, Teodora Rutar 1992, (Affiliate); MSME, 1994, University of Washington; PhD, 2000, University of Washington

Sniadecki, Nathan John 2007; MS, 2003, University of Maryland; PhD, 2003, University of Maryland

Wang, Junlan 2008; MS, 1997, Univ. of Science And Technology (China); PhD, 2002, University of Illinois

Xu, Chunye 2000, (Affiliate); MSc, 1990, Northwest Institute of Textile Science and Technology, China; PhD, 1998, Nara Women's University (Japan)

Assistant Professors

Alsem, Daan Hein 2010, (Affiliate); MS, 2002, University of Groningen (Netherlands); PhD, 2006, University of California (Berkeley)

Aubin, Patrick Mark 2004, (Affiliate); MS, 2006, University of Washington; PhD, 2010, University of Washington

Boechler, Nicholas Sebastian 2012; MS, 2008, California Institute of Technology; PhD, 2011, California Institute of Technology

Brunton, Steven Lee 2012; PhD, 2012, Princeton University

Iaquinto, Joseph M 2012, (Affiliate); MS, 2006, Virginia Commonwealth University; PhD, 2010, Virginia Commonwealth University

Ihn, Jeong-Beom 2007, (Affiliate); MS, 1998, Stanford University; PhD, 2003, Stanford University

Johnston, Scott R. 2000, (Affiliate); MS, 1995, Kansas State University; MS, 1998, University of Missouri; PhD, 2000, University of Washington

Kintner-Meyer, Michael 1989, (Affiliate); MSME, 1985, Rheinisch Westfaelische Technische Hochschule, Germany; PhD, 1993, University of Washington

Lee, Kyong-Hoon 2010, (Affiliate); MS, 1994, Seoul National University (Korea); PhD, 1999, University of Tokyo (Japan)

Liu, Jonathan Teng-Chieh 2014; MS, 2000, Stanford University; PhD, 2005, Stanford University

Mason, Gregory Steven 1988, (Affiliate); MSME, 1984, Georgia Institute of Technology; PhD, 1992, University of Washington

Nelson, Leonard Y. 2010, (Affiliate); PhD, 1969, University of California (Berkeley)

Neumann, Thomas 1996, (Affiliate); MD, 1994, University of Hale

Picone, Rico Allan Russell 2008, (Affiliate); MSc, 2010, University of Washington; PhD, 2014, University of Washington

Polagye, Brian L. 2002; MSME, 2005, University of Washington; PhD, 2009, University of Washington

Rombokas, Eric Scott 2005, (Affiliate); MS, 2001, Rice University; PhD, 2012, University of Washington

Steele, Katherine Muterspaugh 2012; MS, 2009, Stanford University

Steinhauer, David Ethan 1992, (Affiliate); MS, 1998, University of Maryland; PhD, 2000, University of Maryland

Tourovskaja, Anna V. 1997, (Affiliate); MS, 1994, Ural State University (Russia); PhD, 2006, University of Washington

Weller, John E. 1989, (Affiliate); MSME, 1991, University of Washington; PhD, 1996, University of Washington

College of the Environment

Aquatic and Fishery Sciences

Professors

Anderson, James J. * 1969, (Research); PhD, 1977, University of Washington

Armstrong, David A. * 1978; MS, 1974, Oregon State University; PhD, 1978, University of California (Davis)

Bailey, Kevin McLean 1981, (Affiliate); MA, 1977, University of Washington; PhD, 1981, University of Washington

Beauchamp, David Anthony 1987; MS, 1982, University of Washington; PhD, 1987, University of Washington

Bisson, Peter Andre 1988, (Affiliate); MS, 1969, Oregon State University; PhD, 1975, Oregon State University

Bottom, Daniel Lee 2003, (Affiliate); MS, 1975, University of Delaware

Chew, Kenneth Kendall * 1955, (Emeritus); MS, 1958, University of Washington; PhD, 1962, University of Washington

Clarke, Elizabeth 2006, (Affiliate); MS, 1979, University of Alaska; PhD, 1984, Scripps Oceanographic Institution

Conquest, Loveday Loyce * 1976, (Emeritus); MS, 1972, Stanford University; PhD, 1975, University of Washington

Davis, Jonathan Putnam 1984, (Affiliate); MS, 1982, Yale University; PhD, 1994, University of Washington

Elston, Ralph Arthur 1985, (Affiliate); MS, 1975, University of California (Davis); PhD, 1980, Cornell University

Essington, Timothy Edwin 2003; MS, 1995, University of Minnesota; PhD, 1999, University of Wisconsin (Madison)

Francis, Robert Colgate * 1980, (Emeritus); MS, 1966, University of California (Santa Barbara); PhD, 1970, University of Washington

Friedman, Carolyn Suzanne 2001; PhD, 1990, University of California (Davis)

Gallucci, Vincent Frank * 1972; MSc, 1966, State University of New York (Buffalo); PhD, 1971, North Carolina State University

Gunderson, Donald R. * 1978, (Emeritus); MS, 1966, Montana State University; PhD, 1975, University of Washington

Harvell, Catherine Drew 1988, (Affiliate); PhD, 1985, University of Washington

Hilborn, Ray William * 1987; PhD, 1974, University of British Columbia (Canada)

Holland, Daniel 2013, (Affiliate); MS, 1993, University of Illinois; PhD, 1998, University of Rhode Island

Hollowed, Anne Babcock 1994, (Affiliate); MS, 1982, Old Dominion University; PhD, 1990, University of Washington

Horne, John Kenneth 1999; MSc, 1988, Dalhousie University (Canada); PhD, 1995, Memorial University of Newfoundland

Ianelli, James N. 1988, (Affiliate); PhD, 1993, University of Washington

Karp, William A. 1995, (Affiliate); MS, 1975, University of Washington; PhD, 1982, University of Washington

Karr, James Richard * 1991, (Emeritus); MSc, 1967, University of Illinois; PhD, 1970, University of Illinois

Kocan, Richard Michael * 1976, (Emeritus); MS, 1965, Michigan State University; PhD, 1967, Michigan State University

Leaman, Bruce Michael 1998, (Affiliate); MS, 1976, University of British Columbia (Canada); PhD, 1988, University of British Columbia (Canada)

Liston, John * 1957, (Emeritus); PhD, 1955, University of Aberdeen (UK)

Livingston, Patricia Ann 1989, (Affiliate); MS, 1980, University of Washington; MPA, 1988, University of Washington

Mathews, Stephen Barstow * 1963, (Emeritus); MA, 1962, University of California (Berkeley); PhD, 1967, University of Washington

Methot, Richard Donald 1992, (Affiliate); PhD, 1981, University of California (San Diego)

Miller, Bruce Stuart * 1971, (Emeritus); MS, 1965, University of Washington; PhD, 1969, University of Washington

Naiman, Robert Joseph 1988, (Emeritus); MA, 1971, University of California (Los Angeles); PhD, 1974, Arizona State University

Orensanz, Jose Maria 1986, (Affiliate); PhD, 1988, University of Washington

Orr, James Wilder 1987, (Affiliate); MS, 1987, Auburn University; PhD, 1995, University of Washington

Parrish, Julia Kathryn 1990; PhD, 1988, Duke University

Piatt, John F. 2005, (Affiliate); PhD, 1987, Memorial University of Newfoundland

Pietsch, Theodore W. * 1978; MS, 1969, University of Southern California; PhD, 1973, University of Southern California

Plisetskaya, Erika Michael * 1980, (Emeritus); PhD, 1958, Academy of Science (Ussr); DSc, 1973, Academy of Science (Ussr)

Punt, Andre Eric * 1992; MSc, 1988, University of Cape Town (South Africa); PhD, 1991, University of Capetown (South Africa)

Quinn, Thomas Peter * 1986; MS, 1978, University of Washington; PhD, 1981, University of Washington

Ruckelshaus, Mary 1985, (Affiliate); MSc, 1988, University of Washington; PhD, 1994, University of Washington

Schindler, Daniel Edward 1997; MS, 1992, University of Wisconsin; PhD, 1995, University of Wisconsin (Madison)

Simenstad, Charles Arthur * 1969, (Research); MS, 1971, University of Washington

Skalski, John Raymond * 1987; MS, 1976, Oregon State University; MS, 1978, Cornell University; PhD, 1985, Cornell University

Smith, Anthony D.M. 2013, (Affiliate); PhD, 1979, University of British Columbia (Canada)

Smith, Lynwood Stephen * 1957, (Emeritus); MS, 1955, University of Washington; PhD, 1962, University of Washington

Swanson, Penny 1987, (Affiliate); MS, 1980, University of Wisconsin; PhD, 1986, University of Washington

Swartzman, Gordon Leni * 1973, (Emeritus); MSEE, 1965, University of Michigan; PhD, 1969, University of Michigan

Taub, Frieda Blou * 1959, (Emeritus); MS, 1957, Rutgers University; PhD, 1959, Rutgers University

Utter, Fred Madison 1971, (Affiliate); MS, 1964, University of Washington; PhD, 1969, University of California (Davis)

Wade, Paul Robert 2000, (Affiliate); MS, 1986, Montana State University; PhD, 1994, University of California (San Diego)

Waples, Robin Snowden 1989, (Affiliate); PhD, 1986, Scripps Oceanographic Institution

Williams, John Gordon 1989, (Affiliate); MS, 1975, University of Washington; PhD, 1978, University of Washington

Winton, James Robert 1988, (Affiliate); PhD, 1981, Oregon State University

Wissmar, Robert Charles * 1972, (Emeritus); MS, 1968, University of Idaho; PhD, 1972, University of Idaho

Young, Graham 2004; PhD, 1980, University of Sheffield (UK)

Associate Professors

Anderson, Christopher M. 2012; PhD, 2001, California Institute of Technology

Aydin, Kerim Y. 1995, (Affiliate); PhD, 2000, University of Washington

Bengtson, John Luther 1996, (Affiliate); MS, 1980, University of Minnesota; PhD, 1981, University of Minnesota

Bentzen, Paul * 1993, (Affiliate); MSc, 1982, University of British Columbia (Canada); PhD, 1989, McGill University (Canada)

Brodeur, Richard Davide 1986, (Affiliate); MS, 1983, Oregon State University; PhD, 1990, University of Washington

Canino, Michael Francis 1986, (Affiliate); MA, 1981, College of William And Mary; PhD, 2003, University of Washington

Dorn, Martin W. 2009, (Affiliate); MSc, 1989, University of Washington; PhD, 1998, University of Washington

Elliott, Diane Godsey 1986, (Affiliate); MS, 1975, University of Washington; PhD, 1985, University of Washington

Grue, Christian Ebbesen * 1989; MS, 1977, Northern Arizona University; PhD, 1977, Texas A&M University

Hard, Jeffrey J. 2008, (Affiliate); MS, 1984, University of Alaska; PhD, 1991, University of Oregon

Hare, Steven 1990, (Affiliate); MS, 1989, University of Washington; PhD, 1996, University of Washington

Hauser, Lorenz 2002; MSc, 1989, University of Vienna, Austria; MSc, 1990, University of Wales (U.K.); PhD, 1996, University of Wales (U.K.)

Helser, Thomas Earl 2012, (Affiliate); MS, 1987, Auburn University; PhD, 1992, Louisiana State University

Hershberger, Paul Keith 1993, (Affiliate); MS, 1995, University of Washington; PhD, 1999, University of Washington

Herwig, Russell Paul * 1983, (Emeritus); MA, 1978, College of William And Mary; PhD, 1989, University of Washington

Holmes, Elizabeth Eli 1989, (Affiliate); PhD, 1995, University of Washington

Matarese Kiernan, Ann M. 1996, (Affiliate); PhD, 1990, University of Washington

McClure, Michelle Marie 2014, (Affiliate); PhD, 1998, Cornell University

Melvin, Edward F. 1990, (Affiliate); MS, 1980, Humboldt State University

Naish, Kerry-Ann 2000; MSc, 1990, Rhodes University, South Africa; PhD, 1993, University of Wales (U.K.)

Olden, Julian David 2006; MS, 2000, University of Toronto (Canada); PhD, 2004, Colorado State University

Pauley, Gilbert Buckhannon 1974, (Emeritus); MS, 1965, University of Washington; PhD, 1971, University of California (Irvine)

Roberts, Steven Beyer 2006; PhD, 2002, University of Notre Dame

Roni, Philip 1990, (Affiliate); MS, 1992, University of Washington; PhD, 2000, University of Washington

Stevenson, Duane 1996, (Affiliate); MS, 1996, University of Charleston; PhD, 2002, University of Washington

Thom, Ronald Mark 1982, (Affiliate); MS, 1976, California State University, Long Beach; PhD, 1978, University of Washington

Trainer, Vera Lynn 1991, (Affiliate); PhD, 1990, University of Miami (Florida)

Vanblaricom, Glenn Richard * 1993; PhD, 1978, University of California (San Diego)

Warheit, Kenneth Ira 1992, (Affiliate); PhD, 1990, University of California (Berkeley)

Winans, Gary Albert 1987, (Affiliate); MS, 1975, Florida Institute of Technology; PhD, 1980, University of Hawaii

Zabel, Richard 1988, (Affiliate); MS, 1988, University of Michigan, Ann Arbor; PhD, 1994, University of Washington

Assistant Professors

Adams, Dawn Page Noren 2009, (Affiliate); MS, 1997, University of California (Santa Cruz); MA, 1999, University of California (Santa Cruz); PhD, 2002, University of California (Santa Cruz)

Branch, Trevor 2000; MSc, 1998, University of Capetown (South Africa); PhD, 2004, University of Washington
 Buckley, Raymond Milo 1975, (Affiliate); MS, 1968, University of Washington; PhD, 1997, University of Washington
 Clark, William G. 1984, (Affiliate); PhD, 1975, University of Washington

Duffy-Anderson, Janet T. 1999, (Affiliate); PhD, 1996, University of Delaware

Hanson, Morris Bradley 2009, (Affiliate); MS, 1988, University of Washington; PhD, 2001, University of Washington

Hendrix, Albert Noble 1994, (Affiliate); MS, 2000, University of Washington; PhD, 2003, University of Washington
 Holtgrieve, Gordon William 2003; MS, 2001, Stanford University; PhD, 2009, University of Washington

Horner-Devine, Marie Claire 2004, (Affiliate); PhD, 2004, Stanford University

Pess, George Robert 2001, (Affiliate); MFS, 1992, Yale University; PhD, 2009, University of Washington

Scheuerell, Mark D. 1997, (Affiliate); MS, 1996, Cornell University; PhD, 2002, University of Washington

Steel, Elizabeth Ashley 1990, (Affiliate); MS, 1993, University of Washington; MS, 1996, University of Washington; PhD, 1999, University of Washington

Lecturers

Jensen, Gregory Carlton 1984; PhD, 1990, University of Washington

Lubetkin, Susan Crane 1994; MS, 1997, University of Washington; PhD, 2008, University of Washington

Atmospheric Sciences

Professors

Ackerman, Thomas Peter 2002; MS, 1971, University of Washington; PhD, 1976, University of Washington

Battisti, David Stephen * 1983; MS, 1981, University of Washington; PhD, 1988, University of Washington

Bitz, Cecilia Marie 1988; MS, 1990, University of Washington; PhD, 1997, University of Washington

Bretherton, Christopher Stephen * 1984; PhD, 1984, Massachusetts Institute of Technology

Brown, Robert Alan * 1969, (Emeritus); MS, 1962, University of California (Berkeley); PhD, 1969, University of Washington

Businger, Joost Alois * 1958, (Emeritus); PhD, 1954, University of Utrecht (Netherlands)

Charlson, Robert J. * 1962, (Emeritus); MS, 1959, Stanford University; PhD, 1964, University of Washington

Chen, Shuyi S. * 1991, (Affiliate); MS, 1985, University of Oklahoma; PhD, 1990, Pennsylvania State University

Covert, David Spencer * 1974, (Emeritus); MS, 1971, University of Washington; PhD, 1974, University of Washington
 Durran, Dale Richard * 1987; MS, 1975, University of California (Berkeley); PhD, 1981, Massachusetts Institute of Technology

Fu, Qiang 2000; MS, 1985, Peking University (China); PhD, 1991, University of Utah

Grenfell, Thomas C. * 1968, (Emeritus); MS, 1968, University of Chicago; PhD, 1972, University of Washington

Hakim, Gregory John * 1999; MS, 1993, University of Albany; PhD, 1997, University of Albany

Hartmann, Dennis Lee * 1977; MA, 1973, Princeton University; PhD, 1975, Princeton University

Hegg, Dean Arnold * 1975, (Emeritus); MS, 1976, University of Washington; PhD, 1979, University of Washington

Houze, Robert A. * 1972; MS, 1969, Massachusetts Institute of Technology; PhD, 1972, Massachusetts Institute of Technology

Jaegle, Lyatt * 2000; MS, 1992, California Institute of Technology; PhD, 1996, California Institute of Technology
 Mass, Clifford Fred * 1981; PhD, 1978, University of Washington

Overland, James Edward * 1983, (Affiliate); MS, 1971, University of Washington; PhD, 1973, New York University
 Radke, Lawrence F. * 1964, (Affiliate); MS, 1967, University of Washington

Rasch, Philip John 2008, (Affiliate); MS, 1979, Florida State University; PhD, 1984, Florida State University

Sarachik, Edward Stuart * 1984, (Emeritus); MS, 1963, Brandeis University; PhD, 1966, Brandeis University
 Tillman, James Eugene 1971, (Emeritus); MS, 1961, Massachusetts Institute of Technology

Wallace, John Michael * 1966, (Emeritus); PhD, 1966, Massachusetts Institute of Technology

Warren, Stephen George * 1981, (Emeritus); MA, 1969, Harvard University; PhD, 1973, Harvard University

Wood, Robert 2001; PhD, 1997, University of Manchester (UK)

Associate Professors

Bates, Timothy Shawn * 1990, (Affiliate); MS, 1978, University of Washington; PhD, 1988, University of Washington

Bond, Nicholas Anderson 1980, (Affiliate); PhD, 1986, University of Washington

Colman, Bradley Ray 1999, (Affiliate); ScD, 1984, Massachusetts Institute of Technology

Eckel, Frederick Anthony 2010, (Affiliate); MS, 1998, Air Force Institute of Technology; PhD, 2003, University of Washington

Frierson, Dargan Michael Wright 2007; MS, 2002, Princeton University; PhD, 2005, Princeton University

Harrison, Halstead * 1971, (Emeritus); PhD, 1960, Stanford University

Light, Bonnie 1990, (Affiliate); MS, 1990, University of Maryland; PhD, 2000, University of Washington

Mote, Philip Whitfield 1989, (Affiliate); PhD, 1994, University of Washington

Stoelinga, Mark Theodore 1987, (Affiliate); PhD, 1993, University of Washington

Suess, Becky Alexander 2004; PhD, 2002, University of California (San Diego)

Thornton, Joel A. 2004; PhD, 2002, University of California (Berkeley)

Yuter, Sandra Ellyn 1990, (Affiliate); PhD, 1996, University of Washington

Assistant Professors

Cziczo, Daniel James 2008, (Affiliate); MS, 1997, University of Chicago; PhD, 1999, University of Chicago

Kim, Daehyun 2014; PhD, 2010, Seoul National University (Korea)

Swann, Abigail 2012; MA, 2005, Columbia University; PhD, 2010, University of California (Berkeley)

Senior Lecturer

McMurdie, Lynn Alison 1988; MS, 1983, University of Washington; PhD, 1989, University of Washington

Lecturer

Wilton, Darren 2000; MS, 2005, University of Washington; PhD, 2011, University of Washington

Earth and Space Sciences

Professors

Adams, John Bright * 1961, (Emeritus); MS, 1958, University of Washington; PhD, 1961, University of Washington

Anderson, Patricia Marie 1982, (Emeritus); MA, 1976, Brown University; PhD, 1982, Brown University

Atwater, Brian Franklin * 1986, (Affiliate); MS, 1974, Stanford University; PhD, 1980, University of Delaware

Baker, Marcia Bourgin * 1971, (Emeritus); MS, 1960, Stanford University; PhD, 1971, University of Washington

Bergantz, George Walter * 1988; MS, 1985, Georgia Institute of Technology; PhD, 1988, Johns Hopkins University

Bernard, Eddie Nolan 2005, (Affiliate); MS, 1970, Texas A&M University; PhD, 1976, Texas A&M University

Booker, John Ratcliffe 1971, (Emeritus); MS, 1965, University of California (San Diego); PhD, 1968, University of California (San Diego)

Booth, Derek Blake 1980, (Affiliate); MS, 1980, Stanford University; PhD, 1984, University of Washington

Bourgeois, Joanne * 1980; PhD, 1980, University of Wisconsin (Madison)

Brown, John Michael 1984; MS, 1978, University of Washington; PhD, 1980, University of Minnesota

Buick, Roger 2001; PhD, 1986, University of West Australia

Catling, David Charles 2001; DPhil, 1994, Oxford University (UK)

Cheney, Eric Swensen * 1964, (Emeritus); PhD, 1964, Yale University

Cowan, Darrel Sidney * 1974; PhD, 1972, Stanford University

Creager, Kenneth Clark 1986; PhD, 1984, University of California (San Diego)

Crosson, Robert S. 1966, (Emeritus); MS, 1963, University of Utah; PhD, 1966, Stanford University

Evans, Bernard William * 1969, (Emeritus); PhD, 1959, Oxford University (UK)

Frankel, Arthur 2009, (Affiliate); MA, 1978, Columbia University; PhD, 1982, Columbia University

Ghiorso, Mark S. * 1980, (Affiliate); MA, 1978, University of California (Berkeley); PhD, 1980, University of California (Berkeley)

Ghose, Subrata 1972, (Emeritus); MSc, 1955, University of Calcutta (India); MS, 1959, University of Chicago; PhD, 1959, University of Chicago

Gomberg, Joan 2006, (Affiliate); PhD, 1986, University of California (San Diego)

Gonzalez, Frank Ignacio 2005, (Affiliate); PhD, 1974, University of Hawaii

Greene, Mott Tuthill 1979, (Affiliate); MA, 1974, University of Washington; PhD, 1978, University of Washington

Hallet, Bernard * 1979; PhD, 1975, University of California (Los Angeles)

Holzworth, Robert Haviland II 1982; MA, 1974, University of California (Berkeley); PhD, 1977, University of California (Berkeley)

Houston, Heidi B. 2006; MS, 1980, University of Wisconsin (Madison); PhD, 1987, California Institute of Technology

Irving, Anthony John * 1979, (Affiliate); PhD, 1972, Australian National University

Iverson, Richard Matthew * 1990, (Affiliate); MS, 1980, Stanford University; MS, 1981, Stanford University; PhD, 1984, Stanford University

Joughin, Ian R. 1990, (Affiliate); MS, 1990, University of Vermont; PhD, 1995, University of Washington

Maykut, Gary Allen * 1969, (Emeritus); PhD, 1969, University of Washington

McCallum, Ian Stewart * 1970, (Emeritus); PhD, 1968, University of Chicago

McCord, Thomas B. 2002, (Affiliate); MS, 1966, California Institute of Technology; PhD, 1968, California Institute of Technology

Merrill, Ronald T. 1967, (Emeritus); MS, 1961, University of Michigan; PhD, 1967, University of California (Berkeley)

Montgomery, David Richard * 1991; PhD, 1991, University of California (Berkeley)

Nelson, Bruce Kert 1986; MS, 1980, University of Kansas; PhD, 1985, University of California (Los Angeles)

Parks, George Kung * 1971, (Emeritus); PhD, 1966, University of California (Berkeley)

Porter, Stephen Cummings 1962, (Emeritus); MS, 1958, Yale University; PhD, 1962, Yale University

Raymond, Charles Forest * 1969, (Emeritus); PhD, 1969, California Institute of Technology

Rensberger, John M. 1966, (Emeritus); MA, 1961, University of California (campus unspecified); PhD, 1967, University of California (campus unspecified)

Roe, Gerard Hugh 1999; PhD, 1999, Massachusetts Institute of Technology

Sack, Richard Olmsted 1993, (Affiliate); MA, 1975, Harvard University; PhD, 1979, Harvard University

Schreiber, B. Charlotte 2005, (Affiliate); MA, 1966, Rutgers University; PhD, 1974, Rensselaer Polytechnic Institute

Smith, Stewart W. * 1970, (Emeritus); MS, 1958, California Institute of Technology; PhD, 1961, California Institute of Technology

Steig, Eric J. 1989; MS, 1992, University of Washington; PhD, 1996, University of Washington

Stuiver, Minze * 1969, (Emeritus); PhD, 1958, University of Groningen (Netherlands)

Tudhope, Alexander William 2004, (Affiliate); PhD, 1983, Edinburgh University, Scotland

Vidale, John E. 2006; PhD, 1987, California Institute of Technology

Waddington, Edwin Donald 1984; MSc, 1973, University of Alberta, Canada; PhD, 1981, University of British Columbia (Canada)

Winglee, Robert Matthew 1991; PhD, 1984, University of Sydney (Australia)

Associate Professors

Aalto, Rolf Erhart 1992, (Affiliate); MS, 1995, University of Washington; PhD, 2002, University of Washington

Bachmann, Olivier 2001, (Affiliate); MSc, 1997, University of Geneva (Switzerland); PhD, 2000, University of Geneva (Switzerland)

Bust, Gary Steven 2012, (Affiliate); PhD, 1989, University of Texas (Austin)

Gorman-Lewis, Drew Johnston 2008; PhD, 2006, University of Notre Dame

Huntington, Katharine Watson 2008; PhD, 2006, Massachusetts Institute of Technology

Moran, Seth C. 1988, (Affiliate); MS, 1992, University of Washington; PhD, 1997, University of Washington

Nesbitt, Elizabeth A. * 1993; PhD, 1982, University of California (Berkeley)

Odom, Robert I. Jr. * 1990, (Research); MSE, 1973, University of Washington; PhD, 1980, University of Washington

Putkonen, Jaakko Kalervo 1994, (Affiliate); MS, 1990, University of Helsinki (Finland); PhD, 1997, University of Washington

Schmidt, David 2012; PhD, 2002, University of California (Berkeley)

Smith, Benjamin E. 2000, (Affiliate); MS, 1999, University of Wisconsin; PhD, 2005, University of Washington

Stone, John Owen Hardwick 1998; PhD, 1986, Cambridge University (UK)

Swanson, Brian Douglas 1982, (Emeritus); MS, 1985, University of Washington; PhD, 1992, University of Washington

Teng, Fang-Zhen 2012; PhD, 2005, University of Maryland

Thomas, Jeremy N. 2000, (Affiliate); MS, 2002, University of Washington; PhD, 2005, University of Washington

Vance, Joseph Alan * 1957, (Emeritus); PhD, 1957, University of Washington

Assistant Professors

Brand, Brittany D. 2008, (Affiliate); MS, 2004, Boise State University; PhD, 2008, Arizona State University

Brown, Thomas Alexander 1987, (Affiliate); MSc, 1985, Simon Fraser University, B.C. (Canada); PhD, 1994, University of Washington

Christianson, Knut Andrew 2014, (Affiliate); PhD, 2012, Pennsylvania State University

Cladouhos, Trenton Thomas 1995, (Affiliate); PhD, 1993, Cornell University

Crider, Juliet G. 1991; MS, 1993, University of Washington; PhD, 1998, Stanford University

Decosmo, Janice Mary 1984, (Affiliate); MS, 1984, University of Oregon; PhD, 1991, University of Washington

Duvall, Alison Renee 2012; MS, 2003, University of California (Santa Barbara); PhD, 2011, University of Michigan

Haugerud, Ralph Albert 2000, (Affiliate); MS, 1980, Western Washington University; PhD, 1985, University of Washington

Hawley, Robert L. 1993, (Affiliate); PhD, 2005, University of Washington

Matsuoka, Kenichi 2002, (Affiliate); MS, 1997, Hokkaido University (Japan); PhD, 2002, Hokkaido University (Japan)

Neumann, Thomas A. 1996, (Affiliate); PhD, 2003, University of Washington

Petrie, Gregg 2011, (Affiliate); MS, 1978, Western Washington University

Sherrod, Brian Louis 1995, (Affiliate); MS, 1989, University of Pittsburgh; PhD, 1998, University of Washington

Titov, Vasily V. 1997, (Affiliate); MS, 1984, Novosibirsk State University (Russia); PhD, 1997, University of Southern California

Ziemba, Timothy M. 1998, (Affiliate); MS, 1997, University of Washington; PhD, 2003, University of Washington

Senior Lecturers

Collins, Brian David 1998; MS, 1984, University of Washington; PhD, 2009, University of Washington

Troost, Kathy 1996; MS, 1999, University of Washington; PhD, 2012, University of Washington

Lecturers

Harrell, Michael Damian 1993; MS, 1994, University of Oregon; PhD, 2002, University of Washington

Swanson, Terry Woodrow 1988; MA, 1989, University of California (Davis); PhD, 1994, University of Washington

Walters, Steven 2006; MS, 1994, Purdue University; PhD, 2002, University of Maryland

Program on the Environment

Lecturers

Helmiere, Frederica R. 2010; MEnvSc, 2010, Yale University; MAR, 2010, Yale Divinity School

McDonald, Patrick Sean 1998; PhD, 2006, University of Washington

Environmental and Forest Sciences

Professors

Agee, James Kent * 1978, (Emeritus); MS, 1968, University of California (Berkeley); PhD, 1973, University of California (Berkeley)

Allan, George Graham 1966; PhD, 1956, University of Glasgow (UK); DSc, 1971, University of Strathclyde (UK)

Aubry, Keith Baker 1983, (Affiliate); MF, 1977, Yale University; PhD, 1983, University of Washington

Bare, Barry Bruce * 1969; MS, 1965, University of Minnesota; PhD, 1969, Purdue University

Bilby, Robert Eugene 1994, (Affiliate); PhD, 1979, Cornell University

Bolton, Susan Margot 1992; MS, 1979, University of North Dakota; MS, 1985, New Mexico State University; PhD, 1991, New Mexico State University

Bradley, Gordon Allan 1972; MLA, 1972, University of California (Berkeley); PhD, 1986, University of Michigan

Brubaker, Linda Beck 1973, (Emeritus); MS, 1967, University of Michigan; PhD, 1973, University of Michigan

Cole, Dale Warren * 1958, (Emeritus); MS, 1957, University of Wisconsin (Madison); PhD, 1963, University of Washington

DeLuca, Thomas Henry 2012; MS, 1987, Montana State University; PhD, 1993, Iowa State University

Eastin, Ivan Louis 1987; MSc, 1985, Michigan Technological University; MSc, 1989, University of Washington; PhD, 1992, University of Washington

Edmonds, Robert Leslie 1973, (Emeritus); MSF, 1968, University of Washington; PhD, 1971, University of Washington

Ewing, Kern B. 1990; MA, 1970, Texas Technological University; MS, 1978, University of Washington; PhD, 1982, University of Washington

Ford, Edward David * 1985, (Emeritus); PhD, 1968, University College, London (UK)

Franklin, Jerry Forest 1986; MS, 1961, Oregon State University; PhD, 1966, Washington State University

Fridley, James Lee 1988; MS, 1980, Michigan State University; PhD, 1984, University of Washington

Fritschen, Leo Joseph * 1966, (Emeritus); MS, 1958, Kansas State University; PhD, 1960, Iowa State University

Gara, Robert Imre 1968, (Emeritus); MS, 1962, Oregon State University; PhD, 1964, Oregon State University

Graumlich, Lisa 2010; MS, 1978, University of Wisconsin; PhD, 1985, University of Washington

Greulich, Francis Edward 1977; MS, 1967, University of California (Berkeley); PhD, 1976, University of California (Berkeley)

Gustafson, Richard Roy * 1986; PhD, 1982, University of Washington

Halpern, Charles Bernard * 1991, (Research); PhD, 1987, Oregon State University

Harrison, Robert Boyd 1987; MS, 1981, University of New Hampshire; PhD, 1985, Auburn University

Hessburg, Paul 2003, (Affiliate); PhD, 1984, Oregon State University

Hinckley, Thomas Metcalf * 1980, (Emeritus); PhD, 1971, University of Washington

Hodgson, Kevin Thomas * 1991, (Emeritus); MS, 1980, Carnegie Mellon University; PhD, 1986, University of Washington

Hogans, Mack L. 2011, (Affiliate); MS, 1976, University of Washington

Jenkins, Kurt 2013, (Affiliate); MS, 1980, Oregon State University; PhD, 1985, University of Idaho

Johnson, Jay Allan * 1980, (Emeritus); MS, 1970, State University of New York (Syracuse); PhD, 1973, University of Washington

Kaplan, Rachel 1997, (Affiliate); MA, 1960, University of Michigan, Ann Arbor; PhD, 1962, University of Michigan, Ann Arbor

Koontz, Fred Wilson 2014, (Affiliate); MS, 1980, University of Maryland; PhD, 1984, University of Maryland

Lee, Robert Godfrey 1978, (Emeritus); MFS, 1969, Yale University; PhD, 1973, University of California (Berkeley)

Lippke, Bruce Robert * 1990, (Emeritus); MSEE, 1959, New Mexico State University; MSIE, 1966, University of California (Berkeley)

Manuwal, David Allen 1972, (Emeritus); MS, 1968, University of Montana; PhD, 1972, University of California (Los Angeles)

Martin, Douglas J. 2010, (Affiliate); MS, 1976, University of Washington; PhD, 1985, University of Washington

Marzluff, John Mark 1997; MSc, 1983, Northern Arizona University; PhD, 1987, Northern Arizona University

Mc Kean, William Thomas * 1974, (Emeritus); PhD, 1970, University of Washington

Michaelis, Lynn Otto 1993, (Affiliate); MA, 1972, Washington State University; PhD, 1975, Washington State University

Perez-Garcia, John Manuel * 1990; MS, 1982, University of Puerto Rico; DF, 1990, Yale University

Pickford, Stewart Gerald * 1973, (Emeritus); MSF, 1966, University of Washington; PhD, 1972, University of Washington

Raedeke, Kenneth John * 1979, (Affiliate); PhD, 1979, University of Washington

Raphael, Martin George 1999, (Affiliate); MS, 1976, University of California (Berkeley); PhD, 1980, University of California (Berkeley)

Reichard, Sarah Elizabeth 1986; MS, 1989, University of Washington; PhD, 1994, University of Washington

Ryan, Clare Mary 1997; MS, 1990, University of Michigan, Ann Arbor; PhD, 1996, University of Michigan, Ann Arbor

Schiess, Peter 1975, (Emeritus); MS, 1968, Swiss Federal Institute of Technology; PhD, 1975, University of Washington

Schreuder, Gerard Fritz 1971, (Emeritus); MS, 1960, Wageningen University (The Netherlands); MS, 1967, University of North Carolina; PhD, 1968, Yale University

Sillett, Stephen Charles 2014, (Affiliate); MS, 1991, University of Florida; PhD, 1995, Oregon State University

Sprugel, Douglas George * 1984, (Emeritus); MPhil, 1974, Yale University; PhD, 1974, Yale University

Stettler, Reinhard Friederich * 1963, (Emeritus); Diploma, 1955, Swiss Federal Institute of Technology; PhD, 1963, University of California (Berkeley)

Taber, Richard Douglas * 1968, (Emeritus); MS, 1949, University of Wisconsin; PhD, 1951, University of California (Berkeley)

Thorud, David Bruce * 1981, (Emeritus); MS, 1960, University of Minnesota; PhD, 1964, University of Minnesota

Tukey, Harold B. * 1980, (Emeritus); MS, 1956, Michigan State University; PhD, 1958, Michigan State University

Underwood, Daniel August 2010, (Affiliate); PhD, 1986, University of Utah

Vogt, Kristiina Ann 1976; MS, 1974, New Mexico State University; PhD, 1976, New Mexico State University

Wagar, John Alan 1967, (Emeritus); MF, 1956, University of Michigan; PhD, 1961, University of Michigan

Waggener, Thomas Runyan * 1966, (Emeritus); MF, 1963, University of Washington; MA, 1965, University of Washington; PhD, 1966, University of Washington

West, Stephen Douglas 1979, (Emeritus); MS, 1974, University of Alaska; PhD, 1979, University of California (Berkeley)

Wott, John Arthur 1981, (Emeritus); MS, 1966, Cornell University; PhD, 1968, Cornell University

Wurster, Charles 2006, (Affiliate); MS, 1954, University of Delaware; PhD, 1957, Stanford University

Zabowski, Darlene 1992; MS, 1983, University of Washington; PhD, 1988, University of Washington

Associate Professors

Acker, Steven Anthony 2004, (Affiliate); PhD, 1988, University of Wisconsin

Antos, Joseph Avery 1992, (Affiliate); MA, 1977, University of Montana; PhD, 1984, Oregon State University

Bakker, Jonathan 2006; MSc, 1996, University of Regina (Saskatchewan); PhD, 2005, Northern Arizona University

Barbour, Roy James 1996, (Affiliate); MS, 1983, University of Washington; PhD, 1990, University of Washington

Blahna, Dale Jeffrey 2009, (Affiliate); MS, 1978, University of Wisconsin (Stevens Point); PhD, 1985, University of Michigan

Bura, Renata 2006; MSc, 2000, University of Toronto (Canada); PhD, 2004, University of British Columbia (Canada)

Chalker-Scott, Linda Kay 1997, (Affiliate); MS, 1981, Oregon State University; PhD, 1988, Oregon State University

Dabek, Lisa Fran 1986, (Affiliate); MS, 1991, University of Washington; PhD, 1994, University of Washington

Deal, Robert Leslie 2011, (Affiliate); MS, 1987, University of Washington; PhD, 1999, Oregon State University

Doty, Sharon L. 1989; PhD, 1995, University of Washington

Ettl, Gregory John 1988; MAT, 1989, University of Washington; PhD, 1995, University of Washington

Fuller, William Scott 1982, (Affiliate); MS, 1967, University of Washington

Johnson, Darryll R. 2001, (Affiliate); MA, 1970, South Dakota State University

Kim, Soo-Hyung 2006; MS, 1994, Seoul National University (Korea); PhD, 2001, University of California (Davis)

Larkin, Narasimhan Karl 2000, (Affiliate); PhD, 2000, University of Washington

Lauver, Chris L. 2009, (Affiliate); MS, 1983, Washington State University; PhD, 1986, Colorado State University

Lawler, Joshua John 2007; MS, 1997, Utah State University; PhD, 2000, Utah State University

Moskal, Ludmila M. 2006; MSc, 2000, University of Calgary (Canada); PhD, 2005, University of Kansas

Nadkarni, Nalini Moreshwar 1992, (Affiliate); PhD, 1983, University of Washington

Patel-Weynard, Toral 2008, (Affiliate); MS, 1992, Yale University; PhD, 2000, Yale University

Paun, Dorothy Ann * 1993; MBA, 1984, Catholic University of Leuven (Belgium); PhD, 1993, University of Oregon

Pearson, Scott F. 1992, (Affiliate); MS, 1988, University of Michigan; PhD, 1997, University of Washington

Rabotyagov, Sergey Sergeyevich 2007; MS, 2002, Iowa State University; PhD, 2007, Iowa State University

Rustagi, Krishna Prasad * 1973, (Emeritus); MSc, 1953, Agra University, India; MF, 1971, Yale University; PhD, 1973, Yale University

Toth, Sandor Ferenc 2007; MSc, 1994, University of Forestry and Wood Sciences; MS, 2002, Shinshu University (Japan); PhD, 2005, Pennsylvania State University

Turnblom, Eric Carl 1994; MSc, 1986, University of British Columbia (Canada); PhD, 1994, University of Minnesota

Vander Haegen, William Matthew 2005, (Affiliate); MS, 1987, University of Massachusetts; PhD, 1991, University of Maine

Vogt, Daniel John 2000; MS, 1976, New Mexico State University; PhD, 1987, University of Washington

Wirsing, Aaron John 1996; MS, 2001, University of Idaho; PhD, 2005, Simon Fraser University, B.C. (Canada)

Assistant Professors

Anderson, Hans-Erik 1995, (Affiliate); MS, 1997, University of Washington; PhD, 2003, University of Washington

Asah, Stanley 2009; MS, 2003, University of Minnesota; PhD, 2006, University of Minnesota

Bigley, Richard Ernest 1994, (Affiliate); MSc, 1981, University of British Columbia (Canada); PhD, 1988, University of British Columbia (Canada)

Butman, David E. 2014; MSc, 2006, Yale University; MPhil, 2009, Yale University; PhD, 2011, Yale University

Cervený, Lee Karol 2006, (Affiliate); MA, 1993, Northern Arizona University; PhD, 2004, Syracuse University

Fimbel, Robert Alan 2005, (Affiliate); MSc, 1981, Colorado State University; PhD, 1992, Rutgers University

Gaolach, Bradley Wayne 1989, (Affiliate); MS, 1995, North Carolina State University; PhD, 2001, University of Washington

Gayaldo, Perry Fleming 1996, (Affiliate); MS, 1996, University of Washington; PhD, 2002, University of Washington

Gersonde, Rolf Friedrich 2006, (Affiliate); MS, 1991, Georg-August Universität (Germany); PhD, 2003, University of California (Berkeley)

Girvetz, Evan Hartunian 2007, (Affiliate); PhD, 2007, University of California (Davis)

Gurarie, Eliezer 2002, (Affiliate); MS, 2000, University of Aix-Marseille, France; PhD, 2008, University of Washington

Haugo, Ryan D. 2003, (Affiliate); MS, 2006, University of Washington; PhD, 2010, University of Washington

Kearney, Anne Regina 1989, (Affiliate); MS, 1993, University of Michigan, Ann Arbor; PhD, 1996, University of Michigan, Ann Arbor

Long, Robert Armand 2014, (Affiliate); MS, 1995, University of Maine; PhD, 2006, University of Vermont

Lutz, James A. 2003, (Affiliate); MBA, 1985, Massachusetts Institute of Technology; MS, 1985, Massachusetts Institute of Technology; MS, 2005, University of Washington; PhD, 2008, University of Washington

McKenzie, Donald 1992, (Affiliate); MFA, 1979, University of California (Los Angeles); MS, 1994, University of Washington; PhD, 1998, University of Washington

McRae, Bradner Hearn 2011, (Affiliate); MS, 1995, University of Wisconsin (Madison); PhD, 2004, Northern Arizona University

Pacheco De Resende, Fernando 2011; MS, 2003, State University of Campinas (Piracicaba); MS, 2008, University of Michigan, Ann Arbor; PhD, 2009, University of Michigan, Ann Arbor

Petruncio, Markian Demetrius 1989, (Affiliate); MS, 1985, North Carolina State University; PhD, 1994, University of Washington

Restani, Marco 1998, (Affiliate); MS, 1989, Montana State University; PhD, 1997, Utah State University

Rocheffort, Regina M. 1991, (Affiliate); MFS, 1978, Yale University; PhD, 1995, University of Washington

Schumaker, Nathan H. 1987, (Affiliate); MS, 1989, University of Washington; PhD, 1995, University of Washington

Smith, Daniel Bruce 1997, (Affiliate); PhD, 1991, University of Idaho; MSc, 1995, University of Washington

Suntana, Asep 2005, (Affiliate); MA, 2004, Brandeis University; PhD, 2011, University of Washington

Tobin, Patrick C. 2014; MS, 1997, Pennsylvania State University; PhD, 2002, Pennsylvania State University

Torgersen, Christian Erik 2006, (Affiliate); MS, 1996, Oregon State University; PhD, 2002, Oregon State University

Van Pelt, Robert Scott 1988, (Affiliate); MS, 1991, University of Washington; PhD, 1995, University of Washington

Zobrist, Kevin Walter 2000, (Affiliate); MS, 2001, University of Washington

Lecturers

Stacey, Liam M. 1990; MS, 1993, University of Oregon; PhD, 2011, University of Washington

Marine and Environmental Affairs

Professors

Allison, Edward H. 2013; PhD, 1993, University of Liverpool (UK)

Aron, William Irwin 1953, (Affiliate); MS, 1957, University of Washington; PhD, 1960, University of Washington

Christie, Patrick John 1999; MS, 1993, University of Michigan, Ann Arbor; PhD, 1999, University of Michigan, Ann Arbor

Huppert, Daniel D. 1987, (Emeritus); MA, 1972, University of Washington; PhD, 1975, University of Washington

Klinger, Terrie L. 1993; MSc, 1984, University of British Columbia (Canada); PhD, 1988, University of California (San Diego)

Leschine, Thomas Michael 1983; MA, 1970, University of Pittsburgh; PhD, 1975, University of Pittsburgh

Miles, Edward Lancelot * 1974, (Emeritus); PhD, 1965, University of Denver

Miller, Marc L. * 1979; MA, 1972, University of California (San Diego); PhD, 1974, University of California (Irvine)

Pollnac, Richard 2013, (Affiliate); PhD, 1972, University of Missouri

White, Alan T. 2010, (Affiliate); MA, 1978, School for International Training; PhD, 1984, University of Hawaii

Associate Professors

Baker, Mary Campbell 2012, (Affiliate); PhD, 2000, University of Washington

Copping, Andrea Elizabeth * 1992, (Affiliate); MS, 1977, University of Washington; PhD, 1982, University of Washington

Dalton, Penelope 2005, (Affiliate); MS, 1987, University of Maryland

Dicks, David 2010, (Affiliate); JD, 1999, University of California (Berkeley)

Fluharty, David Lincoln * 1976; MS, 1972, University of Washington; PhD, 1977, University of Michigan

Pavia, Robert 2010, (Affiliate); MS, 1979, Oregon State University; PhD, 1989, University of Washington

Secord, David Lee 1989, (Affiliate); PhD, 1995, University of Washington

Assistant Professors

Bryant, Beth Christine 2002, (Affiliate); MA, 1994, University of Washington; JD, 1996, University of Washington

Hass, Todd Stephen 1998, (Affiliate); PhD, 1997, University of North Carolina, Chapel Hill

Haynie, Alan Campbell 2000, (Affiliate); PhD, 2005, University of Washington

Himes-Cornell, Amber 1998, (Affiliate); MEng, 2002, Duke University; PhD, 2005, University of Portsmouth, England

Jenkins, Lekelia D. 2009; PhD, 2006, Duke University
Kelly, Ryan Patrick 2012; MA, 2003, Columbia University; MPhil, 2005, Columbia University; PhD, 2006, Columbia University; JD, 2011, University of California (Berkeley)

Oceanography

Professors

Aagaard, Knut * 1966, (Emeritus); MS, 1964, University of Washington; PhD, 1966, University of Washington

Alford, Matthew Hudson 1998, (Affiliate); PhD, 1998, Scripps Oceanographic Institution

Anderson, George Cameron 1951, (Emeritus); MA, 1949, University of British Columbia (Canada); PhD, 1954, University of Washington

Armbrust, Elizabeth Virginia 1996; PhD, 1990, Massachusetts Institute of Technology

Baker, Edward Thomas 1973, (Affiliate); MS, 1969, University of Washington; PhD, 1973, University of Washington

Balistrieri, Laurie S. 1991, (Affiliate); MS, 1977, University of Washington

Banse, Karl * 1960, (Emeritus); Doct, 1955, University of Kiel (Germany)

Baross, John Allen * 1984; MA, 1966, San Francisco State; PhD, 1973, University of Washington

Cannon, Glenn Albert * 1969, (Affiliate); MA, 1965, Johns Hopkins University; PhD, 1969, Johns Hopkins University
Carpenter, Roy * 1968, (Emeritus); PhD, 1968, University of California (San Diego)

Creager, Joe Scott * 1958, (Emeritus); MS, 1953, Texas A&M University; PhD, 1958, Texas A&M University

Cronin, Meghan Frances 1998, (Affiliate); PhD, 1993, University of Rhode Island

Delaney, John Rutledge * 1977; MA, 1967, University of Virginia; PhD, 1977, University of Arizona

Deming, Jody Wheeler * 1988; PhD, 1981, University of Maryland

Devol, Allan H. * 1974; PhD, 1975, University of Washington

Emerson, Steven Ray * 1976, (Emeritus); MPhil, 1973, Columbia University; PhD, 1974, Columbia University

Eriksen, Charles C. * 1986; PhD, 1977, Massachusetts Institute of Technology

Ewart, Terry E. * 1956, (Emeritus); PhD, 1965, University of Washington

Feely, Richard Alan * 1974, (Affiliate); MS, 1971, Texas A&M University; PhD, 1974, Texas A&M University

Gregg, Michael C. * 1974, (Emeritus); PhD, 1971, Scripps Institute of Technology

Grunbaum, Daniel 1991; MSME, 1987, University of Washington; PhD, 1991, Cornell University

Harrison, Don Edmunds * 1985, (Affiliate); MS, 1973, Harvard University; PhD, 1977, Harvard University

Hickey, Barbara Mary * 1973; MS, 1969, University of California (San Diego); PhD, 1975, University of California (San Diego)

Holmes, Mark Lawrence 1976, (Emeritus); MS, 1967, University of Washington; PhD, 1975, University of Washington

Johnson, Gregory C. * 1990, (Affiliate); PhD, 1990, Massachusetts Institute of Technology

Johnson, Harlan Paul * 1972; MS, 1966, Southern Illinois University; PhD, 1972, University of Washington

Keil, Richard George * 1991; PhD, 1991, University of Delaware

Kelley, Deborah Sue * 1992; MSc, 1987, University of Washington; PhD, 1990, Dalhousie University (Canada)

Kelly, Kathryn Ann 1996, (Affiliate); PhD, 1983, University of California (San Diego)

Kessler, William Samuel * 1983, (Affiliate); PhD, 1989, University of Washington

Kunze, Eric Lee * 1987, (Affiliate); MS, 1982, University of Washington; PhD, 1985, University of Washington

Lessard, Evelyn Jean * 1989; MS, 1979, University of Rhode Island; PhD, 1984, University of Rhode Island

Lewin, Joyce Chismore 1965, (Emeritus); MS, 1950, Yale University; PhD, 1953, Yale University

Lewis, Brian T. R. * 1970, (Emeritus); PhD, 1970, University of Wisconsin (Madison)

Lien, Ren-Chieh 1991, (Affiliate); MS, 1980, National Taiwan University; MS, 1986, University of Hawaii; PhD, 1990, University of Hawaii

Lilley, Marvin Douglas * 1984; MS, 1970, University of Arkansas; PhD, 1983, Oregon State University

MacCready, Parker * 1986; MS, 1986, California Institute of Technology; PhD, 1991, University of Washington

Martin, Seelye * 1968, (Emeritus); PhD, 1967, Johns Hopkins University

Mc Duff, Russell Eugene * 1981, (Emeritus); PhD, 1978, University of California (San Diego)

Mc Manus, Dean Alvis * 1959, (Emeritus); PhD, 1959, University of Kansas

Mc Phaden, Michael J. * 1982, (Affiliate); PhD, 1980, Scripps Oceanographic Institution

Mobley, Curtis D. 1979, (Affiliate); PhD, 1977, University of Maryland

Mofjeld, Harold 1970, (Affiliate); MS, 1965, University of Washington; PhD, 1970, University of Washington

Moore, Dennis Wilson 1996, (Affiliate); MA, 1963, Harvard University; PhD, 1968, Harvard University

Morison, James Howe * 1972, (Affiliate); MS, 1972, University of California (Davis); PhD, 1980, University of Washington

Nittroer, Charles Albert * 1978; MS, 1974, University of Washington; PhD, 1978, University of Washington

Nowell, Arthur Ralph Mackinnon * 1978; MA, 1971, University of British Columbia (Canada); PhD, 1975, University of British Columbia (Canada)

Ogston, Andrea Susanna 1990; MS, 1993, University of Washington; PhD, 1997, University of Washington

Perry, Mary Jane * 1976, (Affiliate); PhD, 1974, University of California (San Diego)

Quay, Paul Douglas * 1977; MPhil, 1975, Columbia University; PhD, 1977, Columbia University

Rhines, Peter B. * 1984; MS, 1964, Massachusetts Institute of Technology; PhD, 1967, Cambridge University (UK)

Richey, Jeffrey Edward * 1973; MSPH, 1970, University of North Carolina; PhD, 1973, University of California (Davis)

Riser, Stephen Craig 1981; MS, 1974, Massachusetts Institute of Technology; PhD, 1980, University of Rhode Island

Sabine, Christopher Lee 1999, (Affiliate); PhD, 1992, University of Hawaii

Sachs, Julian P. 2006; PhD, 1997, Massachusetts Institute of Technology

Sternberg, Richard Walter * 1961, (Emeritus); MS, 1961, University of Washington; PhD, 1965, University of Washington

Thompson, Luanne 1990; MA, 1986, Harvard University; PhD, 1990, Woods Hole Oceanographic Institution

Thomsen, Laurenz Asmus 2002, (Affiliate); PhD, 1992, University of Kiel (Germany)

Wilcock, William Sam Douglas 1993; MSc, 1986, Imperial College; PhD, 1992, Massachusetts Institute of Technology

Associate Professors

Bullister, John Logan 1991, (Affiliate); MS, 1980, Texas A&M University; PhD, 1984, University of California (San Diego)

Butterfield, David A. 1984, (Affiliate); PhD, 1990, University of Washington

Crusius, John Frederick 2010, (Affiliate); MA, 1987, Columbia University; MPhil, 1991, Columbia University; PhD, 1992, Columbia University

Deutsch, Curtis A. 2003; PhD, 2003, Princeton University
Dushaw, Brian D. 1992, (Affiliate); MA, 1985, University of California (Davis); PhD, 1992, Scripps Oceanographic Institution

Duxbury, Alyn Crandall * 1954, (Emeritus); MS, 1956, University of Washington; PhD, 1963, Texas A&M University

Hautala, Susan L. 1994; PhD, 1992, University of Washington

Hermann, Albert Joseph 1982, (Affiliate); MS, 1980, University of Florida; PhD, 1988, University of Washington

Ingalls, Anita 2003; MS, 1998, State Univ of New York (Stony Brook); PhD, 2002, State Univ of New York (Stony Brook)

Kawase, Mitsuhiro 1988; MA, 1983, Princeton University; PhD, 1986, Princeton University

Keister, Julie E. 2008; MS, 1996, University of Maryland; PhD, 2008, Oregon State University

Mathis, Jeremy 2013, (Affiliate); PhD, 2007, University of Miami (Florida)

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Morris, Robert Michael 2007; PhD, 2004, Oregon State University

Resing, Joseph Anton 1999, (Affiliate); MS, 1992, University of Hawaii; PhD, 1997, University of Hawaii

Rocap, Gabrielle Louise 2001; PhD, 2000, Massachusetts Institute of Technology

Shuman, Frank Randolph 1999, (Affiliate); MS, 1974, University of Washington; PhD, 1978, University of Washington

Stafford, Kathleen 2004, (Affiliate); MS, 1995, Oregon State University; PhD, 1997, Oregon State University

Warner, Mark James * 1989; PhD, 1988, University of California (San Diego)

Assistant Professors

Alin, Simone Rebecca 2003, (Affiliate); PhD, 2001, University of Arizona

Banas, Neil S. 1998, (Affiliate); MA, 1998, University of Colorado (Boulder); MS, 2001, University of Washington; PhD, 2005, University of Washington

Gagnon, Alexander 2012; PhD, 2010, California Institute of Technology

Girton, James B. 1994, (Affiliate); PhD, 2001, University of Washington

Lauer, John Wesley 2009, (Affiliate); MEng, 1998, University of California (Berkeley); PhD, 2006, University of Minnesota

McNeil, Craig 2008, (Affiliate); PhD, 1995, University of Victoria (Canada)

Mecking, Sabine 1994, (Affiliate); MS, 1997, University of Washington; PhD, 2001, University of Washington

Newton, Jan A. 1981, (Affiliate); MS, 1984, University of Washington; PhD, 1989, University of Washington

Rainville, Luc 2007, (Affiliate); PhD, 2004, Scripps College

Rigor, Ignatius G. 1981, (Affiliate); MS, 2001, University of Washington; PhD, 2005, University of Washington

Roland Saenger, Emily Carlson 2014; PhD, 2011, Massachusetts Institute of Technology

Solomon, Evan Alan 2009; PhD, 2007, Scripps Oceanographic Institution

Sonnerup, Rolf E. 1991, (Affiliate); PhD, 1999, University of Washington

Lecturers

Nuwer, Mikelle 1997; MS, 2004, University of Washington; PhD, 2008, University of Washington

The Information School

Professors

Benne, Mae Maxine * 1965, (Emeritus); MS, 1955, University of Illinois

Bruce, Harry William 1998; MLibr, 1993, University of New S. Wales (Australia); PhD, 1996, University of New South Wales (Australia)

Czerwinski, Mary Patricia 1996, (Affiliate); MA, 1983, Ball State University; PhD, 1988, Indiana University

Dumais, Susan T. 2002, (Affiliate); PhD, 1979, Indiana University

Duranti, Luciana 2011, (Affiliate); MA, 1975, Archivio di Stato di Roma; PhD, 1975, Università di Roma

Eisenberg, Michael B. 1998; MLS, 1973, State University of New York (Albany); PhD, 1986, Syracuse University

Fidel, Raya * 1982, (Emeritus); MLS, 1976, Hebrew University (Israel); PhD, 1982, University of Maryland

Fisher, Karen Elizabeth 1999; MLIS, 1991, University of Western Ontario (Canada); PhD, 1997, University of Western Ontario (Canada)

Friedman, Batya * 1999; PhD, 1988, University of California (Berkeley)

Frincke, Deborah Ann 2008, (Affiliate); MS, 1989, University of California (Davis); PhD, 1992, University of California (Davis)

Grudin, Jonathan Thomas 1999, (Affiliate); MS, 1973, Purdue University; MA, 1979, University of California (San Diego); PhD, 1981, University of California (San Diego)

Hiatt, Peter * 1974, (Emeritus); MLS, 1957, Rutgers University; PhD, 1963, Rutgers University

Levy, David Myron 2000; MS, 1974, Stanford University; PhD, 1979, Stanford University

Mason, Robert M. 2005; MS, 1965, Massachusetts Institute of Technology; PhD, 1973, Georgia Institute of Technology

Nelson, Bryce Eugene 1983, (Affiliate); MAT, 1969, Northwestern University; PhD, 1981, University of Washington

Palmer, Carole L. 2014; MLS, 1986, Vanderbilt University; PhD, 1996, University of Illinois (Urbana)

Pratt, Wanda 2002; MS, 1991, University of Texas (Austin); PhD, 1999, Stanford University

Associate Professors

Carlyle, Allyson 1996; MLS, 1986, University of California (Los Angeles); PhD, 1994, University of California (Los Angeles)

Cutrell, Edward 2011, (Affiliate); MSc, 1994, University of Oregon; PhD, 1999, University of Oregon

Gomez, Ricardo 2007; MA, 1992, Université du Québec; PhD, 1997, Cornell University

Harrison, Beverly L. 2008, (Affiliate); MAS, 1991, University of Toronto (Canada); PhD, 1997, University of Toronto (Canada)

Hendry, David Gordon 2002; MSc, 1989, University of Guelph (Canada); PhD, 1996, The Robert Gordon University (Scotland)

Janes, Joseph William 1998; MLS, 1983, Syracuse University; PhD, 1989, Syracuse University

Johnson, Ronald 1986; MA, 1972, University of Chicago; MS, 1975, University of Southern California

Ko, Andrew Jensen 2008; PhD, 2008, Carnegie Mellon University

Metoyer, Cheryl Anne 2003; MA, 1969, Immaculate Heart College, Ca; PhD, 1976, Indiana University

Moore, Adam Daniel 2003; MA, 1993, Ohio State University; PhD, 1997, Ohio State University

Nahon, Karine 2004; MSc, 2000, Tel Aviv University (Israel); PhD, 2001, Tel Aviv University (Israel)

Scholl, Hans Jochen 2003; MBA, 1997, Grad Sch of Business Admin Zurich Switze; PhD, 2002, State University of New York (Albany)

Sutton, Stuart Allen * 1999, (Emeritus); MA, 1968, San Francisco State; JD, 1981, Golden Gate University; LLM, 1982, University of California (Berkeley); MLS, 1987, University of California (Berkeley); PhD, 1991, University of California (Berkeley)

Taylor, Hazel A. 2005; MSc, 1978, University of Otago (New Zealand); PhD, 2004, Queensland Univ of Technology (Australia)

Tennis, Joseph T. 2001; MLIS, 1999, Indiana University; PhD, 2005, University of Washington

Wobbrock, Jacob O. 2006; MS, 2000, Stanford University; PhD, 2006, Carnegie Mellon University

Assistant Professors

Alawadhi, Suha 2011, (Affiliate); MS, 2000, Kuwait University; PhD, 2007, Loughborough University

Blumenstock, Joshua 2013; MA, 2010, University of California (Berkeley); PhD, 2012, University of California (Berkeley)

Carter, Michelle Suzanne 2014; MS, 2003, Anglia Ruskin University (England); MS, 2008, Georgia State University; PhD, 2012, Clemson University

Consolvo, Sunny 2004, (Affiliate); PhD, 2008, University of Washington

Dahya, Negin 2014; MEd, 2008, York University (Canada); PhD, 2014, York University (Canada)

Davis, Katharine E. 2012; EdM, 2002, Harvard University; EdM, 2009, Harvard University; EdD, 2011, Harvard University

Finn, Megan 2014; MS, 2005, University of California (Berkeley); PhD, 2012, University of California (Berkeley)

Lee, Jin Ha 2009; MS, 2002, University of Illinois; PhD, 2008, University of Illinois

Nelson, Jerold Arthur * 1971, (Emeritus); MA, 1964, University of Minnesota; PhD, 1971, University of California (Berkeley)

Soper, Mary Ellen * 1972, (Emeritus); MS, 1963, University of Illinois; PhD, 1972, University of Illinois

Spiro, Emma 2013; MA, 2011, University of California (Irvine); PhD, 2013, University of California (Irvine)

Teevan, Jaime 2012, (Affiliate); SM, 2001, Massachusetts Institute of Technology; PhD, 2007, Massachusetts Institute of Technology

West, Jevin Darwin 2005; MS, 2004, Utah State University; PhD, 2010, University of Washington

Senior Lecturers

Barker, Scott Flint 1999; MS, 1987, Syracuse University

Boiko, Robert B. 2000; MS, 1985, University of Utah

Bruce, Lorraine 1999; BS, 1977, Riverina College of Advanced Education, Australia

Hill, Trent Gregory 2000; MA, 1988, Duke University; PhD, 1994, Duke University; MLIS, 2002, University of Washington

Luke, Jessica Judith 2012; MMSt, 1998, University of Toronto (Canada); PhD, 2009, University of Maryland

Saxton, Matthew 2000; MLS, 1994, University of California (Los Angeles); PhD, 2000, University of California (Los Angeles)

Stearns, David 2013; PhD, 2008, University of Edinburgh (UK)

Williams, Helene Cherald 1995; MA, 1987, Purdue University; MLS, 1989, Indiana University

Lecturers

Bonow, Peter 2011; MBA, 1984, University of Washington

Campbell, Clinton Jay 2013; MS, 2003, University of Tulsa; MA, 2011, Seattle School of Theology and Psychology

Chaffin, Kristin 2014; MS, 1996, University of North Carolina, Chapel Hill

Coker, Frank E. 2003; MS, 1975, Frostburg State University, Maryland

Del Vecchio, Stephen V. 2001; MS, 1987, Columbia University; MS, 2001, Polytechnic Institute of Brooklyn

Dickey, Timothy 2013; MMUS, 1997, University of Connecticut; MCom, 1997, Gordon-Conwell Theological Seminary; PhD, 2003, Duke University; MLIS, 2007, Kent State University

Doane, Michael 2008; MA, 1985, San Francisco State; MLIS, 2005, University of Washington

Dushkes, Laura 2001; MA, 1987, University of Washington; MLIS, 2002, University of Washington

Farricker, James 1987; MBA, 1989, City University (Bellevue)

Fusco, Lisa Marie 2000; MLS, 1997, Kent State University Goldsmith, Annette 2009; MLS, 1983, University of Toronto (Canada); PhD, 2009, Florida State University

Hay, Gregory Thomas 2008; MSIM, 2007, University of Washington

Jha, Lakhan 2012; MSc, 1986, Utkal University (India); PhD, 2001, Delhi University, India; MS, 2005, University of Washington

Larson, Robert E. 1985; MBA, 1984, University of Washington

Mills, Jared 2013; MLIS, 2008, Drexel University

Morrill-McClure, Karen 2014; ME, 1989, Harvey Mudd College

Morris, Jacob Aaron 2003; MS, 2014, University of Washington

Mueller, Harold E 2009; BA, 1985, University of Rochester

Nicklas, Robert B. 2003; MA, 1977, University of Pittsburgh

Ostergren, Marilyn 1990; MLIS, 1992, University of Washington; PhD, 2013, University of Washington

Phuwanartnurak, Jiranida 2003; MS, 2002, University of Michigan, Ann Arbor; MS, 2011, University of Washington; PhD, 2013, University of Washington

Sarat Chandra, Mala 2010; MBA, 1977, University of Pittsburgh

Schildkraut, Laura Beth 1996; MBA, 1988, New York University

Senan, David 2014; BA, 1993, University of New Hampshire

Stone, Misha 2001; MLIS, 2002, University of Washington

Subramaniam, Ilanko 2011; MSc, 1991, Brunel University

Wang, Wu-Ping Simon 2012; MS, 1987, Texas A&M University

Intercollege and Interschool Programs

Bioengineering

Professors

Auth, David Christopher * 1969, (Affiliate); MS, 1966, Georgetown University; PhD, 1969, Georgetown University
Bassingthwaighte, James Bucklin 1975; MD, 1955, University of Toronto (Canada); PhD, 1964, Mayo Medical School/Graduate School

Black, Roy 2012, (Affiliate); JD, 1974, Harvard University; PhD, 1982, University of Wisconsin (Madison)

Blyakhman, Felix A. 1996, (Affiliate); MS, 1979, Ural State University (Russia); PhD, 1986, Medical Academy, Krasnodar, Russia; DSc, 1996, Institute of Transplantation & Artificial Organs, Russia

Brent, Roger 2010, (Affiliate); PhD, 1982, Harvard University

Bryers, James D. 2004; MSc, 1976, University of Idaho; PhD, 1980, Rice University

Burke, Paul 2012, (Affiliate); PhD, 1992, Massachusetts Institute of Technology

Daggett, Valerie Dawn 1993; PhD, 1990, University of California (San Francisco)

Danley, David Lawrence 2009, (Affiliate); PhD, 1973, Purdue University

Franza, Robert B. 1995, (Affiliate); MD, 1979, Georgetown University

Giachelli, Cecilia Maria 1982; PhD, 1987, University of Washington

Horbett, Thomas A. * 1970, (Emeritus); PhD, 1970, University of Washington

Hsieh, Ching-Ho 1999, (Affiliate); MD, 1992, Kaohsiung Medical College, Taiwan; PhD, 2003, University of Washington

Lai, Henry Chiu-Yuen 1978, (Emeritus); PhD, 1977, University of Washington

Maki, Gary Keith 2003, (Affiliate); MSEE, 1968, University of Missouri; PhD, 1969, University of Missouri

Martin, Roy Wallace 1971, (Emeritus); MS, 1970, University of Southern California; PhD, 1975, University of Washington

Martyn, Donald Allyn * 1978, (Emeritus); PhD, 1975, University of Southern California

McCulloch, Andrew Douglas 2000, (Affiliate); COP, 1983, University of Auckland (New Zealand); PhD, 1986, University of Auckland (New Zealand)

Nakamae, Katsuhiko 1995, (Affiliate); MS, 1962, Kyoto University (Japan); DrEng, 1967, Kyoto University (Japan)

O'Donnell, Matthew 2006; PhD, 1976, University of Notre Dame

Pollack, Gerald H. 1968; PhD, 1968, University of Pennsylvania

Powers, Jeffry Earl 2012, (Affiliate); MS, 1974, University of California (San Diego); PhD, 1980, University of Washington

Pun, Suzie Hwang 2003; MS, 1998, California Institute of Technology; PhD, 2000, California Institute of Technology

Quinton, Wayne E. 2003, (Affiliate); BSME, 1959, University of Washington

Ratner, Buddy Dennis 1972; PhD, 1972, Polytechnic Institute of Brooklyn

Regnier, Michael 1995; MS, 1983, Portland State University; PhD, 1991, University of Southern California

Reid, John Mitchell 1966, (Affiliate); MS, 1957, University of Minnesota; PhD, 1965, University of Pennsylvania

Sanders, Joan Elizabeth * 1985; MSME, 1985, Northwestern University; PhD, 1991, University of Washington

Senter, Peter Dana 2000, (Affiliate); MS, 1976, North Carolina State University; PhD, 1980, University of Illinois (Urbana)

Spelman, Francis Arthur * 1961, (Emeritus); MSEE, 1968, University of Washington; PhD, 1975, University of Washington

Stayton, Patrick Sean 1992; MS, 1989, University of Illinois; PhD, 1989, University of Illinois

Suydam, Ian 2010, (Affiliate); PhD, 2006, Stanford University

van der Vusse, Ger 1985, (Affiliate); MS, 1971, University of Amsterdam (Netherlands); PhD, 1975, Erasmus University (Netherlands)

Wang, Ruikang 2010; MSc, 1990, Tianjin University (China); PhD, 1995, University of Glasgow (UK)

Yager, Paul 1987; PhD, 1980, University of Oregon

Associate Professors

Folch, Albert F. 2000; PhD, 1994, University of Barcelona (Spain)

Gao, Xiaohu 2005; PhD, 2004, Indiana University

Hill, John J. 2012, (Affiliate); PhD, 1994, University of Illinois

Medina, John James 1988, (Affiliate); PhD, 1988, University of Washington

Price, Nathan 1999, (Affiliate); PhD, 2005, University of California (San Diego)

Ratner, Daniel Martin 1995; PhD, 2004, Massachusetts Institute of Technology

Sauro, Herbert 2007; MSc, 1982, University of York (UK); PhD, 1986, Oxford University (UK)

Thomas, Wendy E. 1991; MS, 2003, University of Washington; PhD, 2003, University of Washington

Vicini, Paolo 1996, (Affiliate); PhD, 1996, Polytechnic of Milan (Italy)

Weigl, Bernhard Hans 1995, (Affiliate); MSc, 1991, University of Graz (Austria); PhD, 1993, University of Graz (Austria)

Assistant Professors

Anderson, Joseph Clark 1995, (Affiliate); MS, 1998, University of Washington; PhD, 2001, University of Washington

Baker, Daniel Reed 1995, (Affiliate); MSE, 1986, University of Michigan; PhD, 1993, University of Utah

Baldwin, David N. 1994, (Affiliate); PhD, 1999, University of Washington

Basiji, David Abraham 1990, (Affiliate); MS, 1992, University of Washington; PhD, 1997, University of Washington

Beard, Daniel A. 2001, (Affiliate); MS, 1997, University of Washington; PhD, 1997, University of Washington

Bedi, Ram L. 2008, (Affiliate); PhD, 1989, University of Wales (U.K.); MBA, 2002, University of Washington

Benson, Sheila Marie 2009, (Affiliate); PhD, 1989, Northwestern University

Corey, Michael James 1993, (Affiliate); MA, 1978, Antioch University; PhD, 1997, University of California (Berkeley)

Figuerola, Xavier A. 1997, (Affiliate); PhD, 2003, University of Washington

Gombotz, Wayne Richard 1990, (Affiliate); MS, 1985, University of Washington; PhD, 1988, University of Washington

Johnson, Paul Hicock 2011, (Affiliate); PhD, 1970, SUNY Roswell Park Cancer Institute

Kim, Deok-Ho 2011; MS, 2000, Seoul National University (Korea); PhD, 2010, Johns Hopkins University

Laursen, Erik 2011, (Affiliate); MS, 1973, Technical Univ of Denmark (Denmark)

Leach, Kathleen Jo 1997, (Affiliate); PhD, 1996, Brown University

Lutz, Barry R. 1998; PhD, 2003, University of Washington

Managuli, Ravi A. 1996, (Affiliate); MS, 1996, University of Nevada (Las Vegas); PhD, 2000, University of Washington

Moehring, Mark Alan 2001, (Affiliate); MSEE, 1989, University of Washington; PhD, 1994, University of Washington

Nehilla, Barrett J. 2010, (Affiliate); PhD, 2008, Boston University

Overbeck, John Robert 1989, (Affiliate); MSE, 1974, University of Michigan; MSE, 1991, University of Washington; MD, 1995, University of Washington

Pathak, Sayan Dev 1994, (Affiliate); MS, 1997, University of Washington; PhD, 2000, University of Washington

Wong, Roberta 2010, (Affiliate); PharmD, 1983, University of California (San Francisco)

Woodrow, Kim 2009; MS, 2001, Stanford University; PhD, 2006, Stanford University

Zheng, Ying 2011; PhD, 2008, University of Michigan

Senior Lecturer

Neils, Christopher M. 2001; MS, 1998, University of Texas (Austin); PhD, 2000, University of Texas (Austin)

Lecturers

Hendricks, Dianne Grayce 2013; PhD, 2010, Duke University

Taylor, Alyssa 2010; BS, 2003, University of California (Davis)

To, Richard Y. 1983; PhD, 1982, Oregon State University

Global Health

Professors

Ahmed, Tahmeed 2014, (Affiliate); MBBS, 1983, University of Dhaka (Bangladesh); PhD, 1996, University of Tsukuba (Japan)

Alarcon, Jorge 1994, (Affiliate); MD, 1974, Univ.Nacional Mayor De San Marcos (Peru); MPH, 1998, University of Washington

Baeten, Jared 1995; PhD, 2001, University of Washington; MD, 2003, University of Washington

Baeza, Cristian C. 2014; MD, 1985, University of Chile; MS, 1987, Universidad Alberto Hurtado; MS, 1989, University of Chile; MPH, 1994, Johns Hopkins University

Bertozi, Stefano 2009, (Affiliate); MD, 1991, University of California (San Diego); PhD, 1991, Massachusetts Institute of Technology

Brauer, Michael 2014, (Affiliate); ScD, 1990, Harvard University

Burnett, Richard T 2014, (Affiliate); MSc, 1978, Queens University; PhD, 1982, Queens University

Carter, William Gene * 1976, (Affiliate); PhD, 1974, University of California (Davis)

Celum, Connie Locke 1987; MD, 1984, University of California (San Francisco); PhD, 1989, University of Washington

Chilundo, Baltazar G 2014, (Affiliate); MD, 1999, Universidade Eduardo Mondlane (Mozambique); PhD, 2004, University of Oslo (Norway)

Cliff, Julie 2009, (Affiliate); MB, 1967, University of Melbourne (Australia); Diploma, 1970, London Sch of Hygiene & Trop Med (UK); MSc, 1980, London Sch of Hygiene & Trop Med (UK)

Cohen, Aaron Joseph 2014, (Affiliate); MPH, 1985, Boston University; DSc, 1991, Boston University

Degenhardt, Louisa J 2013, (Affiliate); PhD, 2001, University of New South Wales (Australia)

Ebi, Kristie Lee 2014; MS, 1976, Massachusetts Institute of Technology; MPH, 1983, University of Michigan, Ann Arbor; PhD, 1985, University of Michigan, Ann Arbor

Ezzati, Majid 2008, (Affiliate); MEng, 1995, McGill University (Canada); PhD, 2000, Princeton University

Feigin, Valery Lvovitch 2014, (Affiliate); MD, 1977, Novosibirsk State University (Russia); MSc, 1984, Novosibirsk State University (Russia); PhD, 1992, Russian Academy of Medical Sciences, Moscow; MSc, 1997, Erasmus University (Netherlands)

Gakidou, Emmanuela 2007; MSc, 1997, Harvard University; PhD, 2001, Harvard University

Garcia, Patricia J. 1994, (Affiliate); MD, 1988, Universidad Peruana Cayetano Heredia; MPH, 1998, University of Washington

Gardner, Malcolm J. 2008, (Affiliate); PhD, 1985, University of Tennessee

Garnett, Geoffrey P. 2014, (Affiliate); MPAS, 1987, York University (UK); Mtech, 1990, University of Sheffield (UK)

Gloyd, Stephen Stewart 1973; MD, 1973, University of Chicago; MPH, 1983, Harvard University

Hakomori, Sen-Itiroh 1967, (Emeritus); MD, 1951, Tohoku Imperial University (Japan); DrMedS, 1956, Tohoku Imperial University (Japan)

Holmes, King Kennard 1967; MD, 1963, Cornell University; PhD, 1967, University of Hawaii

Jamison, Dean Tecumseh 2008, (Emeritus); MS, 1967, Stanford University; PhD, 1970, Harvard University

John Stewart, Grace Chiramukuthu 1992; MD, 1987, University of Michigan; MPH, 1995, University of Washington; PhD, 2000, University of Washington

Kappe, Stefan H. I. 2004, (Affiliate); MS, 1991, University of Bonn (Germany); PhD, 1998, University of Notre Dame

Kenny, George E. * 1961, (Emeritus); MS, 1957, University of North Dakota; PhD, 1961, University of Minnesota

Kimerling, Michael E. 2008, (Affiliate); MD, 1986, University of Alabama, Birmingham; MPH, 1995, University of Alabama, Birmingham

Lafta, Riyadh Khudhair 2011, (Affiliate); MBChB, 1984, Baghdad Medical College

Laxminarayan, Ramanan 1994, (Affiliate); MPH, 1999, University of Washington; PhD, 1999, University of Washington

Lingappa, Jaisri Rao * 1999; PhD, 1985, Harvard University; MD, 1987, University of Massachusetts

Lopez, Alan Donald 2008, (Affiliate); MS, 1974, Purdue University; PhD, 1978, Australian National University

Lozano, Rafael 2008; MD, 1979, Universidad Autonoma de Yucatan, Mexico

Mandaliya, Kishorchandra N 2014, (Affiliate); MBChB, 1976, University of Nairobi (Kenya)

Martin, Robert 2009; MS, 1976, Michigan Technological University; MPH, 1977, University of North Carolina, Chapel Hill; DrPH, 1979, University of North Carolina, Chapel Hill

Mokdad, Ali 2008; PhD, 1997, Emory University

Murray, Christopher J.L. 2007; DPhil, 1987, Oxford University (UK); MD, 1991, Harvard University

Myler, Peter John 1993, (Affiliate); PhD, 1982, University of Queensland (Australia)

Noble, Michael Alan 2011, (Affiliate); MD, 1972, University of Western Ontario (Canada)

Orenstein, Walter A. 2010, (Affiliate); MD, 1972, Albert Einstein College of Medicine

Parish, Tanya 2007, (Affiliate); PhD, 1993, National Inst For Medical Research (UK)

Parsons, Marilyn * 1981, (Affiliate); PhD, 1979, Stanford University

Pfeiffer, James Timothy 2004; MA, 1989, University of California (Los Angeles); MPH, 1997, University of California (Los Angeles); PhD, 1997, University of California (Los Angeles)

Reed, Steven Gregory * 1993, (Affiliate); PhD, 1979, University of Montana

Reyes, Edward Michael 2009, (Affiliate); MD, 1986, University of California (Irvine)

Sepulveda, Jaime Amor 2009, (Affiliate); MD, 1978, Autonomous University, Mexico; MPH, 1980, Harvard University; MS, 1981, Harvard University; DPH, 1985, Harvard University

Sherman, David Russell * 1998, (Affiliate); PhD, 1987, Vanderbilt University

Small, Peter Michael 2003, (Affiliate); MD, 1985, University of Florida

Stamatatos, Leonidas 2001, (Affiliate); MSc, 1983, University of Paris (France); PhD, 1988, McGill University (Canada)

Steketee, Richard Walter 2012, (Affiliate); MD, 1976, University of Cincinnati; MPH, 1983, Harvard University

Stuart, Kenneth Daniel * 1985, (Affiliate); MA, 1965, Wesleyan University; PhD, 1969, University of Iowa

Vos, Eric Theo 2013; MD, 1978, University of Groningen (Netherlands); MSc, 1994, London Sch of Hygiene & Trop Med (UK); PhD, 2006, Erasmus University (Netherlands)

Wasserheit, Judith Nina 2001; MD, 1978, Harvard University; MPH, 1989, Johns Hopkins University

Whiteford, Harvey A 2013, (Affiliate); MBBS, 1977, University of Queensland (Australia); MPH, 1993, University of Queensland (Australia); PhD, 1999, University of Queensland (Australia)

Zhou, Maigeng 2014, (Affiliate); MSc, 2001, Chinese Center for Disease Control & Prevention (China); PhD, 2009, Chinese Center for Disease Control & Prevention (China)

Associate Professors

Abera, Sisay Yifru 2011, (Affiliate); MD, 1994, Gondar College of Medicine and Health Sciences (Ethiopia)

Bates, Nicole Kia-Patrice 2014, (Affiliate); MPH, 2000, University of North Carolina, Chapel Hill; DrPH, 2008, University of North Carolina, Chapel Hill

Becker, Stephen Lawrence 2009, (Affiliate); MD, 1976, State University of New York (Buffalo)

Beckmann, Anna Marie 1983, (Affiliate); PhD, 1982, Johns Hopkins University

Blas, Magaly M. 2003, (Affiliate); MD, 2002, Univ.Peruana Cayetano Heredia (Peru); MPH, 2007, University of Washington; PhD, 2008, University of Washington

Brewer, Thomas George 2011, (Affiliate); MD, 1974, University of Mississippi

Chung, Michael Hoonbae 2001; MPH, 1998, Harvard University; MD, 1998, University of Chicago

Coler, Rhea Nadine 1994, (Affiliate); MSc, 1990, London Sch of Hygiene & Trop Med (UK); PhD, 1998, University of Washington

Cowgill, Karen D. 2008, (Affiliate); MPH, 1995, Columbia University; PhD, 2002, Johns Hopkins University; MSc, 2005, University of London, UK

Donnell, Deborah Jane 1994, (Affiliate); MA, 1982, University of Auckland (New Zealand); PhD, 1987, University of Washington

Downer, Ann Ellen 1989; MS, 1984, University of Washington

Frahm, Nicole 2008; Diploma, 1996, Technical University of Braunschweig; PhD, 2003, University of Hamburg (Germany)

Gertler, Robert Andrew 1980, (Affiliate); PhD, 1976, Case Western Reserve University; MD, 1978, Case Western Reserve University

Gimbel-Sherr, Kenneth 1999; MPH, 2000, University of Washington; PhD, 2009, University of Washington

Hagopian, Amy 1988; MHA, 1983, University of Washington; PhD, 2003, University of Washington

Hallett, Timothy Bartlett 2010, (Affiliate); MSc, 2004, University of London: Imperial College; PhD, 2007, University of London: Imperial College

Hansen, John David 2004, (Affiliate); PhD, 1996, Oregon State University

Hernandez Prado, Bernardo 2011; MSc, 1991, University of London, UK; DSc, 1998, Harvard University

Jacobson, Julie Ann 2014, (Affiliate); MD, 1994, University of South Florida

Kasprzyk, Danuta Maria 1984, (Affiliate); MA, 1981, University of Illinois; PhD, 1983, University of Washington

Kebede, Assefa Getachew 2011, (Affiliate); MD, 1996, Addis Ababa University (Ethiopia)

Kiarie, James Njogu 1997, (Affiliate); MBChB, 1989, University of Nairobi (Kenya); MMed, 1992, University of Nairobi (Kenya); MPH, 2001, University of Washington

Koju, Rajendra Prasad 2014, (Affiliate); MBBS, 1994, Tribhuvan University (Nepal); MD, 2003, Bangabandhu Sheikh Mujib Medical University

Kurath, Gael * 1994, (Affiliate); MS, 1980, Oregon State University; PhD, 1984, Oregon State University

Lim, Stephen 2007; PhD, 2005, Monash University (Australia)

Lingappa, Jairam Rao 1991; PhD, 1987, Harvard University; MD, 1991, University of California (San Francisco)

Mersha, Mengesha Admassu 2011, (Affiliate); MD, 1990, Leningrad Medical Institute (Russia); MPH, 2002, Addis Ababa University (Ethiopia)

Montano, Daniel Edward * 1979, (Affiliate); MA, 1979, University of Illinois; PhD, 1983, University of Washington

Montgomery, Joel Mark 2013, (Affiliate); MSc, 1996, University of Texas (Arlington); PhD, 2000, University of Texas (Arlington)

Naghavi, Mohsen 2007; MD, 1979, Tehran University (Iran); PhD, 1996, Tehran University (Iran)

Nickle, David C 1997, (Affiliate); MS, 1994, University of Nevada (Las Vegas); PhD, 2007, University of Washington

Rao, Deepa 2009; MA, 1996, University of Chicago; PhD, 2004, Illinois Institute of Technology

Sanchez, Jorge L. 1990, (Affiliate); MD, 1984, Univ.Peruana Cayetano Heredia (Peru); MPH, 1992, University of Washington

Smith, Joseph Douglas 2003, (Affiliate); PhD, 1994, Washington University

Sodora, Donald L. 2008, (Affiliate); PhD, 1990, University of Pennsylvania

Van Damme, Lut 2013, (Affiliate); MD, 1988, University of Ghent (Belgium); MSc, 1995, London Sch of Hygiene & Trop Med (UK); PhD, 2004, University of Ghent (Belgium)

Walker, Damian Grahame 2011, (Affiliate); MSc, 1997, University of York (UK); PhD, 2006, University of London, UK

Walker, Dilsy M. 2010, (Affiliate); MD, 1987, University of California (San Diego)

Walson, Judd L. 2004; MPH, 2000, Tufts University; MD, 2000, Tufts University

Wang, Ruobing 2008, (Affiliate); MD, 1982, Wuhan University (China); MS, 1984, The Third Military Medical University; PhD, 1990, The Third Military Medical University

Assistant Professors

Babigumira, Joseph Brian 2006; MBChB, 2000, Mbarara University (Uganda); MS, 2004, Case Western Reserve University; PhD, 2011, University of Washington

Barnabas, Ruanne Vanessa 2009; MBChB, 1997, University of Capetown (South Africa); MSc, 2000, University of Oxford (UK); PhD, 2005, University of Oxford (UK)

Dharmaratne, Samath D. 2009, (Affiliate); MBBS, 1990, University of Colombo, Sri Lanka; MSc, 1997, University of Colombo, Sri Lanka; MD, 2002, University of Colombo, Sri Lanka

Flaxman, Abraham David 2007; PhD, 2006, Carnegie Mellon University

Forouzanfar, Mohammad Hossein 2009; MD, 1998, Tehran University (Iran); PhD, 2006, Tehran University (Iran)

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Ghee, Annette Elizabeth 1992, (Affiliate); MPH, 1990, University of California (Los Angeles); PhD, 2006, University of Washington

Grove, John Thomas 2013, (Affiliate); MA, 2001, University of San Francisco; PhD, 2012, Royal Melbourne Institute of Technology

Grundner, Christoph 2010, (Affiliate); MS, 1999, Humboldt University (Germany); PhD, 2003, University of Heidelberg (Germany)

Hanlon, Michael 2007; MA, 2008, University of Washington; PhD, 2010, University of Washington

Heffron, Renee 2008; MPH, 2004, Tulane University; PhD, 2012, University of Washington

Higashi, Hideki 2013; Diploma, 2001, University of New South Wales(Australia); MPH, 2003, University of New South Wales(Australia); MSc, 2008, Chulalongkorn University (Thailand); PhD, 2011, University of Queensland (Australia)

Kohler, Pamela Kay 2004; MPH, 2006, University of Washington; PhD, 2012, University of Washington

Lama, Javier Ricardo 2002, (Affiliate); MD, 1994, Universidad Peruana Cayetano Heredia (Lima, Peru); MPH, 2004, University of Washington

Lambdin, Barrot Hopkins 2006, (Affiliate); MPH, 2005, Emory University; PhD, 2010, University of Washington

Lamontagne, Scott 1991, (Affiliate); MPH, 1995, Yale University; PhD, 2005, Middlesex University

Lehman, Dara Ann 1998, (Affiliate); MHS, 2003, Johns Hopkins University; PhD, 2008, University of Washington

Masiye, Felix 2012, (Affiliate); MSc, 1998, University of Capetown (South Africa); PhD, 2005, University of Capetown (South Africa)

McGrath, Christine J. 2005, (Affiliate); MPH, 2001, University of North Texas; PhD, 2011, University of Washington

Medlin, Carol A. 2012, (Affiliate); MPA, 1990, Princeton University; PhD, 1998, University of California (Berkeley)

Meller, Gretchen Margaret 2014, (Affiliate); PhD, 1998, University of Virginia

Mogford, Elizabeth A. 1997, (Affiliate); MA, 2002, University of Washington; MPH, 2002, University of Washington; PhD, 2007, University of Washington

Nair, M. Nathan 2002, (Affiliate); MPH, 2002, Columbia University; MD, 2002, Columbia University

Ng, Tan-Hung Marie 2002; MS, 2006, University of Southern California; PhD, 2008, University of Southern California

Ngure, Kenneth Kairu 2010, (Affiliate); MPH, 2004, University of Nairobi (Kenya); MS, 2008, Us International University; PhD, 2011, Jomo Kenyatta University of Agriculture & Technology (Kenya)

O'Malley, Gabrielle Elizabeth 1992; MA, 1989, Johns Hopkins University; PhD, 2000, University of Washington

Pecenka, Clinton Joseph 2014, (Affiliate); MPAS, 2005, University of Minnesota; ME, 2011, University of Minnesota

Peinado, Jesus 2001, (Affiliate); MD, 2000, Universidad Peruana Cayetano Heredia; MS, 2001, Universidad Peruana Cayetano Heredia; MS, 2004, University of Washington

Sgaier, Sema K 2013, (Affiliate); MA, 1999, Brown University; PhD, 2005, New York University

Sherris, Jacqueline Robinovitch 1989, (Affiliate); MS, 1979, Purdue University; PhD, 1980, Purdue University

Slyker, Jennifer Ann 2000; MSc, 1998, Oxford University (UK); PhD, 2007, Open University (UK)

Verguet, Stephane 2009; MS, 2003, Ecole Polytechnique (France); MS, 2005, University of California (Berkeley); MPP, 2008, University of California (Berkeley); PhD, 2008, University of California (Berkeley)

Wang, Haidong 2008; MA, 2003, Peking University (China); MA, 2004, University of Pennsylvania; PhD, 2008, University of Pennsylvania

Senior Lecturers

Gonzales, Virginia 1993; MSW, 1971, University of California (Berkeley); MPH, 1974, University of California (Berkeley); EdD, 1988, Harvard University

Mercer, Mary Anne * 1996; MPH, 1981, Johns Hopkins University; DrPH, 1987, Johns Hopkins University

School of Law

Professors

Allen, Craig Howard 1994; JD, 1989, University of Washington

Andersen, William Robert * 1964, (Emeritus); LLM, 1958, Yale University

Anderson, Helen Allison 1994; JD, 1984, University of Washington

Anderson, Robert Thomas 2000; JD, 1983, University of Minnesota

Andrews, Thomas Roderick * 1985; MA, 1973, Northwestern University; JD, 1979, University of Pennsylvania

Bodansky, Daniel Michael 1989, (Affiliate); MPhil, 1981, Cambridge University (UK); JD, 1984, Yale University

Boxx, Karen E. 1996; JD, 1983, University of Washington

Calandrillo, Steve P. 2000; JD, 1998, Harvard University

Cammack, Mark E. 2006, (Affiliate); JD, 1983, University of Wisconsin (Madison)

Clarke, Donald Clary 1988, (Affiliate); MSc, 1983, University of London:King's College (UK); JD, 1987, Harvard University

Eddy, Jonathan Andrew 1979; JD, 1969, University of Washington

Fan, Mary 2010; JD, 2003, Yale University; MPhil, 2008, University of Cambridge (UK)

Foote, Daniel Harrington 1988; JD, 1981, Harvard University

Gomulkiewicz, Robert William 1997; MA, 1987, University of Washington; JD, 1987, University of Washington

Haley, John Owen 1974, (Affiliate); LLM, 1971, University of Washington

Hatfield, Michael Wayne 2012; MA, 1993, Texas A&M University; JD, 1996, New York University

Hicks, Gregory Alan 1984; JD, 1978, University of Texas (Austin)

Huston, John C. * 1967, (Emeritus); LLD, 1952, University of Washington; LLM, 1955, New York University

Jay, Stewart * 1980; JD, 1976, Harvard University

Junker, John Michael * 1964, (Emeritus); JD, 1962, University of Chicago

Kelly, Lisa Ann 2002; JD, 1982, University of Pennsylvania

Kuszler, Patricia Carol 1994; MD, 1978, Mayo Medical School/Graduate School; JD, 1991, Yale University

Lombardi, Clark B. 2004; JD, 1998, Columbia University; PhD, 2001, Columbia University

Maranville, Deborah Ann 1989; JD, 1975, Harvard University

Mastroianni, Anna Catherine 1996; JD, 1986, University of Pennsylvania; MPH, 1997, University of Washington

McMurtrie, Jacqueline 1989; JD, 1983, University of Michigan

Nicolas, Peter 2000; MPP, 1992, University of Michigan; JD, 1999, Harvard University

O'Connor, Sean M. 2002; MA, 1995, Arizona State University; JD, 1998, Stanford University

O'Neill, Kathleen Marie 1993; JD, 1980, Columbia University

Ramasastri, Anita Gonsalves 1996; MA, 1989, University of Sydney (Australia); JD, 1992, Harvard University

Rodgers, William Hamilton * 1967; AB, 1961, Harvard University; LLB, 1965, Columbia University

Rombauer, Marjorie Dick * 1960, (Emeritus); LLB, 1960, University of Washington

Sato, Yasunobu 2006, (Affiliate); LLM, 1989, Harvard University; PhD, 2000, University of London, UK

Schnapper, Eric 1995; MA, 1963, Johns Hopkins University

Schumacher, Scott A. 2000; JD, 1990, Seattle University; LLM, 1991, New York University

Smith, Charles Zellender * 1973, (Emeritus); LLB, 1955, University of Washington

Smith, Francis Winston Jr. * 1968, (Emeritus); LLM, 1968, Harvard University

Takenaka, Toshiko * 1992; LLM, 1990, University of Washington; PhD, 1992, University of Washington

Taylor, Allyn L. 2014, (Affiliate); JD, 1987, University of California (Berkeley); LLM, 1990, Columbia University; JSD, 2000, Columbia University

Testy, Kellye 2009; JD, 1991, Indiana University

Vaughn, Lea Beth * 1984; JD, 1978, University of Michigan

Watts, Kathryn A. 2007; JD, 2001, Northwestern University

Winn, Jane Kaufman 2002; JD, 1987, Harvard University

Wolcher, Louis Edward 1986, (Emeritus); JD, 1973, Harvard University

Young, Michael Kent 2011; JD, 1976, Harvard University

Associate Professors

Drake, Dwight Julian 2004; JD, 1973, University of Washington

Howard, Maureen Andrea 1994; JD, 1986, University of Washington

Kirtley, Alan * 1984; JD, 1972, Indiana University

Krug, Anita 2010; AM, 1996, Harvard University; JD, 1997, Harvard University; PhD, 2000, Harvard University

Laster, Daniel 2003, (Affiliate); JD, 1983, University of Michigan

McCormack, Shannon 2012; JD, 2000, Harvard University; LLM, 2006, Georgetown University

Ngugi, Joel M. 2004, (Affiliate); LLM, 1999, Harvard University; SJD, 2002, Harvard University

Sanford, Sallie Thieme 2000; JD, 1991, University of California (Los Angeles)

Townsend, Michael Edward * 1992; MA, 1978, University of Michigan; PhD, 1982, Yale University; JD, 1989, Yale University

Walsh, Walter John 1996; LLM, 1989, Yale University

Zang, Dongsheng 2005; LLM, 1996, Harvard University; SJD, 2004, Harvard University

Assistant Professors

Bledsoe, David John 2006, (Affiliate); JD, 1993, University of Puget Sound; LLM, 1995, University of Washington

Calo, Michael Ryan 2012; JD, 2005, University of Michigan

Durkee, Melissa 2013; JD, 2004, Yale University

Knudsen, Sanne H. 2011; MS, 2002, University of Michigan, Ann Arbor; JD, 2002, University of Michigan, Ann Arbor

Manheim, Elisabeth 2011; JD, 2005, Yale University

Mitchell, Robert Gostin 1992, (Affiliate); JD, 1987, University of Washington; LLM, 1993, University of Washington

Porter, Elizabeth Gilbert 2010; EdM, 1992, Harvard University; MA, 2000, Columbia University; JD, 2000, Columbia University

Said, Zahr Kassim 2011; PhD, 2003, Harvard University; JD, 2008, Columbia University

Whitener, Ronald John 1999, (Affiliate); JD, 1994, University of Washington

Senior Lecturers

Cobb, Thomas Dillon 2004; MALS, 1993, Reed College; MA, 1997, University of Chicago; JD, 2001, University of Minnesota

Covington, William Edward 2003; JD, 1977, University of Michigan

McGinnis, Kathleen Marie 1994; JD, 1984, University of California (Berkeley)

Myhre, Theodore 1994; MA, 1991, Drew University; MA, 1994, Boston College; JD, 2000, Seattle University

Lecturers

Bailey, William Scherer 1992; JD, 1974, Northwestern University

Cohan, Molly Martin 2006; JD, 1977, University of Washington

Fan, Jennifer Shiu-Li 2010; JD, 1998, University of Pennsylvania

Gold, Julia Ann 1995; JD, 1983, University of South Carolina

Tolin, Anna 2011; JD, 1992, Cornell University

Williams, Brenda Elizabeth 1996; MPA, 1997, University of Washington; JD, 1997, University of Washington

Ziff, David Joseph Sidney 2012; JD, 2005, Columbia University

School of Medicine

Anesthesiology

Professors

Anderson, Corrie T.M. 2001; MS, 1985, Boston University
 Artru, Alan Arthur 1980; MD, 1975, Medical College of Wisconsin
 Bashein, Gerard * 1974, (Emeritus); MS, 1964, Carnegie Mellon University; PhD, 1969, Carnegie Mellon University; MD, 1974, University of New Mexico
 Bhagwanjee, Satish 2009; MBChB, 1983, University of Natal, South Africa
 Bishop, Michael Joshua 1979, (Emeritus); MD, 1974, University of California (San Diego)
 Bosenberg, Adrian Thomas 1983; MBChB, 1973, University of Capetown (South Africa)
 Bowdle, Thomas Andrew 1981; MD, 1980, University of Washington; PhD, 1983, University of Washington
 Byers, Margaret R. * 1971, (Emeritus); PhD, 1969, Harvard University
 Cheney, Frederick Wyman 1964, (Emeritus); MD, 1960, Tufts University
 Crowder, Charles Michael 2014; MD, 1989, Washington University; PhD, 1989, Washington University
 Cullen, Bruce Frederick 1972, (Emeritus); MD, 1966, University of California (Los Angeles)
 Curatolo, Michele 2013; MD, 1984, University of Messina (Italy); PhD, 1998, Aalborg University, Denmark
 Domino, Karen Barbara 1986; MA, 1974, University of New Mexico; MD, 1978, University of Michigan
 Fitzgibbon, Dermot Richard 1992; MBChB, 1983, University College (Ireland)
 Freund, Peter Ronald 1975, (Emeritus); MD, 1975, Columbia University
 Haberkern, Charles M. 1974; MD, 1974, Columbia University
 Hornbein, Thomas Frederic * 1963, (Emeritus); MD, 1956, Washington University
 Krueger, James Martin 2013, (Affiliate); PhD, 1974, University of Pennsylvania; MD, 2005, University of Szeged (Hungary)
 Landau-Cahana, Ruth 2008, (Affiliate); MS, 1983, Calvin College; MD, 1989, University of Geneva (Switzerland)
 Lynn, Anne Marie 1975; MD, 1975, Stanford University
 Mackensen, Georg Burkhard 2012; MD, 1994, University of Hamburg (Germany); PhD, 2005, Technische Universität (Germany)
 Martin, Lynn Douglas 1994; MD, 1982, University of Washington
 Morgan, Philip Glennon 2008; MS, 1975, University of Colorado (Boulder); MD, 1980, University of Colorado (Denver)
 Opp, Mark R. 2010; MS, 1983, Walla Walla College; PhD, 1987, Washington State University
 Orr, Rosemary Jean 1969; MBChB, 1967, Queen's University of Belfast (Ireland)
 Oxorn, Donald Charles 1998; MD, 1978, McGill University (Canada)
 Palermo, Tonya M. 2010; PhD, 1998, Case Western Reserve University
 Pavlin, Dorothy Janet 1971; MSc, 1966, University of Manitoba (Canada); MD, 1969, University of Manitoba (Canada)
 Pavlin, Edward G. 1971; MD, 1968, University of Manitoba (Canada)

Rafferty, Michael Daniel 2012; PhD, 1991, University of California (Berkeley); MBA, 2004, University of Chicago
 Rooke, George Alec 1982; MD, 1980, University of Washington; PhD, 1985, University of Washington
 Ross, Brian Kent 1983; MS, 1973, Idaho State University; PhD, 1975, University of North Dakota; MD, 1983, University of Washington
 Schell, Randall M. 2011, (Affiliate); MD, 1987, Loma Linda University; MEd, 2010, University of Southern California
 Schwinn, Debra Anne 2007, (Affiliate); MD, 1983, Stanford University
 Sedensky, Margaret M. 2008; MS, 1975, University of Colorado (Boulder); MD, 1980, University of Colorado (Denver)
 Sharar, Samuel Randolph 1983; MD, 1983, University of Washington
 Sharma, Deepak 2007; MBBS, 1997, University of Rajasthan; MD, 2003, University of Rajasthan
 Sivarajan, Murali 1971; MBBS, 1967, Jawaharlal Inst of Postgr Med Educ & Res
 Souter, Karen Jane 2002; MBBS, 1985, St. Bartholomew's Hosp Med School (UK); MS, 1999, University of East Anglia (UK)
 Souter, Michael J. 2001; MBChB, 1984, University of Edinburgh (UK)
 Terman, Gregory William * 1987; MA, 1981, University of California (Los Angeles); PhD, 1985, University of California (Los Angeles); MD, 1987, University of Miami (Florida)
 Tian, Rong 2009; PhD, 1992, University of Aarhus (Denmark)
 Treggiari, Miriam Monica 1999, (Affiliate); MD, 1990, University of Pavia (Italy); MD, 1999, University of Geneva (Switzerland); MPH, 2002, University of Washington
 Turk, Dennis Charles 1996; MA, 1975, University of Waterloo (Canada); PhD, 1978, University of Waterloo (Canada)
 Van Norman, Gail Ann 1986; MD, 1981, University of Washington
 Vavilala, Monica Shanta 1994; MD, 1991, University of Texas (Houston)
 Walco, Gary 2009; MA, 1982, Ohio State University; PhD, 1984, Ohio State University
 Ward, Richard John 1963, (Emeritus); MD, 1949, St Louis University
Associate Professors
 Bentov, Itay 2007; MD, 1992, Hadassah Medical Center; PhD, 2006, Tel Aviv University (Israel)
 Bhananker, Sanjay Madhav 2002; MBBS, 1987, Goa University (India); MD, 1992, Goa University (India)
 Bramhall, John Shepard 1995; PhD, 1976, Aston University (England); MD, 1991, University of California (San Diego)
 Chadwick, Heathcliff Sanford 1980, (Emeritus); MD, 1976, University of Oregon
 Dagal, Armagan Huseyin Cemil 2008; MD, 1993, Dokuz Eylul University (Turkey)
 Davies, Joanna Mary 2001; MBBS, 1991, London Hospital Medical College (UK); FRCA, 1998, London Hospital Medical College (UK)
 Dembo, Gregory 2000; MD, 1978, First Leningrad Medical Institute, Russia
 Dunbar, Peter John 1991; MBChB, 1978, University of Aberdeen (UK)
 Eisses, Michael James 1992; MD, 1995, University of Washington
 Flack, Sean H. 2004; MBChB, 1992, University of Cape Town (South Africa)
 Grabinsky, Andreas 2008; MD, 1995, University of Frankfurt (Germany)
 Hecker, James G. 2010; MS, 1977, University of Wisconsin (Madison); PhD, 1982, University of Washington; MD, 1989, University of Virginia

Jardine, David Stuart 1987; MD, 1980, Johns Hopkins University
 Joffe, Aaron 2010; DO, 1998, Midwestern University
 Joffe, Denise Carolyn 2006; MD, 1986, McGill University (Canada)
 Karl, Helen Weist 1990; MD, 1976, University of Virginia
 Kent, Christopher Donald 2005; MD, 1988, University of Saskatchewan (Canada)
 Lang, John Darnell 2006; MD, 1988, American University of The Caribbean
 Loland, Vanessa Jennifer 2011; MD, 2002, New York Medical College
 Martay, Kenneth Andreas Chona 1999; MD, 1987, University of Freiburg (Germany)
 Metzner, Julia Irina 2003; MD, 1986, Timisoara Univ of Med & Pharm (Romania)
 Nandate, Koichiro 2008; MD, 1992, University of Occupational and Environmental Health; PhD, 2006, University of Occupational and Environmental Health
 Pittaway, Andrew John 2002; MBBS, 1991, University of Nottingham (UK)
 Rampersad, Sally Elizabeth 1996; BM, 1986, University of Southampton (UK)
 Richards, Michael John 2003; BM, 1993, University of Southampton (UK)
 Roche, Anthony Michael 2011; MBChB, 1993, University of Stellenbosch (So Africa); FRCA, 1999, Royal College of Anaesthetists; MMed, 2001, University of Capetown (South Africa)
 Rozet, Irena 2002; MD, 1985, Academy of Medicine of Latvia
 Rubens, Daniel David 1999; MBBS, 1992, University of New South Wales (Australia)
 Vater, Youri Leon 1999; MD, 1977, Riga High Medical School (Israel); PhD, 1988, Riga High Medical School (Israel)
 Vitin, Alexander A. 2003; MD, 1981, Kharkov State Medical Univ (Ukraine); PhD, 1985, Kharkov State Medical Univ (Ukraine)
 Wright, David Robert 2011; BM, 1990, University of Southampton (UK)
Assistant Professors
 Ben-Ari, Alon Yoav 2011; MD, 2000, Technion Israel Institute of Technology
 Bollag, Laurent Albert 2008; MD, 1999, University of Zurich (Switzerland)
 Ciliberto, Christopher 2010; MD, 1991, U of Medicine & Dentistry of New Jersey
 Ferreira, Renata Gomes 2012; MD, 2001, Universidade Federal do Rio de Janeiro (Brazil)
 Grigg, Eliot Brownell 2007; MD, 2007, George Washington University
 Hawkins, Brian J. 2010, (Affiliate); MS, 2000, University of Pennsylvania; PhD, 2003, Virginia Polytechnic Institute and State University
 Horibe, Mayumi 2007; MD, 1984, Hiroshima University (Japan)
 Hsieh, Vincent C. 2010; MS, 2001, Georgetown University; MD, 2006, University of Pittsburgh
 Hunyady, Agnes Ildiko 2004; MD, 1993, Semmelweis Medical University (Hungary)
 Ivashkov, Yulia 2006; MD, 1989, Far Eastern State University (Russia)
 Jimenez, Nathalia 2002; MD, 1994, Universidad Javeriana (Colombia)
 Kassebaum, Nicholas James 2008; MD, 2007, Vanderbilt University
 Kim, Jerry Hyun 2006; MD, 2002, Thomas Jefferson University

Latham, Gregory Joseph 2009; MD, 2000, University of Kansas

Low, Daniel King-Wai 2007; MBBS, 1997, University of Nottingham (UK)

Martin, Lizabeth Dane 2010; MD, 2006, Dartmouth College

Meyers, Jennifer Lynne 2007; MD, 2001, Pennsylvania State Hershey Medical Cntr.

Nishio, Isuta 2004; MD, 1986, Nara Medical University (Japan); PhD, 1997, Keio University (Japan)

Ortner, Clemens Maria 2010; MD, 2002, Medical University of Vienna (Austria); MSc, 2004, Bocconi University (Italy)

Rabbitts, Jennifer Anne 2011; MBChB, 2002, University of Stellenbosch (So Africa)

Ramaiah, Ramesh 2006; MBBS, 1990, Jawaharlal Nehru University (India)

Stogicza, Agnes Reka 2010; MD, 2002, Semmelweis Medical University (Hungary)

Suhre, Wendy M 2014; MS, 2002, University of Arizona; MD, 2009, University of Arizona

Thilen, Stephan 2008; MD, 1981, Karolinska Institute (Sweden); MS, 2007, University of Wisconsin (Madison)

Thompson, Douglas Royce 2008; MD, 2005, University of California (San Diego)

Togashi, Kei 2010; MD, 2003, Wakayama Medical University

Verma, Shilpa Thakkar 2008; MBBS, 2002, University of Mumbai (India)

Von Homeyer, Peter 2008; MD, 2001, Free University Berlin

Wang, Wang 2010; MD, 1997, Beijing Medical University (China); PhD, 2002, Peking University (China)

Biochemistry

Professors

Aitchison, John 2004, (Affiliate); PhD, 1992, McMaster University (Canada)

Baker, David * 1993; PhD, 1989, University of California (Berkeley)

Biggins, Susan 2000, (Affiliate); PhD, 1995, Princeton University

Brockhoff, Susan E. 1987; PhD, 1993, University of Washington

Brosemer, Ronald Webster 1985, (Affiliate); PhD, 1960, University of Illinois (Urbana)

Carter, Bruce L.A. 1996, (Affiliate); PhD, 1968, University of London, UK

Cooper, Jonathan Alstead * 1987, (Affiliate); MA, 1973, University of Cambridge (UK); PhD, 1976, University of Warwick (UK)

Davis, Trisha Nell 1987; PhD, 1983, Yale University

Eisenman, Robert Neil * 1976, (Affiliate); PhD, 1971, University of Chicago

Fischer, Edmond H. * 1953, (Emeritus); PhD, 1947, University of Geneva (Switzerland)

Gray, Patrick William 2009, (Affiliate); PhD, 1978, University of Colorado (Boulder)

Hahn, Steven Mark * 1994, (Affiliate); PhD, 1984, Brandeis University

Hauschka, Stephen D. 1966; PhD, 1966, Johns Hopkins University

Hol, Wilhelmus Gerardus Jozef 1992; MS, 1966, Technical University (Eindhoven); PhD, 1971, University of Groningen (Netherlands)

Hurley, James Bryant 1985; PhD, 1979, University of Illinois

Kimelman, David 1989; PhD, 1985, Harvard University

Klevit, Rachel Ellen 1983; DPhil, 1981, Oxford University (UK)

Miller, Kurt Werner 2001, (Affiliate); PhD, 1982, Boston University

Morris, David Robert 1966; PhD, 1964, University of Illinois

Palmiter, Richard Deforest * 1974; PhD, 1969, Stanford University

Parson, William W. * 1967, (Emeritus); PhD, 1965, Case Western Reserve University

Petra, Philip Hue * 1966, (Emeritus); PhD, 1966, Tulane University

Roberts, James Michael * 1989, (Affiliate); MD, 1984, Columbia University; PhD, 1984, Columbia University

Roth, Mark Brantly * 1994, (Affiliate); PhD, 1988, University of Colorado (Boulder)

Ruohola-Baker, Hannele Tarja 1993; MSc, 1984, University of Helsinki (Finland); PhD, 1989, University of Helsinki (Finland)

Shapiro, Bennett M. * 1970, (Affiliate); MD, 1964, Jefferson Medical College

Stoddard, Barry Leonard * 1994, (Affiliate); PhD, 1990, Massachusetts Institute of Technology

Teller, David Chambers 1965, (Emeritus); PhD, 1965, University of California (Berkeley)

Tsukiyama, Toshio * 1999, (Affiliate); MS, 1987, Obihiro University of Agriculture and Veterinary Medicine, Japan; DVM, 1987, Obihiro University of Agriculture and Veterinary Medicine, Japan; PhD, 1991, University of Horishima (Japan)

Walsh, Kenneth Andrew * 1958, (Emeritus); MS, 1953, Purdue University; PhD, 1959, University of Toronto (Canada)

Weiner, Alan Matthew 2000; PhD, 1973, Harvard University

Young, Elton Theodore 1969, (Emeritus); PhD, 1967, California Institute of Technology

Associate Professors

Cole, Douglas G. 2003, (Affiliate); PhD, 1990, Washington State University

Copie, Valerie 2003, (Affiliate); PhD, 1990, Massachusetts Institute of Technology

Gonen, Tamir 2005, (Affiliate); PhD, 2002, University of Auckland (New Zealand)

Kennedy, Brian Keith 2001, (Affiliate); PhD, 1996, Massachusetts Institute of Technology

Langer, Pamela Joyce 2001, (Affiliate); PhD, 1980, Massachusetts Institute of Technology

Merz, Alexey J. 2004; PhD, 2000, Oregon Health Sciences University

Muller, Eric George Davis * 1988, (Research); PhD, 1981, Yale University

Roberts, Kenneth P. 2008, (Affiliate); PhD, 1989, Washington State University

Schief, William R. Jr. 1991, (Affiliate); MS, 1992, University of Washington; PhD, 1999, University of Washington

Stayton, Mark Manley 2001, (Affiliate); PhD, 1980, Iowa State University

Teintze, Martin 2000, (Affiliate); PhD, 1981, University of California (San Diego)

Verlinde, Christophe L. M. J. 1992; PhD, 1988, Catholic University of Leuven (Belgium)

Assistant Professors

Ailion, Michael Edward 2000; PhD, 2000, University of Washington

Bai, Jihong 2011, (Affiliate); MS, 1998, Tsinghua University (China); PhD, 2003, University of Wisconsin (Madison)

Bradley, Philip Harlan 2001, (Affiliate); PhD, 2001, Massachusetts Institute of Technology

Chauvin, Theodore R. 2012, (Affiliate); MS, 1999, Northern Illinois University; PhD, 2003, Washington State University

Dimaio, Frank 2007; PhD, 2007, University of Wisconsin (Madison)

Fortunato, Elizabeth A. 2001, (Affiliate); PhD, 1995, University of California (San Diego)

Hoppins, Suzanne 2013; PhD, 2005, University of Alberta, Canada

Kollman, Justin Michael 2014; PhD, 2005, University of California (San Diego)

Miller, Dana L. 2010; PhD, 2003, Johns Hopkins University

Ranish, Jeffrey Alan 1992, (Affiliate); PhD, 1999, University of Washington

Bioethics and Humanities

Professors

Berryman, Jack William * 1975; MS, 1971, University of Massachusetts; MA, 1974, University of Massachusetts; PhD, 1976, University of Maryland

Bowen, Deborah Jane * 1986; PhD, 1986, Uniformed Services University of The Health Sciences

Boyer, Bert B. 2004, (Affiliate); PhD, 1988, Louisiana State University

Braddock, Clarence Henry * 1993, (Affiliate); MD, 1981, University of Chicago; MPH, 1995, University of Washington

Burke, Wylie Gilman 1974; PhD, 1974, University of Washington; MD, 1978, University of Washington

Dudzinski, Denise Marie 2001; MS, 1993, Vanderbilt University; PhD, 2001, Vanderbilt University

Edwards, Kelly Alison 1993; MA, 1995, University of Washington; PhD, 2000, University of Washington

Holland, Suzanne 2001, (Affiliate); MA, 1991, Louisville Seminary; PhD, 1997, Graduate Theological Union

Jecker, Nancy Ann Silbergeld * 1982; MA, 1982, Stanford University; MA, 1984, University of Washington; PhD, 1986, University of Washington

Jonsen, Albert R. * 1987, (Emeritus); MA, 1956, Gonzaga University; STM, 1963, Santa Clara University; PhD, 1967, Yale University

Menzel, Paul Theodore 1988, (Affiliate); PhD, 1971, Vanderbilt University

Press, Nancy 2011, (Affiliate); MA, 1978, Hunter College; PhD, 1985, Duke University

Risse, Guenter B. 2002, (Affiliate); MD, 1958, University of Buenos Aires (Argentina); MA, 1966, University of Chicago; PhD, 1971, University of Chicago

Whorton, James Clifton * 1970, (Emeritus); PhD, 1969, University of Wisconsin (Madison)

Associate Professors

Fullerton, Stephanie Malia 2005; DPhil, 1995, University of Oxford (UK)

Starks, Helene E. 1989; MPH, 1989, University of California (Berkeley); PhD, 2004, University of Washington

Assistant Professors

Blacksher, Erika A. 2010; MA, 1996, University of Virginia; PhD, 2007, University of Virginia

Forster, David Grant 1992, (Affiliate); MA, 1996, University of Washington; JD, 1996, University of Washington

Grant, George Henry 2000, (Affiliate); PhD, 2001, Boston University

James, Rosalina 1995; PhD, 2002, University of Washington

King, Stephen Duane Watkins 2010, (Affiliate); PhD, 1993, Vanderbilt University

Milam, Steven Dwight 1989, (Affiliate); JD, 1969, University of Oregon
Robey, Thomas E 2001, (Affiliate); PhD, 2007, University of Washington; MD, 2009, University of Washington
Taulii, Maile M. 1991, (Affiliate); MPH, 2004, University of Washington; PhD, 2009, University of Washington

Senior Lecturer

McCormick, Thomas Richard * 1974, (Emeritus); MDiv, 1960, Drake University; DMin, 1976, Southern Methodist University

Biological Structure

Professors

Adman, Elinor T. * 1967, (Emeritus); MA, 1964, Brandeis University; PhD, 1967, Brandeis University
Bailey, Raymond 2008, (Affiliate); MA, 1969, California State University, Long Beach; PhD, 1973, Johns Hopkins University
Bajorath, Jurgen 1995, (Affiliate); PhD, 1988, Free University Berlin
Brinkley, James F. III * 1974; MD, 1974, University of Washington; PhD, 1984, Stanford University
Clark, John Irwin 1982; PhD, 1974, University of Washington
Cusick, Catherine Grace 2011, (Affiliate); PhD, 1979, University of Washington
Dacey, Dennis M. 1986; PhD, 1983, University of Chicago
Farr, Andrew Grant * 1982, (Emeritus); PhD, 1975, University of Chicago
Floerchinger, Steven Lyle 1996, (Affiliate); MD, 1987, University of Washington
Goodman, Anthony Allen 2000, (Affiliate); MD, 1965, Cornell University
Graney, Daniel Owen 1966, (Emeritus); MA, 1962, University of California (San Francisco); PhD, 1965, University of California (San Francisco)
Hendrickson, Anita Elizabeth * 1964, (Emeritus); PhD, 1964, University of Washington
Koehler, James Klaus * 1963, (Emeritus); MS, 1958, University of California (Berkeley); PhD, 1961, University of California (Berkeley)
Lee, Minako Yoshioka * 1974, (Emeritus); MD, 1963, Tokyo Women'S Medical College (Japan)
Quinlan, Roy Andrew 2009, (Affiliate); PhD, 1981, University of Kent
Raible, David Woolven 1995; PhD, 1989, University of Pennsylvania
Reh, Thomas A. 1989; PhD, 1981, University of Wisconsin
Reuveni, Zipora * 1979; MSc, 1975, Weizmann Institute For Science (Israel); PhD, 1979, University of Windsor (Canada)
Robinson, Farrel R. 1986; PhD, 1982, Brown University
Rosse, Cornelius * 1967, (Emeritus); MBChB, 1964, University of Bristol (UK); MD, 1974, University of Bristol (UK); DSc, 1983, University of Bristol (UK)
Sherk, Helen Adelaide * 1982; PhD, 1978, Massachusetts Institute of Technology
Stenkamp, Ronald Eugene 1975; MS, 1971, University of Washington; PhD, 1975, University of Washington
Wong, Rachel O. 2006; PhD, 1986, Australian National University
Xu, Wenqing 1999; MS, 1988, Chinese Academy of Sciences (China); PhD, 1995, Massachusetts Institute of Technology
Associate Professors
Bermingham-McDonogh, Olivia 1996; PhD, 1987, University of California (Los Angeles)

De Vito, June Logan * 1953, (Emeritus); MA, 1949, University of British Columbia (Canada); PhD, 1954, University of Washington
Gaddum-Rosse, Penelope * 1966, (Emeritus); PhD, 1965, University of Liverpool (UK)
Harris, Roger Mason * 1982, (Emeritus); PhD, 1975, University of Washington
Kapas, Levente Sandor 2009, (Affiliate); MD, 1985, Medical University, Hungary
Pasupathy, Anitha Karambakkam 2006; MS, 1994, McGill University (Canada); PhD, 2001, Johns Hopkins University
Pfeiffer, David C. 2004, (Affiliate); MS, 1990, University of British Columbia (Canada); PhD, 1997, University of British Columbia (Canada)
Pittack, Catrin 1989, (Affiliate); PhD, 1995, University of Washington
Prothero, John William * 1965, (Emeritus); PhD, 1960, University of Western Ontario (Canada)
Stenkamp, Deborah L. 2003, (Affiliate); PhD, 1993, Johns Hopkins University
Sundsten, John Wallin 1962, (Emeritus); PhD, 1961, University of California (Los Angeles)
Assistant Professors
Alexander, Brenda Mae 2010, (Affiliate); MS, 1988, University of Wyoming; PhD, 1999, University of Wyoming
Bair, Wyeth Daniel 2011; PhD, 1996, California Institute of Technology
Balemba, Onesmo Begira 2010, (Affiliate); MVSc, 1997, Sokoine University of Agriculture (Tanzania); PhD, 2001, Royal Veterinary and Agricultural University, Denmark
Brown, Ronald Lane 2012, (Affiliate); PhD, 1991, Stanford University
Conley, David Marshall 1987, (Affiliate); MS, 1987, Washington State University
Dhaka, Ajay 2009; PhD, 2002, University of California (Los Angeles)
Harris, Julie Ann 2000, (Affiliate); PhD, 2006, University of Washington
Hinterberger, Timothy James 1996, (Affiliate); MS, 1981, University of Illinois (Urbana); PhD, 1987, University of Illinois (Urbana)
Lampa, Steven Jeffrey 2008, (Affiliate); MS, 1994, Washington State University; PhD, 2004, Washington State University
Lefcort, Frances Brenda 1996, (Affiliate); PhD, 1988, University of California (San Francisco)
Seegmiller, Jeffrey G. 2008, (Affiliate); MS, 1996, Illinois State University; EdD, 2003, Illinois State University
Shafer, Gavriela 2002, (Affiliate); MSc, 1995, Tel Aviv University (Israel); PhD, 2002, Hebrew University (Israel)
Szentirmai, Eva 2009, (Affiliate); MD, 2004, University of Szeged (Hungary)
Wang, Liguó 2011; PhD, 2003, Cornell University
Wisor, Jonathan Paul 2009, (Affiliate); PhD, 1997, University of California (Los Angeles)
Lecturers
Buckley, Cadie Lin 2013; PhD, 2011, University of Hawaii
Mulligan, Kathleen Anne 1987; PhD, 1985, University of New South Wales(Australia)

Biomedical Informatics and Medical Education

Professors

Carline, Jan Dana * 1977; MEd, 1976, University of Washington; PhD, 1979, University of Washington

Foster, James A. 2003, (Affiliate); MS, 1987, Illinois Institute of Technology; PhD, 1990, Illinois Institute of Technology
Fuller, Sherrilynne Shirley * 1988; MLS, 1968, Indiana University; PhD, 1984, University of Southern California
Gantenbein, Rex E. 1997, (Affiliate); MS, 1983, University of Iowa; PhD, 1986, University of Iowa
Heckerman, David 2006, (Affiliate); MS, 1979, University of California (Los Angeles); MS, 1983, Stanford University; PhD, 1990, Stanford University; MD, 1992, Stanford University
Horvitz, Eric Joel 1995, (Affiliate); PhD, 1991, Stanford University; MD, 1994, Stanford University
Joyce, Paul Joseph 1988, (Affiliate); MS, 1982, Montana State University; PhD, 1988, University of Utah
Kolker, Eugene Evgeni 1996, (Affiliate); MSc, 1986, Kishinev University, Ussr; PhD, 1996, Weizmann Institute For Science (Israel)
Masys, Daniel Richard 2011, (Affiliate); MD, 1974, Ohio State University
Robins, Lynne Stephanie * 1999; PhD, 1990, University of Michigan
Robinson, Timothy Jay 2011, (Affiliate); MS, 1994, Virginia Polytechnic Institute and State University; PhD, 1997, Virginia Polytechnic Institute and State University
Schaad, Douglas Craig * 1975; MEd, 1974, University of Washington; PhD, 1986, University of Washington
Scott, Craig Stanley * 1979; MA, 1970, California State University, Sacramento; PhD, 1973, University of Iowa
Shelby, Nancy Jane 2010, (Affiliate); MS, 1991, University of Utah; PhD, 1993, University of Utah
Tarczy-Hornoch, Peter 1992; MD, 1989, Stanford University
Wetter, Thomas 2011, (Affiliate); MSc, 1976, University of Aachen (Germany); PhD, 1984, University of Aachen (Germany)
Wolf, Fredric Marc 1997; MEd, 1977, Kent State University; PhD, 1980, Kent State University
Associate Professors
Abernethy, Neil F. 2008; PhD, 2005, Stanford University
Curioso, Walter H. 2003, (Affiliate); MD, 2002, Universidad Peruana Cayetano Heredia
Daratha, Kenneth Blake 2010, (Affiliate); MBA, 1986, Eastern Washington University; PhD, 2004, Washington State University
Gennari, John H. 2002; MS, 1985, University of Wisconsin; PhD, 1990, University of California (Irvine)
Putnam, Elizabeth A. 2003, (Affiliate); PhD, 1989, University of Texas (Houston)
Rossini, Anthony Joseph 1998, (Affiliate); ScD, 1994, Harvard University
Vanderwende, Lucretia Henrica 2011, (Affiliate); MS, 1985, Georgetown University; PhD, 1995, Georgetown University
Assistant Professors
Capurro Nario, Daniel 2010, (Affiliate); MD, 2003, Pontificia Universidad Catolica De Chile; PhD, 2012, University of Washington
Murray, Kathleen 1989, (Affiliate); MLS, 1976, University of Washington
Wenrich, Marjorie D. 1980, (Affiliate); MPH, 1994, University of Washington
Yetisgen, Meliha 2002; MS, 2000, Middle East Technical University (Turkey); PhD, 2007, University of Washington
Lecturer
Masuda, David Lee 1997; MD, 1980, University of North Dakota; MS, 1996, University of Wisconsin (Madison)

Comparative Medicine

Professors

Dennis, Melvin Best Jr. * 1971, (Emeritus); DVM, 1961, Washington State University

Di Giacomo, Ronald Francis * 1974, (Emeritus); DVM, 1965, University of Pennsylvania; MPH, 1974, University of Washington

Iritani, Brian M. 1992; DVM, 1988, Washington State University; PhD, 1997, University of Washington

Knowles, Donald Patrick 2005, (Affiliate); DVM, 1982, University of Illinois; PhD, 1988, Washington State University

Ladiges, Warren Carl 1975; DVM, 1971, Washington State University; MS, 1978, Washington State University

Liggitt, Harry Denny 1989; DVM, 1972, Colorado State University; PhD, 1979, Colorado State University

Price, Lillian M. * 1984; DVM, 1972, University of Pennsylvania; PhD, 1983, University of Pennsylvania

Taylor, Stephen Maxwell 2012, (Affiliate); PhD, 1978, University of Sydney (Australia)

Van Hoosier, Gerald Leonard * 1975, (Emeritus); DVM, 1957, Texas A&M University

Ware, Carol Britton 1995; PhD, 1986, University College (Ireland)

Associate Professors

Colby, Lesley Ann 2012; DVM, 1996, Virginia Polytechnic Institute and State University; MS, 1997, Virginia Polytechnic Institute and State University

Frevort, Charles Wayne 1995; DVM, 1984, Iowa State University; ScD, 1994, Harvard University

Hargis, Ann Mae 1990, (Affiliate); DVM, 1973, Colorado State University; MS, 1976, Colorado State University

Jerome, Christopher Paul 2009, (Affiliate); PhD, 1983, University of California (Davis)

O'Hara, Todd Michael 2005, (Affiliate); MS, 1985, Villanova University; PhD, 1988, Virginia Commonwealth University; DVM, 1992, University of Wisconsin

Treuting, Piper M. 1996; DVM, 1996, Louisiana State University; MS, 2000, University of Washington

Waggie, Kimberly Sue 1997, (Affiliate); DVM, 1980, Iowa State University; MS, 1984, University of Missouri; PhD, 1984, University of Missouri

Washington, Ida Margaret 2006, (Affiliate); MA, 1982, Duke University; DVM, 1987, North Carolina State University; PhD, 1991, University of North Carolina

Weigler, Benjamin Jared * 1997, (Affiliate); DVM, 1986, Colorado State University; MPH, 1988, University of California (Berkeley); PhD, 1991, University of California (Davis)

Assistant Professors

Bennett, Tracy Drew 2014, (Affiliate); DVM, 1994, Washington State University

Buetow, Bernard S. 1996, (Affiliate); DVM, 1989, University of Illinois; PhD, 2003, University of Washington

Graham, Jennifer E. 2004, (Affiliate); DVM, 1999, Auburn University

Hagan, Catherine Elizabeth 2004, (Affiliate); DVM, 2004, University of California (Davis); PhD, 2010, University of Washington

Hsu, Charlie Chun 2012; DVM, 2002, University of Pennsylvania; PhD, 2007, University of Missouri (Columbia)

Kramer, Robert William 1995, (Affiliate); DVM, 1987, University of California (Davis)

Mison, Michael Bueno 2005, (Affiliate); DVM, 1998, University of Florida

Pritchett, Kathleen Ripperton 1992, (Affiliate); DVM, 1993, Washington State University

Runstadler, Jonathan Andrew 2006, (Affiliate); MS, 1992, University of New Hampshire; DVM, 1999, University of California (Davis); PhD, 2003, University of California (Davis)

Wiley, Jesse Carey 1994, (Affiliate); MS, 2003, University of Washington; PhD, 2003, University of Washington

Lecturers

Chang, Mary Y. 1992; PhD, 1991, Massachusetts Institute of Technology

Dowling, Susan Christine 1997; DVM, 1986, Washington State University

Lucas, Molly K. 2005; MS, 1997, University of Hawaii; DVM, 2003, University of California (Davis)

Sanders, George Eldridge 1997; DVM, 1997, Louisiana State University; MS, 2001, University of Washington

Family Medicine

Professors

Baldwin, Laura Mae 1984; MD, 1980, University of Southern California; MPH, 1986, University of Washington

Ballweg, Ruth Ann 1981; PA, 1978, University of Washington; MPA, 1998, University of Washington

Berg, Alfred Oren 1977, (Emeritus); MD, 1974, Washington University; MPH, 1979, University of Washington

Cherkin, Daniel Craig 1974, (Affiliate); MS, 1974, University of Washington; PhD, 1978, University of Washington

Dobie, Sharon Ann 1987; MD, 1979, University of California (San Francisco)

Drezner, Jonathan 1999; MD, 1996, University of California (Los Angeles)

Farber, Stuart Julian 1978; MD, 1974, University of Washington

Force, Rex William 2005, (Affiliate); PharmD, 1991, University of Texas (Austin)

Geyman, John P. 1976, (Emeritus); MD, 1960, University of California (San Francisco)

Gordon, Michael Joseph * 1973, (Emeritus); MA, 1970, Michigan State University; PhD, 1973, Michigan State University

Greer, Hilton Thomas 1977; MD, 1974, University of Mississippi; MPH, 1979, University of Washington

Harmon, Kimberly Garrison 1989; MD, 1993, Indiana University

Losh, David Paul 1992; MD, 1974, University of Kansas

Marchand, Lucille Rachel 2014; MD, 1987, University of California (San Francisco)

Norris, Thomas Elmore 1988; MD, 1973, University of Texas (Galveston)

Parchman, Michael Leo 2012, (Affiliate); MD, 1982, University of Texas (Southwestern); MPH, 2001, University of Texas (Houston)

Rosenblatt, Roger Alan * 1971; MPH, 1971, Harvard University; MD, 1971, Harvard University

Schneeweiss, Ronald 1977, (Emeritus); MBChB, 1964, University of Capetown (South Africa)

Stevens, Nancy Gray 1982; MD, 1979, University of Washington; MPH, 1982, University of Washington

Sugarman, Jonathan Reuel * 1981, (Clinical); MD, 1981, Albert Einstein College of Medicine; MPH, 1990, University of Washington

Thompson, Matthew James 1999; MBChB, 1989, University of Glasgow (UK); MPH, 2001, University of Washington; DPhil, 2007, Oxford University (UK)

Associate Professors

Beard, John Mark 1989; MD, 1986, University of Missouri

Brock, Douglas Michael 1985; MEd, 1987, University of Washington; PhD, 1995, University of Washington

Chen, Frederick Ming 1996; MPH, 1995, University of California (Berkeley); MD, 1996, University of California (San Francisco)

Dickey, John Hanford 2005, (Affiliate); MS, 1975, Idaho State University; PhD, 1982, Wayne State University

Ellsbury, Kathleen Elise 1982, (Emeritus); MD, 1977, Johns Hopkins University; MPH, 1982, University of Missouri

Evans, David Vreeland 2012; MD, 1993, University of Pittsburgh

Godfrey, Emily M. 2012; MD, 1997, Medical College of Wisconsin; MPH, 2003, University of Rochester

Hefflinger, Roger Glenn 1992, (Affiliate); PharmD, 1986, Nebraska College of Pharmacy

Hoffman, Sandra Jo 2005, (Affiliate); MS, 1986, University of California (Los Angeles); MD, 1988, Michigan State University

Huntington, Jane Hoskins 1991; MD, 1994, University of Washington

Keen, Misbah 2006; MBBS, 1993, Government Medical College, India; MS, 2008, Oregon Health Sciences University; MPH, 2009, Johns Hopkins University

Luboga, Samuel Abimerech 2007, (Affiliate); MBChB, 1974, Makerere University, Uganda; MMed, 1979, Makerere University, Uganda; PhD, 1987, Makerere University, Uganda

Maestas, Ramoncita Raquel 1986; MD, 1983, University of Washington

Morgan, James Forrest 2001, (Affiliate); MD, 1980, Boston University

O'Kane, John William 1993; MD, 1993, University of Vermont

Oliver, Lynn Marie 1983; MD, 1983, University of Washington

Pauwels, Judith 1995; MS, 1978, University of Wisconsin; MD, 1983, University of Wisconsin

Sanford, Christopher Allen 2000; MD, 1985, University of California (San Diego); MPH, 2005, Harvard University

Solbrig, Ronald Mark 2005, (Affiliate); MD, 1987, University of Washington

Taylor, Thomas Raymond 1979, (Emeritus); MBChB, 1957, University of Glasgow (UK); PhD, 1972, University of Glasgow (UK)

Assistant Professors

Brandes, Lisa Kae 2006, (Affiliate); MD, 1993, University of Kansas

Cole, Allison Marion 2010; MD, 2002, University of Iowa

Dyer, Donald Alan 2005, (Affiliate); MD, 1972, University of Tennessee

Hornecker, Jaime Rose 2006, (Affiliate); PharmD, 2003, University of Wyoming

Horrocks, Mark Trimming 2005, (Affiliate); MD, 1994, University of Washington

Kost, Amanda Rhea 2005; MD, 2005, State University of New York (Buffalo)

Osborn, Justin Eugene 1989; MD, 1989, University of Virginia

Overstreet, Frederica 2009; MPH, 1992, University of Michigan; MD, 1996, University of Washington

Pentin, Pamela Linda 2004; JD, 1986, Villanova University; MD, 1996, Jefferson Medical College

Pettinger, Tracy K. 2006, (Affiliate); PharmD, 2003, Idaho State University

Raetz, Jaqueline Giulia Margot 2001; MD, 2001, Duke University

Rao, Ashwin Laxminarayana 2003; MD, 2003, Case Western Reserve University

Shih, Grace 2013; MD, 2003, University of Florida; MS, 2010, University of California (San Francisco)

Thompson, Angela Michelle 2013, (Affiliate); PharmD, 2010, University of Colorado (campus unspecified)

Veauthier, Brian Michael 2007, (Affiliate); MD, 2001, Georgetown University

Vorvick, Linda Jean 1987; MD, 1982, University of Washington

Wick, Keren 1990; MA, 1991, University of Leeds (UK); PhD, 1996, University of Leeds (UK)

Senior Lecturers

Coerver, Donald August 1997; MA, 1983, Alaska Pacific University; PhD, 2005, Gonzaga University

Davis, Ardis Keepin 1981; MSW, 1979, University of Washington

Halperin, Abigail Carol 1990; MD, 1983, Albert Einstein College of Medicine

Levy, William S. 2002; PA-C, 1982, University of Washington

Mauksch, Larry Bernard 1985; MEd, 1982, University of Washington

Naidu, Ameer Srikanth 2007; MS, 1999, Midwestern University

Quigley, Timothy F. 2010; MPH, 1999, University of Kansas
Ross, Valerie Regina 1990; MS, 1994, Seattle Pacific University

Scott, Terry Bruce 1983; MPA, 2011, University of Washington

Stoll, Henry Wagner 1978; BA, 1971, Brown University

Lecturers

Alvitre, John Jeffrey 2014; BA, 1997, California State University, Chico; BS, 2003, University of Nebraska, Omaha
Bester, Vanessa Smith 2012; MPAS, 2003, University of Florida

Carrol, Jennifer S 2014; MA, 2002, Seattle University

Cope, Robin Marie 2012; BA, 1981, University of Texas (Austin)

Garcia, Drew Anthony 2013; MA, 2004, University of Nebraska, Omaha

Gianola, Fred Joseph 1975; PA-C, 1973, University of Washington

Hahn, Patricia Lynn 2013; MSN, 1995, Whitworth College
Haverkamp, Kenneth 1996; BA, 1990, Whitman College
Hawkins, Marc Antonio 2013; PA-C, 1980, University of Washington; MA, 2000, University of Nebraska, Omaha
Jackson, Jo Ann 1986; MS, 1975, University of Michigan; MD, 1979, Michigan State University

Jain, Anju 2014; MS, 1997, Western Washington University
Kempe, Christine 2013; MS, 2001, Brigham Young University

Kolojejchick-Coslett, Denise Ann 2009; MS, 2003, King's College, Pennsylvania

Marquardt, Ashley Frederick 2009; BS, 1999, Excelsior College

McIntyre, Susan Reba 2010; MSW, 1982, Eastern Washington University; MPA, 1988, Eastern Washington University; PhD, 2001, Gonzaga University

Plummer, William Taylor 1992, (Emeritus); BS, 1974, University of Nebraska

Quella, Alicia Katherine 2010; MPAS, 1999, University of Iowa; PhD, 2010, University of Iowa

Riley, John O. 2002; MS, 1982, University of Wisconsin

Serpinas, Sarah L. 2014; BCHS, 2010, University of Washington

Siegel, Malinda Selby 2007; JD, 1989, University of Baltimore

Skaggs, Steven Anthony 2009; MPA, 2001, University of Nebraska, Omaha

Smith, Michael Benjamin 2014; MFS, 1997, University of Nebraska, Omaha; MNS, 2012, A.T. Still University of Health Sciences

Stewart, Betty L. 1990; BS, 1996, Seattle University; BCHS, 1998, University of Washington

Thetford, Lois Catherine 1994; BA, 1967, Cornell University

Tozier, William L. 2011; MPH, 1990, University of Oklahoma; PhD, 1999, University of Denver

Vader, Kira Susan 2005; MA, 1999, Fuller Theological Seminary; MHS, 2002, Duke University

Wachtel, Dianna Lynn 2007; MS, 2008, A.T. Still University of Health Sciences

Genome Sciences

Professors

Akey, Joshua Michael 2004; PhD, 2002, University of Texas (Houston)

Berg, Celeste Antoinette 1990; MS, 1981, Yale University; PhD, 1986, Yale University

Brewer, Bonita J. 1979; PhD, 1979, University of Washington

Bruce, James 2008; PhD, 1992, University of Florida

Eichler, Evan E. 2004; PhD, 1995, Baylor College of Medicine

Felsenstein, Joseph 1967; PhD, 1968, University of Chicago

Fields, Stanley 1995; MA, 1978, Cambridge University (UK); PhD, 1981, Cambridge University (UK)

Gallant, Jonathan Abraham 1961, (Emeritus); PhD, 1961, Johns Hopkins University

Gottschling, Daniel E. * 1996, (Affiliate); MS, 1980, University of Colorado (campus unspecified); PhD, 1984, University of Colorado (campus unspecified)

Green, Philip Palmer III * 1994; PhD, 1976, University of California (Berkeley)

Hartwell, Leland H. 1967, (Emeritus); PhD, 1964, Massachusetts Institute of Technology

Hawrylycz, Michael John 2014, (Affiliate); MA, 1984, Wesleyan University; PhD, 1994, Massachusetts Institute of Technology

Henikoff, Steven 1977, (Affiliate); PhD, 1977, Harvard University

Hood, Leroy E. * 1991, (Affiliate); MD, 1964, Johns Hopkins University; PhD, 1968, California Institute of Technology

MacCoss, Michael J. 2004; PhD, 2001, University of Vermont

Manoil, Colin Christy 1986; PhD, 1979, Stanford University

Nickerson, Deborah Ann 1992; PhD, 1978, University of Tennessee

Noble, William Stafford 2002; MS, 1996, University of California (San Diego); PhD, 1998, University of California (San Diego)

Olson, Maynard V. 1975, (Emeritus); PhD, 1970, Stanford University

Pallanck, Leo Joseph 1997; MS, 1989, Albert Einstein College of Medicine; PhD, 1992, Albert Einstein College of Medicine

Sibley, Carol Hopkins 1976, (Emeritus); MA, 1966, University of Rochester; MS, 1970, University of Rochester; PhD, 1974, University of California (San Francisco)

Swanson, Willie James 2002; PhD, 1998, University of California (San Diego)

Thomas, James Horsfall 1988; PhD, 1985, Massachusetts Institute of Technology

Trask, Barbara Jo * 1992, (Emeritus); MS, 1979, Leiden University (The Netherlands); PhD, 1985, Leiden University (The Netherlands)

Waterston, Robert Hugh 2002; MD, 1972, University of Chicago; PhD, 1972, University of Chicago

Associate Professors

Borenstein, Elhanan 2009; PhD, 2007, Tel Aviv University (Israel)

Breeden, Linda Louise 1994, (Affiliate); PhD, 1981, University of Colorado (Boulder)

Dunham, Maitreya 2008; PhD, 2003, Stanford University
Malik, Harmat S. 2004, (Affiliate); MS, 1999, University of Rochester; PhD, 1999, University of Rochester

Paddison, Patrick John 2013, (Affiliate); PhD, 2004, Watson School of Biological Sciences (Cold Spring Harbor, NY)

Queitsch, Christine 2007; MSc, 1993, Martin Luther Univ Halle-Wittenberg; PhD, 2001, University of Chicago

Shendure, Jay Ashok 2007; PhD, 2005, Harvard University; MD, 2007, Harvard University

Stamatoyannopoulos, John A. 2005; MD, 1995, University of Washington

Ventura, Mario 2007, (Affiliate); PhD, 2003, University of Bari (Italy)

Assistant Professors

Bloom, Jesse David 2011, (Affiliate); MPhil, 2002, Cambridge University (UK); PhD, 2007, California Institute of Technology

Bradley, Robert Kurata 2011, (Affiliate); PhD, 2008, University of California (Berkeley)

Dudley, Aimee Marie 2008, (Affiliate); PhD, 1999, Harvard Medical School

Fowler, Douglas McKay 2007; PhD, 2007, The Scripps Research Institute

Trapnell, Bruce Cole 2014; PhD, 2010, University of Maryland

Villen, Judit 2010; MSc, 1999, University of Barcelona (Spain); PhD, 2003, University of Barcelona (Spain)

Wolf Yadin, Alejandro M. 2010; MS, 2001, University of Chile; PhD, 2007, Massachusetts Institute of Technology

Senior Lecturer

Schivell, Amanda Elizabeth 1994; PhD, 2000, University of Washington

Lecturers

Carlson, Keisha Dawn 2008; BS, 2008, Brown University
Cheong, Ka Yan 2011; PhD, 2010, Johns Hopkins University

Munn, Maureen 1993; PhD, 1986, University of California (San Francisco)

Paul, Anne Sandilands 1980; MS, 1994, University of Washington

Immunology

Professors

Aderem, Alan Arnold * 1996, (Affiliate); PhD, 1979, University of Capetown (South Africa)

Bevan, Michael John * 1990; MSc, 1968, University of London, UK; PhD, 1972, National Inst For Medical Research (UK)

Fink, Pamela Jean 1990; PhD, 1981, Massachusetts Institute of Technology

Gale, Michael J. 1983; PhD, 1994, University of Washington

Goverman, Joan M. 1992; PhD, 1981, University of California (Los Angeles)

Isaak, Dale Darwin 2001, (Affiliate); MS, 1973, Montana State University; PhD, 1976, Montana State University

Jutila, Mark Arthur 2002, (Affiliate); MS, 1984, Washington State University; PhD, 1986, Washington State University

Maizels, Nancy 2000; PhD, 1974, Harvard University

Nepom, Gerald Thomas * 1982, (Affiliate); PhD, 1977, University of Washington; MD, 1978, University of Washington

Perlmutter, Roger Matthew * 1984, (Affiliate); MD, 1979, Washington University; PhD, 1979, Washington University

Strong, Roland Kirk * 1994, (Affiliate); PhD, 1990, Harvard University

Ziegler, Steven Frank * 1984, (Affiliate); PhD, 1984, University of California (Los Angeles)

Associate Professors

Campbell, Daniel 2004, (Affiliate); PhD, 1998, University of California (Berkeley)

Hamerman, Jessica Ann 1994, (Affiliate); PhD, 2001, University of Washington

Lacy-Hulbert, Adam 2014, (Affiliate); PhD, 1995, Cambridge University (UK)

Stetson, Daniel 2008; PhD, 2002, University of California (San Francisco)

Assistant Professors

Bettelli, Estelle 2009, (Affiliate); MS, 1996, Universite of Paris VII; PhD, 2001, Universite of Paris VII

Knall, Cindy 2006, (Affiliate); PhD, 1994, University of Colorado (Denver)

Oberst, Andrew Atwell 2012; PhD, 2005, Univ of Pierre & Marie Curie (France); PhD, 2005, University of Rome Tor Vergata (Italy)

Pepper, Marion 2011; PhD, 2006, University of Pennsylvania

Savan, Ram 2011; MSc, 2001, University of Agricultural Sciences (India); PhD, 2004, Kagoshima University

Laboratory Medicine

Professors

Aston, Michael Lee * 1991, (Clinical); MD, 1989, University of Pennsylvania; PhD, 1989, University of Pennsylvania

Chatrian, Gian Emilio 1959, (Emeritus); MD, 1951, University of Naples (Italy)

Chou, David * 1998; MD, 1974, University of Pittsburgh; MS, 1979, University of Minnesota

Clarridge, Jill E. 2002; MS, 1962, University of Michigan; PhD, 1973, Purdue University

Cookson, Brad Theodore 1991; MD, 1991, Washington University; PhD, 1991, Washington University

Coombs, Robert William * 1985; PhD, 1977, Dalhousie University (Canada); MD, 1981, Dalhousie University (Canada)

Corey, Lawrence * 1975; MD, 1971, University of Michigan

Coyle, Marie Bridget * 1973, (Emeritus); MS, 1963, St. Louis University; PhD, 1965, Kansas State University

Detter, James Cox * 1962, (Emeritus); MD, 1962, University of Kansas

Fang, Ferric C. 2001; MD, 1983, Harvard University

Fine, James Stephen * 1977; MD, 1972, University of Minnesota; MS, 1977, University of Minnesota

Hess, John Rider 2012; MD, 1972, University of Washington; MPH, 1979, University of Hawaii

Jerome, Keith Robert 1993; PhD, 1992, Duke University; MD, 1993, Duke University

Kenny, Margaret A. * 1968, (Emeritus); PhD, 1968, University of Illinois

Labbe, Robert Ferdinand * 1957, (Emeritus); MS, 1949, Oregon State University; PhD, 1951, Oregon State University

Morrow, Rhoda Ashley * 1979; PhD, 1977, University of California (Davis)

Plorde, James J. * 1960, (Emeritus); MD, 1959, University of Minnesota

Rainey, Petrie Morrison 2000; PhD, 1973, University of California (Berkeley); MD, 1980, University of North Carolina, Chapel Hill

Raisys, Vidmantas A. * 1971, (Emeritus); MS, 1965, University of Illinois; PhD, 1969, State University of New York (Buffalo)

Rutledge, Joe Cathey * 1976; MD, 1976, Vanderbilt University

Schmer, Gottfried * 1968, (Emeritus); MD, 1956, University of Vienna, Austria

Stephens, Karen Gayle 1989; MA, 1978, Indiana University; PhD, 1982, Indiana University

Tait, Jonathan Francis * 1983; MD, 1983, Washington University; PhD, 1983, Washington University

Wener, Mark Howard * 1980; MD, 1974, Washington University

Wood, Brent Lee 1990; PhD, 1988, Loma Linda University; MD, 1990, Loma Linda University

Zimring, James Charles 2013; MD, 1999, Emory University; PhD, 1999, Emory University

Associate Professors

Bankson, Daniel Duke 1993; MS, 1981, Massachusetts Institute of Technology; PhD, 1985, Massachusetts Institute of Technology

Cherian, Sindhu 2005; MD, 2000, Emory University

Delaney, Collene Jayne * 1972, (Emeritus); MS, 1967, University of Illinois; PhD, 1972, University of Illinois

Fromm, Jonathan R. 1998; MD, 1997, University of Iowa; PhD, 1997, University of Iowa

Hoofnagle, Andrew Norbert 2004; PhD, 2002, University of Colorado (Boulder); MD, 2004, University of Colorado (Denver)

Morishima, Chihiro 1991; MD, 1988, Washington University

Nester, Theresa Ann 2001; MD, 1994, University of Rochester

Opheim, Kent Edgar * 1975; PhD, 1972, Cornell University

Qin, Xuan 2005; PhD, 1995, State University of New York (Albany)

Sabath, Daniel Eliot * 1989; MD, 1989, University of Pennsylvania; PhD, 1989, University of Pennsylvania

Schiller, Harvey Stuart * 1972; MD, 1966, Washington University

Tsuchiya, Karen D. 1990; MD, 1990, University of Michigan

Wu, David 2008; PhD, 2001, Massachusetts Institute of Technology; MD, 2003, Harvard University

Zhu, Tuofu 1997; MD, 1984, Tiangxi (Jiangxi) Medical School, China; PhD, 1990, Peking Union Medical College (China)

Zhu, Tuofu 1997; MD, 1984, Tiangxi (Jiangxi) Medical School, China; PhD, 1990, Peking Union Medical College (China)

Assistant Professors

Abbott, April Nicole 2009; PhD, 2009, University of Texas (Houston)

Baird, Geoffrey S. 2003; PhD, 2001, University of California (San Diego); MD, 2003, University of California (San Diego)

Butler-Wu, Susan 2007; PhD, 2005, Tufts University

Daniel-Johnson, Jennifer A. 2010; MBBS, 1995, University of Melbourne (Australia)

Delaney, Meghan 2009; DO, 2004, University of New England; MPH, 2010, University of Washington

Edlefsen, Kerstin Lara 1998; MD, 2002, University of Washington

Grisson, Ricky Darnell II 2013; MBA, 2004, Emory University; MD, 2007, Harvard College; MPH, 2012, Dartmouth College

Haver, Virginia Mary * 1986, (Clinical); PhD, 1980, University of Virginia

Hoffman, Noah Gabriel 2005; PhD, 2003, University of North Carolina; MD, 2005, University of North Carolina

Le Crone, Carol N. * 1967, (Emeritus); MS, 1966, Colorado State University

Murphy, Sean Christopher 2008; PhD, 2006, Northwestern University; MD, 2008, Northwestern University

Pagano, Monica Beatriz 2009; MD, 1999, University of Buenos Aires (Argentina)

Pritchard, Colin Christopher 1996; PhD, 2005, University of Washington; MD, 2007, University of Washington

Salipante, Stephen Joseph 2003; PhD, 2009, University of Washington; MD, 2011, University of Washington

Shirts, Brian Hanson 2012; PhD, 2006, University of Pittsburgh; MD, 2008, University of Pittsburgh

Soma, Lorinda Anne 2012; MD, 1998, University of Minnesota

Swenson, Paul David 1987, (Affiliate); PhD, 1979, Virginia Commonwealth University

Zhou, Yi 2013; MD, 1987, Beijing Medical University (China); PhD, 1995, Louisiana State University

Senior Lecturer

Hansen-Suchy, Kara Fran 2012; MEd, 2005, Weber State University

Medicine

Professors

Abkowitz, Janis Lynne 1980; MD, 1977, Harvard University

Abrass, Christine Kreger 1984, (Emeritus); MD, 1973, Case Western Reserve University

Abrass, Itamar B. 1983, (Emeritus); MD, 1966, University of California (San Francisco)

Aguilar-Bryan, Lydia 2007, (Affiliate); MD, 1975, U Nacional Autonoma De Mexico (Mexico); PhD, 1985, University of Texas (Houston)

Ahmad, Suhail 1976; MBBS, 1968, University of Allahabad (India)

Aitken, Moira Lesley 1982; MBChB, 1978, University of Edinburgh (UK)

Albers, John J. * 1971, (Research); MS, 1967, University of Illinois; PhD, 1969, University of Illinois

Altman, Leonard Charles * 1969, (Clinical); MD, 1969, Harvard University

Amory, John Kenneth 1997; MD, 1994, University of California (San Francisco)

Anawalt, Bradley David 1989; MD, 1989, University of California (Davis)

Appelbaum, Frederick Ray 1978; MD, 1972, Tufts University

Au, David Hsiang-Shan 1996; MD, 1993, University of Chicago; MS, 1999, University of Washington

Aubuchon, James P. 2008; MD, 1978, University of Michigan, Ann Arbor

Back, Anthony Lee 1984; MD, 1984, Harvard University

Banks, William A. 2010; MD, 1979, University of Missouri

Barnhart, Scott * 1979; MD, 1979, George Washington University

Barrett, Peter Hugh Russell * 1988, (Affiliate); PhD, 1989, University of Adelaide (Australia)

Baskin, Denis George * 1979, (Research); PhD, 1969, University of California (Berkeley)

Becker, Pamela Sue 2003; MD, 1986, Harvard University; PhD, 1986, Harvard University

Benditt, Joshua Oliver 1994; MD, 1982, University of Washington

Bensing, William Ira 1976; MD, 1973, Northwestern University

Blagg, Christopher Robin 1963, (Emeritus); MD, 1954, University of Leeds (UK); MBChB, 1954, University of Leeds (UK)

Blau, Carl Anthony 1989; MD, 1986, Ohio State University

Boeckh, Michael Juergen Johannes 1990; MD, 1985, Freie University of Berlin (Germany)

Bomsztyk, Karol 1983; MD, 1977, University of Rochester

Bornfeldt, Karin Elisabet * 1991; PhD, 1991, Linköping University (Sweden)

Boyko, Edward John * 1982; MD, 1979, University of Pittsburgh; MPH, 1984, University of Washington

Bremner, William John 1970; MD, 1969, University of Washington; PhD, 1977, Monash University (Australia)

Brentnall, Teresa Averill 1991; MD, 1987, University of Washington

Broudy, Virginia C. 1985; MD, 1980, University of California (San Francisco)

Brown, Bruce Gregory 1974, (Emeritus); MD, 1969, Johns Hopkins University; PhD, 1969, Johns Hopkins University

Brunzell, John D. * 1966, (Emeritus); MD, 1963, University of Washington

Buckner, Frederick S. 1992; MD, 1988, University of Washington

Buckner, Jane Hoyt 1992, (Affiliate); MD, 1987, Johns Hopkins University

Caldwell, James Hawkins Jr. 1970, (Emeritus); MD, 1970, University of Missouri

Carithers, Robert Lowery Jr. 1990; MD, 1969, University of Pennsylvania

Carter, Darrick A. 2013, (Affiliate); PhD, 1998, Oregon Health Sciences University

Carvalho, Paula Goncalves 1984; MD, 1984, University of Washington

Casper, Corey 2000; MD, 1997, Cornell University

Chait, Alan * 1975; MBChB, 1967, University of Capetown (South Africa); MSc, 1973, University of London, UK; MD, 1974, University of Capetown (South Africa)

Charan, Nirmal Biswas 1977, (Emeritus); MBBS, 1968, Christian Medical College of Ludhiana

Cheever, Martin Alexander 1970; MD, 1970, University of Michigan

Clark, Joan Gathje 1985, (Emeritus); MD, 1974, Washington University

Clurman, Bruce Edward 1991; PhD, 1988, Cornell University; MD, 1989, Cornell University

Cobb, Leonard A. 1957, (Emeritus); MD, 1952, University of Minnesota

Collier, Ann Cornwall 1982; MD, 1978, Dartmouth College

Collins, Steven James * 1980, (Emeritus); MD, 1973, Columbia University

Colven, Roy Mitchell 1987; MD, 1987, University of Washington

Copass, Michael K. 1969, (Emeritus); MA, 1964, Northwestern University; MD, 1964, Northwestern University

Cosgrove, Ellen Mary 2011; MD, 1978, Hahnemann Medical College

Counts, Richard Barton 1967, (Emeritus); MD, 1967, Washington University

Couser, William Griffith 1982, (Affiliate); MD, 1965, Harvard University

Cummings, David Eustace 1987; MD, 1987, Harvard University

Cummins, Richard Oliver 1977; MD, 1972, Case Western Reserve University

Curtis, Jared Randall 1988; MD, 1988, Johns Hopkins University; MPH, 1994, University of Washington

Dale, David Chandler 1971; MD, 1966, Harvard University

Dean, Larry Stephen 1980; MD, 1980, University of Alabama

Deeg, Hans Joachim 1976; MD, 1972, University of Bonn (Germany)

Del Zoppo, Gregory John 2007; MS, 1972, California Institute of Technology; MD, 1977, University of Washington

Dichek, David Anthony 2001; MD, 1984, University of California (Los Angeles)

Disis, Mary Lenora 1990; MS, 1986, University of Nebraska; MD, 1986, University of Nebraska

Dominitz, Jason Alan 1998; MD, 1991, University of Maryland; MS, 1996, Duke University

Doney, Kristine Craig 1975; MD, 1972, University of Michigan

Dong, Jing-Fei 2011; MD, 1984, Lanzhou University (China); MS, 1989, Tianjin University (China); PhD, 1993, University of Birmingham (UK)

Duchin, Jeffrey Scott 1995; MD, 1985, Rutgers University

Dugdale, David Clark 1982; MS, 1978, Cornell University; MD, 1982, University of Pennsylvania

Eisenberg, Mickey Stewart * 1971; MD, 1971, Case Western Reserve University; PhD, 1978, University of Washington

Elkon, Keith Barry 2001; MD, 1974, University of Witwatersrand (S. Africa)

Elmore, Joann Grace 1996; MD, 1987, Stanford University; MPH, 1992, Yale University

Estey, Elihu Harris 2008; MD, 1972, Johns Hopkins University

Fang, Xiangdong 2000, (Affiliate); MD, 1992, First Military Medical University, China; MS, 1995, First Military Medical University, China; PhD, 1999, First Military Medical University, China

Farquhar, Carey 1994; MD, 1994, Harvard University; MPH, 2001, University of Washington

Fihn, Stephan Dittler * 1977; MD, 1977, St Louis University; MPH, 1981, University of Washington

Fishbein, Daniel Philip 1981; MD, 1980, Albert Einstein College of Medicine

Fleckman, Philip H. 1982; MD, 1973, Washington University

Fleet, Wendell P. 1968, (Emeritus); MD, 1965, Creighton University

Flowers, Mary Evelyn Dantas 1994; MD, 1977, Universidade Federal do Rio de Janeiro (Brazil)

Fredricks, David Neal 2001; MS, 1984, Stanford University; MD, 1990, Case Western Reserve University

Fujimoto, Wilfred Y. * 1969, (Emeritus); MD, 1965, Johns Hopkins University

Furlong, Clement Eugene * 1977; PhD, 1968, University of California (Davis)

Gallagher, Thomas Henry 2002; MD, 1990, Harvard University

Garcia, David Allen 2012; MD, 1993, University of Alabama

Gardner, Gregory Charles 1989; MD, 1984, Baylor College of Medicine

Gartler, Stanley Michael * 1957, (Emeritus); PhD, 1952, University of California (Berkeley)

Gaster, Barak 1993; MD, 1993, University of California (San Francisco)

Geballe, Adam Philip * 1988; MD, 1978, Duke University

Gernsheimer, Terry Barbara 1983; MD, 1979, State Univ of New York (Stony Brook)

Gill, Edward Allen 1984; MD, 1984, University of Washington

Glenny, Robb William * 1987; MA, 1980, Duke University; MD, 1984, University of Virginia

Glomset, John A. * 1960, (Emeritus); CandMe, 1953, University of Uppsala (Sweden); LicMed, 1960, University of Uppsala (Sweden); MD, 1960, University of Uppsala (Sweden)

Golden, Matthew Robert 1994; MPH, 1993, Johns Hopkins University; MD, 1994, Johns Hopkins University

Goldstein, Erika Ann 1981; MD, 1981, University of Rochester

Goodner, Charles Joseph * 1962, (Emeritus); MD, 1955, University of Utah

Gopal, Ajay 1997; MD, 1993, Emory University

Goss, Christopher Hooper 1997; MD, 1992, University of Colorado (Denver); MS, 2000, University of Washington

Goss, John Richard 1993; MD, 1987, Oregon Health Sciences University; MPH, 1995, University of Washington

Grady, William M. 1990; MD, 1990, University of Michigan

Gralow, Julie Ruth 1992; MD, 1988, University of Southern California

Greenberg, Philip Dennis * 1976; MD, 1971, St Univ of New York (Downstate Med Ctr)

Handsfield, Hunter 1968, (Emeritus); MD, 1968, Columbia University

Hansen, John Andrew 1977; MD, 1970, Stanford University

Harlan, John Marshall * 1976; MD, 1973, University of Chicago

Harrington, Robert Deasy 1989; MD, 1983, Tufts University

Hawn, Thomas Richard 1995; MD, 1995, Johns Hopkins University; PhD, 1995, Johns Hopkins University

Hazzard, William Russell 1965, (Emeritus); MD, 1962, Cornell University

Heinecke, Jay Walter 1981; MD, 1981, Washington University

Henderson, William Reed 1978; MD, 1973, University of California (San Francisco)

Higano, Celestia Savoye 1982; MD, 1979, University of Massachusetts

Himmelfarb, Jonathan 2008; MD, 1983, George Washington University

Hirsch, Irl Bennett 1990; MD, 1984, University of Missouri

Hirschmann, Jan Victor 1976; MD, 1970, University of Washington

Hisama, Fuki 2009; MD, 1988, University of Chicago

Hockenbery, David Mark * 1994; MD, 1982, Washington University

Hooton, Thomas M. 1982, (Affiliate); MD, 1973, University of Texas (Dallas)

Inadomi, John 2010; MD, 1988, University of California (San Francisco)

Jackson, Jonathan Carey 1990; MPH, 1980, University of Hawaii; MD, 1986, Michigan State University; MA, 1993, Michigan State University

Jarvik, Gail Pairitz * 1991; MS, 1983, University of Michigan; PhD, 1986, University of Michigan; MD, 1987, University of Iowa

Kahn, Steven Emanuel 1986; MBChB, 1978, University of Capetown (South Africa)

Kanaan, Moien Nihad 1999, (Affiliate); MSc, 1984, University of Arizona; PhD, 1992, Ohio State University

Kaplan, Gilla 2014, (Affiliate); MSc, 1975, University of Tromsø; PhD, 1977, University of Tromsø

Kapur, Vishesh 1993; MD, 1989, Yale University; MPH, 1997, University of Washington

Kiem, Hans-Peter 1992; MD, 1987, University of Ulm (Germany)

King, Mary-Claire * 1995; PhD, 1973, University of California (Berkeley)

Kitahata, Mari Massey 1991; MD, 1987, University of Pennsylvania; MPH, 1995, University of Washington

Klausner, Richard D. 2004, (Affiliate); MD, 1976, Duke University

Klebanoff, Seymour Joseph * 1962, (Emeritus); MD, 1951, University of Toronto (Canada); PhD, 1954, University of London, UK

Koelle, David Martin 1988; MD, 1985, University of Washington

Konkle, Barbara Ann 2009; MD, 1979, Vanderbilt University

- Kudenchuk, Peter James 1979; MD, 1979, University of Washington
- Kwok, William Wai-Hung 1983, (Affiliate); PhD, 1983, University of Washington
- Larson, Eric Berg * 1975, (Clinical); MD, 1973, Harvard University; MPH, 1977, University of Washington
- Ledbetter, Jeffrey Alan 1986, (Affiliate); PhD, 1978, University of Wisconsin (Madison)
- Lee, Stephanie J. 2006; MD, 1990, Stanford University; PhD, 1996, Harvard University
- Lee, Sum Ping 1985, (Emeritus); MBBS, 1970, University of Hong Kong; PhD, 1978, University of Auckland (New Zealand); MD, 1981, University of Hong Kong
- Lehmann, Kenneth Grant 1990; MD, 1979, University of California (San Diego)
- Lernmark, Ake * 1988, (Emeritus); MD, 1970, University of Umea; PhD, 1971, University of Umea
- Levy, Wayne Cecil 1985; MD, 1985, Loma Linda University
- Li, Qiliang 1989, (Emeritus); PhD, 1978, Shanghai Institute of Biochemistry (Chn)
- Lieber, Andre Michael 1994; MD, 1987, Second Institute of Medicine (Russia); PhD, 1992, Humboldt University (Germany)
- Liles, Wayne Conrad Jr. 1990; MD, 1987, University of Washington; PhD, 1987, University of Washington
- Limaye, Abhijit Prakash 1990; MD, 1992, University of Washington
- Linenberger, Michael L. 1986; MD, 1982, University of Kansas
- Lipsky, Benjamin Alan 1973, (Emeritus); MD, 1973, Cornell University
- Logerfo, James Paul * 1971, (Emeritus); MD, 1968, University of Rochester; MPH, 1974, University of Washington
- Lopez, Jose Aron 1981; MD, 1981, University of New Mexico
- Lukehart, Sheila Ann 1979; PhD, 1978, University of California (Los Angeles)
- Lyman, Gary Herbert 2013; MD, 1972, State University of New York (Buffalo); MPH, 1982, Harvard University
- MacLellan, William Robb 2011; MD, 1988, University of Toronto (Canada)
- Magill, Alan Jon 2013, (Affiliate); MS, 1979, University of Rhode Island; MD, 1984, Baylor College of Medicine
- Maloney, David George 1995; MD, 1985, Stanford University; PhD, 1991, Stanford University
- Mankoff, David Abraham 1990, (Affiliate); MD, 1988, University of Pennsylvania; PhD, 1988, University of Pennsylvania
- Mannik, Mart * 1966, (Emeritus); MD, 1959, Case Western Reserve University
- Marrazzo, Jeanne Marisa 1992; MD, 1988, Jefferson Medical College; MPH, 1994, University of Washington
- Martin, Paul Joseph 1977; MD, 1974, University of Pennsylvania
- Martin, Thomas Reed 1973, (Emeritus); MD, 1973, University of Pennsylvania
- Martins, Renato 2004; MD, 1992, Federal Univ of Rio De Janeiro (Brazil); MPH, 1998, Harvard University
- Matsumoto, Alvin Mitsu 1975; MD, 1975, University of Washington
- McClelland, Raymond Scott 1988; MD, 1995, University of Washington; MPH, 2001, University of Washington
- McCormick, Wayne C. 1987; MD, 1983, University of Washington; MPH, 1989, University of Washington
- McDonald, George Bernard 1967; MD, 1967, Washington University
- McElrath, Margaret Juliana 1990; PhD, 1978, Medical University of South Carolina; MD, 1980, Medical University of South Carolina
- McGee, Steven Roy 1980; MD, 1980, Washington University
- Mehrotra, Rajnish 2012; MBBS, 1989, All-India Institute of Medical Sciences; MD, 1992, All-India Institute of Medical Sciences; MS, 2008, University of California (Los Angeles)
- Mergener, Klaus 2003, (Affiliate); MD, 1989, Rupprechts Karl University; PhD, 1991, Rupprechts Karl University; MBA, 2010, University of Massachusetts
- Miller, Samuel Irving * 1995; MD, 1979, Baylor College of Medicine
- Milner, John E. * 1965, (Emeritus); MD, 1961, University of Washington
- Montgomery, R. Bruce 1990; MD, 1987, Duke University
- Morales, Leo Sergio 2010; MPH, 1990, University of Washington; MD, 1990, University of Washington; MPhil, 1997, Pardee Rand Graduate School of Policy Studies; PhD, 2000, Pardee Rand Graduate School of Policy Studies
- Motulsky, Arno Gunther * 1953, (Emeritus); MD, 1947, University of Illinois
- Narita, Masahiro 2003; MD, 1988, Keio University (Japan)
- Nash, Richard Anthony 1994, (Affiliate); MD, 1977, University of Manitoba (Canada)
- Neiman, Paul E. * 1968, (Emeritus); MD, 1964, University of Washington
- Nelson, Judith Lee 1981; MD, 1977, University of California (Davis)
- Nelson, Peter Stanley 1993; MD, 1986, University of Kansas
- Nghiem, Paul 2006; MD, 1994, Stanford University; PhD, 1994, Stanford University
- Nichol, Graham 2004; MD, 1988, University of Western Ontario (Canada); MPH, 1995, Harvard University
- O'Brien, Kevin Douglas 1984; MD, 1984, University of Washington
- O'Donnell, Paul Vincent 2001, (Affiliate); PhD, 1973, Cornell University; MD, 1992, Johns Hopkins University
- Olerud, John Everett 1971, (Emeritus); MD, 1971, University of Washington
- O'Morchoe, Charles Christopher Creagh 2003, (Affiliate); MA, 1959, Dublin University; MD, 1961, Dublin University; PhD, 1969, Dublin University; DSc, 1981, Dublin University
- Ott, Susan Marie 1980; MD, 1974, University of Washington
- Otto, Catherine Mary 1982; MD, 1979, University of Washington
- Paauw, Douglas Stephen 1985; MD, 1985, University of Michigan
- Palmer, Jerry Philip 1972; MD, 1970, State Univ of New York (Upstate Med Ct)
- Park, David Raymond 1988; MD, 1988, University of Vermont
- Parks, William C. 2004, (Affiliate); PhD, 1982, Medical College of Wisconsin
- Pearlman, Alan Stuart 1978; MD, 1970, Harvard University
- Pearlman, Robert Allan * 1977; MD, 1975, Boston University; MPH, 1980, University of Washington
- Petersdorf, Effie Wang 1982; MD, 1982, McGill University (Canada)
- Pierson, David John 1976, (Emeritus); MD, 1969, Johns Hopkins University
- Plymate, Stephen R. 1972; MS, 1968, University of Nebraska; MD, 1968, University of Nebraska, campus unspecified
- Poole, Jeanne Engstrom 1981; MD, 1980, University of Washington
- Pope, Charles Edward II 1959, (Emeritus); MD, 1957, Case Western Reserve University
- Porte, Daniel 1963, (Emeritus); MD, 1957, University of Chicago
- Press, Oliver William * 1982; PhD, 1977, University of Washington; MD, 1979, University of Washington
- Price, Thomas Harrison 1972, (Emeritus); MD, 1966, Johns Hopkins University
- Probstfield, Jeffrey L. 1993; MD, 1967, University of Washington
- Psaty, Bruce Mark * 1984; MA, 1975, Indiana University; PhD, 1979, Indiana University; MD, 1981, Indiana University; MPH, 1986, University of Washington
- Radich, Jerald Patrick 1983; MS, 1979, Harvard University; MD, 1983, University of California (Davis)
- Raghu, Ganesh 1981; MBBS, 1974, University of Mysore (India)
- Ramsey, Paul Glenn 1978; MD, 1975, Harvard University
- Ramsey, Scott David * 1990; MD, 1990, University of Iowa; PhD, 1994, University of Pennsylvania
- Raskind, Wendy Herlihy 1978; PhD, 1977, University of Washington; MD, 1978, University of Washington
- Raugi, Gregory John 1980; MD, 1975, Duke University; PhD, 1975, Duke University
- Rea, Thomas David 1992; MD, 1992, University of Michigan; MPH, 2000, University of Washington
- Reid, Brian Jay * 1983; PhD, 1975, University of Washington; MD, 1980, University of Washington
- Riddell, Stanley Ralph 1985; MD, 1979, University of Manitoba (Canada)
- Robertson, Howard Thomas 1968, (Emeritus); MD, 1968, Harvard University
- Rodriguez, Rudolph Albert 2007; MD, 1989, University of California (Los Angeles)
- Rosen, Henry 1972; MD, 1972, University of Rochester
- Roth, Gerald James 1984, (Emeritus); MD, 1967, Harvard University
- Russell, David William 1991; PhD, 1988, Rockefeller University; MD, 1989, Cornell University
- Sandmaier, Brenda Marie 1985; MD, 1983, Albert Ludwig Universität (Germany)
- Sayre, Michael Richard 2012; MD, 1984, University of Cincinnati
- Schnapp, Lynn M. 2000, (Affiliate); MD, 1986, University of Pennsylvania
- Schuffler, Michael D. 1970, (Emeritus); MD, 1966, University of Illinois
- Schwartz, Michael Warren 1983; MD, 1983, Rush Medical College
- Shankland, Stuart James 1994; MBChB, 1983, University of Capetown (South Africa)
- Sheffield, John Van Loon 1989; MD, 1989, Harvard University
- Sherrard, Donald James 1961, (Emeritus); MD, 1960, University of Washington
- Shuhart, Margaret Clavette 1991; MD, 1988, Dartmouth College
- Simkin, Peter A. 1966, (Emeritus); MD, 1961, University of Pennsylvania
- Singh, Pradeep K. 2005; MD, 1989, Northwestern University
- Siscovick, David Stuart * 1976, (Emeritus); MD, 1976, University of Maryland; MPH, 1981, University of Washington
- Skerrett, Shawn Joseph 1983; MD, 1978, New York University
- Slichter, Sherrill J. 1967; MD, 1963, George Washington University
- Smith, Charles Bryan 1991, (Emeritus); MD, 1962, Harvard University
- Smith, Curtis Scott 1987; MD, 1980, University of Washington
- Sow, Papa Salif 2006, (Affiliate); MD, 1987, Dakar University; MSc, 1992, Institute of Tropical Medicine (Belgium)

Spach, David Henry 1986; MD, 1986, Duke University

Stamatoyannopoulos, George 1964; MD, 1958, University of Athens (Greece); Dr, 1960, University of Athens (Greece)

Stamatoyannopoulos, Thalia Papayannopoulou 1965; MD, 1961, University of Athens (Greece); DrMedS, 1964, University of Athens (Greece)

Stapleton, Ann Elizabeth 1987; MD, 1984, Albert Einstein College of Medicine

Starkebaum, Gordon Alan 1970, (Emeritus); MD, 1970, Columbia University

Steinberg, Kenneth Paul 1989; MD, 1985, New York Medical College

Stern, Susan A. 2009; MD, 1987, Case Western Reserve University

Stevens, Dennis Leroy 1979; PhD, 1967, Montana State University; MD, 1971, University of Utah

Stewart, Douglas Keith 1965; MD, 1965, Harvard University

Stewart, Forrest Marc 2000; MD, 1977, Indiana University

Stivelman, John C. 2000; MD, 1978, University of Pennsylvania

Storb, Rainer F. 1965; MD, 1960, University of Freiburg (Germany)

Stratton, John Russell 1976; MD, 1973, Yale University

Surawicz, Christina Mathilda 1974; MD, 1973, University of Kentucky

Swenson, Erik Richard 1983; MD, 1979, University of California (San Diego)

Thompson, Arthur R. 1969, (Emeritus); MD, 1966, University of Washington; PhD, 1972, University of Washington

Thompson, John Ainslie 1979; MD, 1979, University of Alabama

Tonelli, Mark Raymond 1993; MD, 1989, University of Colorado (Boulder)

Torok-Storb, Beverly Jo 1975, (Affiliate); MS, 1971, Edinboro University of Pennsylvania; PhD, 1975, University of Pittsburgh

Trence, Dace Lilliana 2000; MD, 1977, University of Minnesota

Turck, Marvin 1960; MD, 1959, University of Illinois

Van Voorhis, Wesley Courtlandt * 1986; PhD, 1983, Rockefeller University; MD, 1984, Cornell University

Wald, Anna 1989; MD, 1985, Mt Sinai School of Medicine; MPH, 1994, University of Washington

Warren, Edus Houston 1993; PhD, 1988, Harvard University; MD, 1991, Harvard University

Weigle, David Scott 1981, (Emeritus); MD, 1978, Harvard University

Wijsman, Ellen Marie * 1987; PhD, 1981, University of Wisconsin (Madison)

Wipf, Joyce Elaine 1984; MD, 1984, University of Minnesota

Witherspoon, Robert Philip 1970, (Emeritus); MS, 1970, Baylor College of Medicine; MD, 1970, Baylor College of Medicine

Yun, Chae-Ok 2012, (Affiliate); MS, 1988, Sogang University (Korea); PhD, 1996, Illinois Institute of Technology

Zager, Richard Allen 1973; MD, 1969, Northwestern University

Associate Professors

Agostoni, Piergiuseppe 2003, (Affiliate); PhD, 1992, University of Milan (Italy)

Altemeier, William Arthur 1992; MD, 1992, Vanderbilt University

Arterburn, David Eric 2001, (Affiliate); MD, 1997, University of Kentucky; MPH, 2003, University of Washington

Baernstein, Amy 1993; MD, 1993, Cornell University

Bedalov, Antonio 1996; MD, 1989, University of Zagreb (Croatia); DSc, 1998, University of Zagreb (Croatia)

Belcher, Donald Warren * 1964, (Emeritus); MD, 1962, University of Pennsylvania

Best, Jennifer Ann 1993; MD, 2000, Northwestern University

Bonig, Halvard Bjoern 2002, (Affiliate); MA, 1995, Heinrich-Heine University (Germany); MD, 1998, Heinrich-Heine University (Germany)

Branch, Kelley Robert Hardin 2001; MD, 1998, Thomas Jefferson University

Brodkin, Kayla Ilene 1989; MD, 1982, State Univ of New York (Stony Brook)

Browning, Brian Lee 2010; PhD, 1999, University of Washington

Bryant, Amy Evelyn 2006, (Affiliate); PhD, 1999, University of Idaho

Bryson, Christopher L. 2000; MD, 1997, University of Texas (Southwestern); MS, 2002, University of Washington

Carlbom, David John 2000; MD, 1997, University of Washington

Centurion Lara, Glaber Arturo 1993, (Emeritus); MD, 1986, Univ.Nacional Mayor De San Marcos (Peru)

Chauncey, Thomas Reeve 1985; PhD, 1981, University of Chicago; MD, 1985, Rush Medical College

Chen, Michael Anthony 1999; MA, 1991, University of Michigan, Ann Arbor; PhD, 1995, University of Michigan, Ann Arbor; MD, 1999, University of Michigan, Ann Arbor

Cherry, Debra Carol 2013; MD, 1995, Texas Technological University; MS, 1999, Stephen F. Austin University

Cheung, Marian Chor-Kwan 1975, (Emeritus); PhD, 1976, State University of New York (Buffalo)

Chew, Lisa Dianne 1993; MD, 1993, University of California (San Francisco)

Childs, Marian Tolbert * 1968, (Emeritus); PhD, 1950, University of California (Berkeley)

Chin, Michael Thomas 2006; PhD, 1988, University of Rochester; MD, 1991, University of Rochester

Chiorean, Elena Gabriela 2012; BM, 1993, University of Medicine and Pharmacy of Cluj-Napoca (Romania)

Chow, Laura Quan Man 2010; MD, 1999, University of British Columbia (Canada)

Cirulli, Vincenzino 2009; MD, 1986, University of Rome (Italy); PhD, 1993, University of Geneva (Switzerland)

Cornia, Paul Bryan 1996; MD, 1996, Case Western Reserve University

Corson, Marshall Ayer 1994; MD, 1981, Baylor College of Medicine

Crane, Heidi McLaughlin 1991; MD, 1998, University of Washington; MPH, 2002, University of Washington

Crane, Paul K. 1997; MD, 1997, University of Washington; MPH, 2003, University of Washington

Crisa, Laura 2009; MD, 1986, University of Rome (Italy); PhD, 1992, University of Massachusetts

Crothers, Kristina Anne 2009; MD, 1997, Yale University

Culver, Bruce H. 1972, (Emeritus); MD, 1969, University of Washington

Davidson, Robert C. 1956, (Emeritus); MD, 1953, University of Washington

De Boer, Ian H. 2003; MD, 1999, Oregon Health Sciences University; MS, 2005, University of Washington

Dellit, Timothy Harold 2001; MD, 1997, Cornell University

Dhanireddy, Shireesha 1999; MD, 1999, Georgetown University

Duffield, Jeremy Stuart 2010, (Affiliate); MA, 1995, Oxford University (UK); PhD, 2001, Edinburgh University, Scotland; MD, 2004, Educational Commission for Foreign Medical Graduates

Dugowson, Carin E. 1977; MD, 1976, University of Illinois; MPH, 1986, University of Washington

Durvasula, Raghu Venkata 1999; MD, 1996, McGill University (Canada)

Eacker, Anne Marie 1993; MD, 1997, University of Washington

Eaton, Keith David 1998; MS, 1991, University of California (San Diego); PhD, 1995, University of California (San Diego); MD, 1998, University of California (San Diego)

Edelman, Jeffrey D. 2005; MD, 1989, Columbia University

Ellis, Georgiana Kehr 1982; MD, 1982, University of Washington

Emery, David William 1984, (Affiliate); PhD, 1989, University of Washington

Evans, Timothy Charles 1980; MD, 1974, University of Michigan; PhD, 1976, University of Michigan

Fan, Vincent Sh-Yeh 1995; MD, 1995, University of Minnesota; MPH, 2000, University of Washington

Fernandez, Rosemarie 2011; MD, 1999, University of Michigan

Fero, Matthew Luke 1993; MD, 1990, University of California (Irvine)

Ferucci, Elizabeth D. 2004, (Affiliate); MD, 1997, New York University; MPH, 2007, Johns Hopkins University

Foster-Schubert, Karen Emily 1990; MD, 1998, Johns Hopkins University; MS, 2007, University of Washington

Freeman, Rosario Velazquez 2001; MD, 1995, Loyola University (Chicago); MS, 2001, University of Michigan

Gadi, Vijayakrishna K. 2000; PhD, 1999, University of Alabama; MD, 2000, University of Alabama

Gallahue, Fiona E. 2008; MD, 1997, Washington University

Georges, George Earl 1994; MD, 1990, University of California (San Francisco)

Gharib, Sina Aliasghar 1996; MD, 1996, Harvard University

Gibbons, Edward Francis 1997; MD, 1978, University of Chicago

Goodman, Richard B. 1986; MA, 1980, University of South Dakota; MD, 1982, University of Oklahoma

Gottlieb, Geoffrey S. 1998; MD, 1994, Chicago Medical School; PhD, 1995, Chicago Medical School

Greenberg, Deborah Lynn 1990; MD, 1990, Washington University

Gruenewald, David Allan 1983; MD, 1983, University of Chicago

Hagman, Melissa Mae 1999; MD, 1999, University of Washington

Hall, Yoshio Nogami 2007; MD, 1999, Baylor College of Medicine

Hallstrand, Teal Sterling 1990; MD, 1993, University of Washington; MPH, 2000, University of Washington

Hingorani, Sunil 2006; MD, 1994, Yale University; PhD, 1994, Yale University

Holmberg, Leona Ann 1987; PhD, 1983, Harvard University; MD, 1986, University of Miami (Florida)

Hough, Catherine Lee 1999; MD, 1996, University of California (San Francisco); MSc, 2003, University of Washington

Houghton, Ashley McGarry 2012; MD, 1996, Georgetown University

Hwang, Joo Ha 1997; MD, 1997, University of Chicago; PhD, 2005, University of Washington

Ioannou, George 2000; MBChB, 1996, Oxford University (UK); MS, 2002, University of Washington

Jefferson, Jonathan Ashley 1997; MBChB, 1989, Queens University; MD, 1995, Queens University

Jobe, Kathleen Ann 1986; MD, 1986, University of Colorado (Denver)

Johnson, Kay Marie 1991; MD, 1991, University of Minnesota

Jones, Robin L. 2010; MBBS, 1996, Guy's Hospital Medical School (UK); MD, 2006, University of London, UK

- Kalus, Andrea 1995; MD, 1999, University of Washington
- Kearney, David John 1996; MD, 1989, University of Missouri
- Kestenbaum, Bryan 1999; MD, 1995, University of Massachusetts; MS, 2002, University of Washington
- Kim, Francis 1992; MD, 1990, University of California (San Francisco)
- Kim, Hyang Nina 1999; MD, 1999, University of California (San Francisco); MS, 2005, University of Washington
- Knight, Christopher Lawrence 1993; MD, 1996, University of Washington
- Ko, Cynthia W. 1994; MD, 1991, Stanford University
- Korde, Larissa 2009; MD, 1998, New York Medical College; MPH, 2003, George Washington University
- Kritek, Patricia A. 2010; MD, 1998, University of Connecticut; EdM, 2006, Harvard University
- Kruse-Jarres, Rebecca 2014; MPH, 1999, Tulane University; MD, 1999, Tulane University
- Kuver, Rahul Pradyumna 1989; MD, 1989, University of Michigan
- Laya, Mary Beth 1993; MD, 1982, Creighton University; MPH, 1995, University of Washington
- Lee, Scott David 1997; MD, 1994, Jefferson Medical College
- Libby, Edward Norton 2011; MD, 1984, University of Texas (Houston)
- Lin, Edward Hueiguo 2006; MD, 1986, China Medical University (China)
- Linden, Hannah Margaret 1993; MD, 1989, University of Massachusetts
- Linker, David Thor 1993; MD, 1976, Stanford University; MSE, 1982, University of Washington
- Lipkin, Edward Walter * 1981, (Emeritus); PhD, 1976, Case Western Reserve University; MD, 1978, Case Western Reserve University
- Luks, Andrew Mark 2000; MA, 1993, Stanford University; MD, 2000, University of California (San Diego)
- Lynch, John B. 1993; MD, 2002, University of Washington; MPH, 2011, University of Washington
- Madtes, David Keith 1983; MD, 1979, University of Pittsburgh
- Martin, Gary Victor 1984; MD, 1980, University of Arizona
- Matute-Bello, Gustavo 1994; MD, 1988, Central University (Venezuela)
- McDonough, Karen Ann 1993; MD, 1993, University of Wisconsin
- McMullen, William Russell 1981; MD, 1978, University of Cincinnati
- Merrill, Joseph Owen 1996; MD, 1990, Yale University; MPH, 1998, University of Washington
- Mielcarek, Bessie Young 1987; MD, 1987, University of Washington
- Mielcarek, Marco B. 1998; MD, 1986, Freie University of Berlin (Germany); PhD, 1987, Freie University of Berlin (Germany)
- Migeon, Mary Bascom 1988; MD, 1993, University of Washington
- Milek, Debra Jean 2012; PhD, 1982, Medical University of South Carolina; MD, 1985, New Jersey Medical School; MPH, 1988, Columbia University
- Miller, Richard Alan 1980; MD, 1977, Harvard University
- Mostaghel, Elahe Anna 2003; MD, 2000, Duke University; PhD, 2000, Duke University
- Muczynski, Kimberly Ann 1989; MD, 1984, University of Washington; PhD, 1984, University of Washington
- Nelson, Karin 2001; MD, 1995, University of Minnesota; MSHS, 2000, University of California (Los Angeles)
- Nelson, Peter J. 2009; MD, 1997, Mt Sinai School of Medicine
- Ng, Bernard Soo-Kian 2013; MBBS, 1992, National University of Singapore; MMed, 1998, National University of Singapore; MS, 2013, Baylor College of Medicine
- O'Connor, Kim Marie 1996; MD, 1999, University of Washington
- Oehler, Vivian Gudrun 1997; MD, 1997, Case Western Reserve University
- O'Hare, Ann Margaret 2007; MA, 1987, University of Minnesota; MD, 1996, University of Virginia
- Olson, Richard D. 1984, (Affiliate); PhD, 1978, Vanderbilt University
- Pagalilauan, Genevieve L. 1995; MD, 2000, University of Washington
- Page, Stephanie T. 1991; MD, 1999, University of Washington; PhD, 1999, University of Washington
- Patton, Kristen K. 2004; MD, 1995, Oregon Health Sciences University
- Paulovich, Amanda G. 1989; PhD, 1996, University of Washington; MD, 1998, University of Washington
- Payne, Thomas Howard 1991; MD, 1980, University of Washington
- Phelan, Elizabeth A. 1996; MD, 1992, Tufts University; MS, 1998, University of Washington
- Pichler, Raimund H. 1993; MD, 1993, University of Vienna, Austria
- Pottinger, Paul Stuart 2002; MD, 1998, Yale University
- Powell, Heidi Sara 1993; MS, 1980, Oregon State University; MD, 1986, Oregon Health Sciences University
- Ralph, David Dewitt 1979; MD, 1972, Stanford University
- Reed, May Jennifer 1990; MD, 1986, Harvard University
- Reilly, Dominic Francis 1991; MD, 1988, University of Washington
- Rhoads, Caroline Shipley 1989; MD, 1989, University of Pennsylvania
- Richard, Robert Edwin 1996; MD, 1984, Stony Brook University; PhD, 1992, Stony Brook University
- Rodriguez, Cristina Pagua 2013; MD, 2001, University of The Philippines
- Ryan, Michael Joseph 1986; MD, 1986, University of Michigan
- Sasso, Eric Harry 1984, (Affiliate); MD, 1980, University of California (San Diego)
- Schleyer, Anneliese Margareta 1991; MHA, 1992, University of Washington; MD, 1999, University of Washington
- Schur, Ellen Anne 1999; MD, 1999, Stanford University; MS, 2008, University of Washington
- Scott, Bart L. 1999; MD, 1996, University of South Alabama
- Scott, John Douglas 2002; MD, 1998, Georgetown University; MSc, 2006, University of Washington
- Shandro, Jamie 2006; MD, 2002, University of Washington; MPH, 2003, Harvard University
- Shustov, Andrei R. 2003; MD, 1993, Crimea State Medical Univ (Ukraine)
- Smith, Stephen Douglas 2013; MD, 2002, University of Southern California
- Sotodehnia, Nona 1996; MPH, 1996, Harvard University; MD, 1996, Harvard University
- Specht, Jennifer M. 1997; MD, 1999, University of Washington
- Stadius, Michael Lauri 1982; MD, 1978, University of Oregon
- Staiger, Thomas Owen 1985; MD, 1985, University of Washington
- Steinbach, Gideon 2001; PhD, 1975, City University of New York; MD, 1981, Albert Einstein College of Medicine
- Stekler, Joanne Donna 1997; MD, 1997, Duke University; MPH, 2004, University of Washington
- Stempien-Otero, April L. 1994; MD, 1990, University of Connecticut
- Stirewalt, Derek Lynn 1996; MD, 1992, University of North Carolina
- Stout, Karen K. 2000; MD, 1996, University of Arizona
- Strate, Lisa 2006; MD, 1995, University of California (San Francisco); MPH, 2001, Harvard University
- Strote, Jared 2002; MS, 1994, Duke University; MD, 1999, Harvard University
- Sugg, Nancy Kathleen 1983; MD, 1983, University of Maryland
- Sutton, Eliza Leeds 1990; MA, 1986, Harvard University; MD, 1990, Harvard University
- Sutton, Paul Randolph 1999; PhD, 1992, University of Illinois; MD, 1994, University of Chicago
- Takahashi, Traci Ann 1995; MD, 1995, University of California (San Diego); MPH, 2001, University of Washington
- Thompson, Rachel Ellen 2000; MD, 2000, University of Washington
- Thompson, William Herbert 1988; MD, 1988, Johns Hopkins University
- Townes, David Andrew 2001; MD, 1993, University of Massachusetts; MPH, 1998, University of Illinois
- Traynor-Kaplan, Alexis Elaine 1997, (Affiliate); PhD, 1979, University of California (San Diego)
- Utzschneider, Kristina Marie 1993; MD, 1993, Harvard University
- Vig, Elizabeth Karen 1996; MD, 1993, New York University; MPH, 2000, University of Washington
- Walter, Roland 2005; MD, 1997, University of Zurich (Switzerland); PhD, 2006, University of Washington; MS, 2011, University of Washington
- Watanabe, Jill Midori 1998; MD, 1990, Johns Hopkins University; MPH, 1991, Johns Hopkins University
- West, Timothy Edin 2003; MD, 1999, Medical College of Virginia; MPH, 2005, Harvard University
- Wheeler, Stephanie Grace Bertholf 1988; MD, 1993, University of Washington; MPH, 1998, University of Washington
- Whimbey, Estella E. 2001; MD, 1978, Cornell University
- Wisse, Brent Eugene 1999; MD, 1995, McGill University (Canada)
- Wong, Emily Yen 1995, (Affiliate); MD, 1990, University of Washington
- Wood, Francis C. * 1955, (Emeritus); MD, 1954, Harvard University
- Wu, Daniel Yin 1991; MS, 1984, University of California (Los Angeles); PhD, 1990, Loma Linda University; MD, 1991, Loma Linda University
- Wu, Jennifer Donglan 2003, (Affiliate); MS, 1991, Peking University (China); PhD, 2000, University of British Columbia (Canada)
- Wurfel, Mark Matsuo 1997; PhD, 1995, Rockefeller University; MD, 1997, Cornell University
- Yannaki, Evangelia 1998, (Affiliate); MD, 1988, University of Thessaloniki, Greece
- Yu, Evan Ya-Wen 2004; MD, 1998, University of Washington

Assistant Professors

- Adamson, Rosemary 2012; MBBS, 2004, St. Thomas' Hospital Med School (UK)
- Adedipe, Adeyinka 2008; MD, 2001, University of Chicago
- Afkarian, Maryam 2010; MD, 2003, Washington University; PhD, 2003, Washington University; MMSc, 2010, Harvard University
- Ayars, Andrew Garrison 2009; MD, 2006, St. Louis University
- Backlund, Brandon H. 2010; MD, 2000, University of Iowa

- Baik, Christina S. 2009; MD, 2002, University of Rochester; MPH, 2006, Harvard University
- Bansal, Nisha 2013; MD, 2003, University of Connecticut; MAS, 2010, University of California (San Francisco)
- Bar, Merav 1999; MD, 1999, Hebrew University (Israel)
- Bhatia, Shailender 2005; MBBS, 2000, All-India Institute of Medical Sciences
- Billings, Martha Elizabeth 2006; MD, 2002, University of California (San Francisco)
- Blue, Elizabeth E. 2008; MS, 2005, University of Utah; PhD, 2008, University of Utah
- Bridges, Tiffany Michelle 2014; MD, 2005, George Washington University
- Cassaday, Ryan 2010; MD, 2007, University of Wisconsin (Madison)
- Chapuis, Aude Georgiana 2007; MD, 2002, University of Lausanne (Switzerland)
- Cheng, Guang-Shing 2011; MD, 2001, University of California (San Francisco)
- Cheng, Heather Hen 1998; PhD, 2005, University of Washington; MD, 2007, University of Washington
- Cheng, Richard Kar-Hang 2013; MD, 2005, Columbia University; MS, 2011, University of California (Los Angeles)
- Choe, John H. 2000; MD, 1997, New York University; MPH, 2002, University of Washington
- Compton, Nicholas Lee 2002; MD, 2002, University of Washington
- Coruh, Basak 2006; MD, 2006, Virginia Commonwealth University
- Coveler, Andrew Lawrence 2003; MD, 2002, Northwestern University
- Dandekar, Ajai Arvind 2005; MD, 2005, University of Iowa; PhD, 2005, University of Iowa
- Dombrowski, Julia Cook 2007; MPH, 2002, University of North Carolina, Chapel Hill; MD, 2004, Duke University
- Don, Creighton W. 2004; MD, 2001, University of California (San Francisco); PhD, 2001, University of Michigan; MS, 2008, University of Washington
- Duber, Herbert C. 2011; MPH, 2005, Harvard University; MD, 2005, New York University
- Feemster, Laura Cecere 2002; MD, 2002, University of Texas (Southwestern); MS, 2010, University of Washington
- Fisher, Cynthia Elaine 1999; MPH, 2006, Johns Hopkins University; MD, 2007, Johns Hopkins University
- Fletcher, Grant Selmer 2007; MPH, 1998, University of North Carolina; MD, 2002, University of North Carolina
- Floyd, James Song 2005; MD, 2005, Duke University; MS, 2011, University of Washington
- Franzen, Douglas Scott 2013; MD, 2001, University of Michigan, Ann Arbor; MEd, 2008, Virginia Commonwealth University
- Gardner, Jennifer Michelle 2012; MD, 2006, Washington University
- Gatewood, Medley O'Keefe 2005; MD, 2001, University of Chicago
- Giacani, Lorenzo 2002; PhD, 2005, University of Bologna (Italy)
- Goldberger, Zachary David 2004; MD, 2004, Yale University; MS, 2011, University of Michigan, Ann Arbor
- Goulart, Bernardo Haddock Lobo 2005; MD, 1997, Federal Univ of Rio De Janeiro (Brazil); MS, 2010, University of Washington
- Graham, Susan Marie 2003; MPH, 1990, Boston University; MD, 2000, McGill University (Canada); PhD, 2011, University of Toronto (Canada)
- Green, Damian Jonathan 2004; MD, 2000, Ohio State University
- Grim, Jonathan Ezra 1999; PhD, 1997, University of Alabama; MD, 1999, University of Alabama
- Harris, William Proctor 2001; MD, 2001, Columbia University
- Hawkins, Raymond D. 2010; PhD, 2005, University of Texas (Southwestern)
- Horne, David John 2005; MD, 2000, University of California (San Francisco); MPH, 2009, University of Washington
- Hughes, Grant Cassidy 2001; MD, 2001, Oregon Health Sciences University
- Hunt, Susan Elizabeth 2011; MD, 2004, University of Michigan, Ann Arbor
- Hybiske, Kevin James 2013; PhD, 2003, University of California (Berkeley)
- Ilggen, Jonathan Seth 2010; MD, 2004, University of Southern California; MS, 2010, Oregon Health Sciences University
- Inouye, Lisa Suzanne 2013; MD, 1990, University of Pittsburgh; MPH, 1994, Uniformed Services University of The Health Sciences
- Isaac, Margaret Lynne 2007; MD, 2003, University of Washington
- Jackson, Molly Blackley 2004; MD, 2004, University of North Carolina
- Johnsen, Jill 2008; MD, 1998, Case Western Reserve University
- Johnston, Christine Michelle 1995; MD, 2001, University of Minnesota; MPH, 2007, University of Washington
- Kaminetzky, Catherine P. 2011; MD, 1998, Duke University; MPH, 1999, University of North Carolina, Chapel Hill
- Kaplan, Elizabeth Ann 2010; MD, 2004, University of California (San Francisco)
- Kapnadak, Siddhartha G 2014; MD, 2007, Oregon Health Sciences University
- Kaz, Andrew M. 2003; MD, 1999, Duke University
- Keel, Sioban Bridget 2002; MD, 1999, University of Minnesota
- Kobayashi, Akio 2013; MS, 1997, University of Tokyo (Japan); PhD, 2004, Baylor College of Medicine
- Krieger, Eric Viertel 2006; MD, 2002, Mt Sinai School of Medicine
- Kross, Erin Kathryn 2005; MD, 2002, University of Iowa
- Landis, Charles S. 2009; PhD, 1999, State Univ of New York (Stony Brook); MD, 2002, State University of New York (Brooklyn)
- Leary, Peter Joseph 2009; MD, 2005, Johns Hopkins University; MS, 2013, University of Washington
- Lease, Erika Diane 1995; MD, 2004, University of Washington
- Lee, Sylvia Mina 2003; MD, 2003, University of North Carolina
- Liakopoulou, Efstathia 1993, (Affiliate); MD, 1990, University of Patras, Greece; PhD, 2002, University of Patras, Greece
- Lu, Hailing 1995, (Affiliate); MD, 1993, Sun Yat-Sen University; PhD, 2001, University of Washington
- Manicone, Anne M. 2001; MD, 1998, Cornell University
- Martin, Daniel B. 1999; MD, 1995, Yale University
- Masri, Sofia Carolina 2013; MD, 1989, University of Buenos Aires (Argentina)
- McCabe, James Matthew 2013; MD, 2004, Yale University
- Merel, Susan Eva 2005; MD, 2005, University of Chicago
- Mikacenic, Carmen Ruzica 2009; MD, 2006, University of Washington
- Mitchell, Steven Harold 1998; MD, 2002, University of Washington
- Mookherjee, Somnath 1996; MD, 2004, University of Washington
- Morris, Amy E. 2001; MD, 2001, University of Washington
- Ong, Thuan Duc 2008; MPH, 2000, University of California (Los Angeles); MD, 2004, St. Louis University
- Ortiz, Justin Redding 2007, (Affiliate); MD, 2002, University of California (San Francisco)
- Owens, David S. 2005; MD, 1998, Washington University
- Palen, Brian Nicholas 2010; MD, 1999, Creighton University
- Parsons, Elizabeth Christina 2008; MD, 2004, Duke University; MS, 2011, University of Washington
- Paski, Shirley Catherine 2012; MSc, 2000, University of British Columbia (Canada); MD, 2004, McMaster University (Canada)
- Pergam, Steven Aaron 2005; MD, 1998, University of Nebraska, campus unspecified; MPH, 2008, University of Washington
- Pollack, Seth Michaels 2008; MD, 2005, George Washington University
- Prutkin, Jordan Matthew 2005; MS, 2002, Duke University; MD, 2002, Yale University
- Robinson, Melissa Rene 2013; MD, 2001, University of California (San Francisco)
- Rodler, Eve Therese 2008, (Affiliate); MA, 1983, Yale University; MD, 1997, George Washington University
- Roth, Mara Y. 2002; MD, 2002, Brown University
- Roxby, Alison Christina 2007; MSc, 2002, London Sch of Hygiene & Trop Med (UK); MD, 2003, University of North Carolina, Chapel Hill
- Rubinow, Katya Bronwyn 2008; MD, 2006, Yale University
- Ryan, Christina Gilmore 2000; MD, 2003, University of Washington
- Salazar, Lupe G. 1999; MD, 1996, University of Minnesota
- Salit, Rachel Beth 2012; MD, 2004, Loyola-Stritch School of Medicine
- Santana-Davila, Rafael 2014; MD, 2001, Universidad Anahuac, School of Medicine (Mexico)
- Schiffer, Joshua Tisdell 2005; MD, 2002, Johns Hopkins University; MS, 2009, University of Washington
- Schweizer, Michael 2014; MD, 2008, Temple University
- Seshadri, Chetan 2009; MD, 2001, New Jersey Medical School
- Shah, Sachita Pramochandra 2011; MD, 2004, University of Washington
- Shankaran, Veena 2009; MD, 2002, University of Michigan
- Sorror, Mohamed 2008; MD, 1993, University of Asyut; MSc, 1998, University of Asyut
- Stephan, Matthias 2012; MD, 2002, Medical University of Lubeck, Germany; PhD, 2008, Cornell University
- Subramanian, Savitha 2004; MBBS, 1997, Stanley Medical College (India)
- Terasaki, Genji 2001; MD, 2001, Case Western Reserve University
- Thaler, Joshua Paul 2003; PhD, 2001, University of California (San Diego); MD, 2003, University of California (San Diego)
- Tian, Qiang 2008, (Affiliate); MD, 1994, Tianjin University (China); PhD, 2000, Michigan State University
- Till, Brian Gerald 2005; MD, 2002, University of Chicago
- Turtle, Cameron John 2008; MBBS, 1993, University of Sydney (Australia); PhD, 2005, University of Queensland (Australia)
- Tykodi, Scott S. 2000; MD, 1997, Washington University; PhD, 1997, Washington University
- Utarnachitt, Richard Bulani 2008; MS, 2001, Wayne State University; MD, 2004, Wayne State University
- Vary, James Corydon 1998; PhD, 2003, University of Washington; MD, 2005, University of Washington
- Venu, Nanda 2013; MBBS, 1997, Kasturba Medical College (India)
- Watkins, Timothy R 2004; MD, 2000, Ohio State University
- Weppner, William Guy 2002; MD, 2002, University of Washington; MPH, 2009, University of Washington

White, Andrew Austin 2004; MD, 2004, Vanderbilt University

White, Nathan James 2010; MD, 2003, Wayne State University; MS, 2010, Virginia Commonwealth University

Wilper, Andrew Peter 2008; MD, 2003, University of Washington; MPH, 2006, Harvard University

Wingett, Denise Gay 2002, (Affiliate); PhD, 1991, Washington State University

Wong, Christopher Jurn 2001; MD, 2001, Stanford University

Wood, Brian Russell 2007; MD, 2007, University of Washington

Wright, Jennifer Joan 1998; MD, 2005, University of Washington

Zambon, Alberto 1991, (Affiliate); MD, 1988, University of Padova, Italy; PhD, 1999, University of Padova, Italy

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Microbiology

Professors

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Champoux, James J. 1972; PhD, 1970, Stanford University

Clark, Edward Alan * 1979; PhD, 1977, University of California (Los Angeles)

Emerman, Michael 1994, (Affiliate); PhD, 1986, University of Wisconsin

Feldmann, Heinrich 2008, (Affiliate); MD, 1987, University of Giessen (Germany); PhD, 1988, Philipps University (Germany)

Galloway, Denise Allene * 1982, (Research); PhD, 1976, City University of New York

Greenberg, E. Peter 2005; MS, 1972, University of Iowa; PhD, 1977, Harvard University

Harold, Franklin Marcel 2001, (Affiliate); PhD, 1955, University of California (Berkeley)

Hartzell, Patricia Louise 2003, (Affiliate); PhD, 1986, University of Illinois

Harwood, Caroline Stone 2005; MA, 1976, Boston University; PhD, 1982, University of Massachusetts

Katze, Michael Gerald * 1987; MS, 1978, Hahnemann Medical College; PhD, 1980, Hahnemann Medical College

Konkel, Michael 2006, (Affiliate); MS, 1987, San Diego State University; PhD, 1990, University of Arizona

Lagunoff, Michael 2001; PhD, 1995, University of Chicago

Leigh, John Arthur 1985; MS, 1979, University of Illinois; PhD, 1983, University of Illinois

Linial, Maxine L. * 1970, (Research); PhD, 1970, Tufts University

Minnich, Scott Arthur 2012, (Affiliate); MS, 1977, University of Idaho; PhD, 1980, Iowa State University

Moseley, Stephen Lloyd * 1985, (Emeritus); MS, 1978, Catholic University of America; PhD, 1981, University of Washington

Mullins, James Ivan 1994; PhD, 1978, University of Minnesota

Nester, Eugene William 1962, (Emeritus); PhD, 1959, Case Western Reserve University

Overbaugh, Julie Maureen * 1988, (Affiliate); PhD, 1983, University of Colorado (campus unspecified)

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Ramakrishnan, Lalita 2001, (Affiliate); MD, 1983, Baroda Medical College (India); PhD, 1990, Tufts University

Reuer, Quentin Boyd 2005, (Affiliate); PhD, 1987, Montana State University

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Salama, Nina Reda 2001, (Affiliate); PhD, 1995, Stanford University

Sherris, John Charles * 1959, (Emeritus); MBBS, 1948, London Contemp. Dance School (England); MD, 1950, London Contemp. Dance School (England)

Sokourenko, Evgueni Veniaminovich 1999; MD, 1985, Moscow Medical Academy (Russia); PhD, 1989, All-Union Institute of Genetics and Selection of Industrial Microorganisms (Russia)

Staley, James Trotter * 1971, (Emeritus); MS, 1963, Ohio State University; PhD, 1967, University of California (Davis)

Stewart, Philip Shook 2003, (Affiliate); MS, 1985, Stanford University; PhD, 1988, Stanford University

Tomich, Gloria 2014, (Affiliate); MS, 2007, University of Alaska

Top, Eva Maria Rachel 2003, (Affiliate); MS, 1989, University of Ghent (Belgium); PhD, 1993, University of Ghent (Belgium)

Associate Professors

Andrews, Gerard P. 2005, (Affiliate); MS, 1983, University of New Hampshire; PhD, 1993, Uniformed Services University of The Health Sciences

Bessen, Richard Alan 2005, (Affiliate); MS, 1987, University of Wisconsin; PhD, 1991, University of Wisconsin

Bumgarner, Roger Eugene 1992; MS, 1983, Eastern Illinois University; PhD, 1988, University of Arizona

Fuller, Deborah 2010; PhD, 2001, University of Wisconsin (Madison)

Hardy, Michele Elaine 2003, (Affiliate); PhD, 1993, Texas A&M University

Hill, Walter Ernest * 1992, (Affiliate); PhD, 1972, University of Washington

Johnson, Jill 2003, (Affiliate); PhD, 1994, Mayo Medical School/Graduate School

Lara, Jimmie Cano * 1972, (Emeritus); MS, 1967, California State College; PhD, 1970, University of California (San Diego)

Lei, Benfang 2005, (Affiliate); MS, 1985, Beijing Univ of Chemical Tech. (China); MS, 1989, University of Texas (El Paso); PhD, 1993, University of Houston

Mittler, John Eduard 1999; PhD, 1992, University of California (Irvine)

Mougous, Joseph David 2007; PhD, 2004, University of California (Berkeley)

Strom, Mark Stephen 1979, (Affiliate); MS, 1982, University of Washington; PhD, 1992, University of Washington

Traxler, Beth A. * 1992; PhD, 1987, Carnegie Mellon University

Wood, Derek William 1997, (Affiliate); PhD, 1997, University of Arizona

Assistant Professors

Almeida, Roy Joseph 2011, (Affiliate); MS, 1980, Florida Institute of Technology; MS, 1983, University of Texas (San Antonio); MPH, 1987, University of North Carolina; DPH, 1990, University of North Carolina

Brawner, Diane L. 2001, (Affiliate); PhD, 1985, Montana State University

Halonen, Sandra 2004, (Affiliate); MS, 1984, University of Illinois; PhD, 1993, Louisiana State University

Merrih, Houra 2011; MS, 2006, Brandeis University; PhD, 2009, Brandeis University

Miller, Myrna M 2014, (Affiliate); DVM, 1984, Colorado State University; PhD, 2005, Cornell University

Neumann, Christopher Scott 2011, (Affiliate); AM, 2004, Harvard University; PhD, 2007, Harvard University

Pullman, John 2005, (Affiliate); MD, 1977, University of Rochester

Smith, Jason Gregory 2010; PhD, 2004, Harvard University

Voyich-Kane, Jovanka 2006, (Affiliate); PhD, 2001, Montana State University

Woodward, Joshua John 2012; PhD, 2009, University of California (Berkeley)

Senior Lecturers

Anderson, Denise Gayle 1982; MS, 1985, University of Washington; MS, 1987, University of Washington

Bicknell, Mary Ellen 1966, (Emeritus); MS, 1962, University of Washington

Chandler, Mark Steven 1998; MS, 1979, University of Washington; PhD, 1998, University of Illinois

Fulton, Janis Rae 1983, (Emeritus); MS, 1977, Montana State University

Gray, Kendall McLeod 2000; PhD, 1989, University of Southern California

Lecturers

Beins, Almira S. Punjabi 2004; PhD, 2003, Medical College of Wisconsin

Memmer, Ramona 1960, (Emeritus); MS, 1957, University of Washington

Parkhurst, Dale James 1959, (Emeritus); BS, 1960, University of Washington

Neurological Surgery

Professors

Chesnut, Randall M. 2004; MD, 1984, University of Washington

Ellenbogen, Richard Glen 1997; MD, 1983, Brown University

Hevner, Robert Francis 2000; MD, 1992, University of Michigan; PhD, 1992, University of Michigan

Holland, Eric Charles 2013; PhD, 1985, University of Chicago; MD, 1990, Stanford University

Horner, Philip John 2001; MS, 1992, Ohio State University; PhD, 1995, Ohio State University

Kelly, William Albert 1959, (Emeritus); MD, 1954, University of Cincinnati

Lein, Edward Sebastian 2005, (Affiliate); PhD, 1998, University of California (Berkeley)

Loeser, John David 1962, (Emeritus); MD, 1961, New York University

Morrison, Richard Steven * 1994; PhD, 1982, University of California (Los Angeles)

Ojemann, George Alvin 1960, (Emeritus); MD, 1959, University of Iowa

Ojemann, Jeffrey George 1999; MA, 1992, Washington University; MD, 1992, Washington University

Origitano, Thomas Charles 2012, (Affiliate); PhD, 1981, Loyola University (Chicago); MD, 1984, Loyola-Stritch School of Medicine

Ramirez, Jan-Marino 2008; Diploma, 1983, University of Regensburg (Germany); PhD, 1986, University of Regensburg (Germany)

Rostomily, Robert Cullen 1987; MD, 1987, Case Western Reserve University

Sekhar, Laligam Natarajan 2004; MBBS, 1974, University of Madras (India)

Shain, William 2010; PhD, 1972, Temple University

Silber, John Randall 1978, (Emeritus); PhD, 1977, University of Florida

Silbergeld, Daniel Lance 1984; MD, 1984, University of Cincinnati

Socrate, Simona 2010, (Affiliate); MSME, 1990, Massachusetts Institute of Technology; PhD, 1991, University of Rome (Italy); PhD, 1995, Massachusetts Institute of Technology

Temkin, Nancy Rosenberg * 1977; MS, 1971, University of Connecticut; PhD, 1976, State University of New York (Buffalo)

Thompson, Peter A. 2010, (Affiliate); MD, 1984, Brown University

Associate Professors

Browd, Samuel Robert 2007; MD, 2000, University of Florida; PhD, 2000, University of Florida

Chudy, Darko 2009, (Affiliate); MD, 1988, University of Zagreb (Croatia); MS, 1995, University of Zagreb (Croatia); PhD, 2000, University of Zagreb (Croatia)

D'Ambrosio, Raimondo 1995; PhD, 1995, University of Milan (Italy)

Kim, Louis Joong 2007; MD, 1999, Columbia University

Ojemann, Linda Moretti 1966, (Emeritus); MD, 1960, University of Illinois

Zhang, Fangyi 2003; MD, 1986, Capital University

Assistant Professors

Carney, Nancy A. 2006, (Affiliate); MS, 1995, Portland State University; PhD, 1998, Portland State University

Chang, Eric C. 2013; MD, 2005, Harvard Medical School

Crane, Courtney Ann 2012; PhD, 2005, University of Virginia

Ferreira, Manuel 2009; MD, 2002, Georgetown University; PhD, 2002, Georgetown University

Gelfenbeyn, Mikhail 2002; MD, 1978, Moscow State University (Russia); PhD, 1991, Moscow State University (Russia)

Giussani, Carlo Giorgio 2008, (Affiliate); MD, 2001, Università Degli Studi di Milano

Hofstetter, Christoph Paul 2014; MD, 2005, Medical University of Vienna (Austria); PhD, 2005, Karolinska Institute (Sweden)

Kalume, Franck K. 2004; PhD, 2004, University of Tennessee

Ko, Andrew Lin 2005; MD, 2005, University of Illinois (Chicago)

Lee, Amy 2011; MD, 2003, University of Texas (San Antonio)

Macdonald, Christine Louise 2014; MS, 2005, Washington University; PhD, 2007, Washington University

Narenthiran, Ganesalingam 2012, (Affiliate); MBChB, 1996, University of Aberdeen (UK)

Petroni, Gusta 2008, (Affiliate); MD, 1990, National University of Rosario; MS, 2008, Oregon Health Sciences University

Sviri, Gill 2002, (Affiliate); MD, 1996, Haifa University (Israel); MS, 2002, Haifa University (Israel)

Vilela, Marcelo Duarte 2000, (Affiliate); MD, 1995, Federal Univ of Minas Gerais (Brazil)

Lecturers

Kinoshita, Yoshito 1990; PhD, 1982, Tohoku University, Japan

Pridgeon, James Stephen 1973; MHA, 2007, University of Minnesota

Neurology

Professors

Becker, Kyra Jo 1996; MD, 1989, Duke University

Bird, Thomas Dwight 1968, (Emeritus); MD, 1968, Cornell University

Chamberlain, Jeffrey Scott 2000; PhD, 1985, University of Washington

Chamberlain, Marc Charles 2007; MS, 1973, University of California (Berkeley); MD, 1977, Columbia University

Doddrill, Carl Burton 1973, (Emeritus); MS, 1967, Purdue University; PhD, 1970, Purdue University

Farrell, Donald Francis 1971, (Emeritus); MD, 1965, George Washington University

Garden, Gwenn Anne 1987; MD, 1994, University of Washington; PhD, 1994, University of Washington

Gospe, Sidney Maloch Jr. 2000; MS, 1975, Stanford University; PhD, 1980, Duke University; MD, 1981, Duke University

Holmes, Mark David 1987; MD, 1977, Ohio State University
Longstreth, William Thatcher Jr. 1975; MD, 1975, University of Pennsylvania; MPH, 1982, University of Washington
Marra, Christina M. 1984; MS, 1979, Oregon State University; MD, 1984, University of Oregon

Miller, John William 1999; MD, 1977, University of Illinois; PhD, 1981, University of Illinois

Moeller, Thomas 1998, (Affiliate); MSc, 1992, Rupprechts Karl University; PhD, 1996, Free University Berlin

Novotny, Edward 2009; MD, 1979, St. Louis University

Poduslo, Shirley Ellen 2013, (Affiliate); MA, 1976, Johns Hopkins University; PhD, 1980, Johns Hopkins University

Ransom, Bruce Robert * 1995; MD, 1972, Washington University; PhD, 1972, Washington University

Samii, Ali 1998; MD, 1989, McGill University (Canada)

Saneto, Russell Patrick 2001; MS, 1975, San Diego State University; PhD, 1981, University of Texas (unspecified); DO, 1994, Des Moines University

Spain, William Jonathen * 1978; MD, 1977, Columbia University

Stahl, William Louis * 1967, (Emeritus); PhD, 1963, University of Pittsburgh

Swanson, Phillip Dean 1964; MD, 1958, Johns Hopkins University; PhD, 1964, University of London, UK

Tapscott, Stephen Justice 1986; MD, 1982, University of Pennsylvania; PhD, 1982, University of Pennsylvania

Tirschwell, David Lawrence 1991; MD, 1991, Cornell University

Watson, Nathaniel F. 1996; MD, 1996, University of North Carolina

Weiss, Michael David 2001; MD, 1991, Albert Einstein College of Medicine

Wilensky, Alan Joseph 1975, (Emeritus); MD, 1967, University of Western Ontario (Canada); PhD, 1973, University of Toronto (Canada)

Zunt, Joseph Raymond 1991; MD, 1991, University of Minnesota; MPH, 1998, University of Washington

Associate Professors

Amlie-Lefond, Catherine Marion 2002; MD, 1989, University of California (Los Angeles)

Bamford, Nigel Simon 2002; MD, 1992, University of Utah
Brown, Angus McLeod 1991, (Affiliate); PhD, 1990, University of Manchester (UK)

Consens, Flavia B. 2010; MD, 1992, Universidad de la Republica (Uruguay)

Distad, Barbara Jane 2001; MD, 1994, Medical College of Ohio

Drane, Daniel Louis 2001, (Affiliate); MS, 1989, Georgia State University; MS, 1993, Fuller Theological Seminary; PhD, 1994, Fuller Graduate School of Psychology

Khot, Sandeep Prakash 2002; MPH, 2002, Tulane University; MD, 2002, Tulane University

Kollros, Peter Richard 2010; PhD, 1981, University of Chicago; MD, 1982, University of Chicago

Kraus, Eric Edward 1991; MD, 1991, University of Minnesota

Kuratani, John David 1999; MD, 1990, Tulane University
Mrugala, Maciej Michal 2006; MD, 1995, University of Warsaw (Poland); PhD, 2003, Nicolaus Copernicus University (Poland); MPH, 2006, Harvard University

Owens, James Wyche Manier Jr. 2013; PhD, 1996, University of Washington; MD, 1998, University of Washington

Poolos, Nicholas Pete 2001; MD, 1991, Stanford University; PhD, 1991, Stanford University

Weinstein, Jonathan R. 1998; MD, 1998, University of California (Irvine); PhD, 1998, University of California (Irvine)

Wundes, Annette 2003; MD, 1995, Heinrich-Heine University (Germany)

Zabetian, Cyrus Parse 1994; MS, 1988, University of Washington; MD, 1994, University of Miami (Florida)

Assistant Professors

Blume, Heidi K. 1997; MD, 1997, Harvard University

Bozarth, Xiuhua L. 2014; MBBS, 1990, China Medical University (China); PhD, 2002, University of Hong Kong

Creutzfeldt, Claire Johanna 2004; MD, 2003, Ludwig-Maximilians University (Germany)

Domoto-Reilly, Kimiko 2005; MD, 2005, New York Medical College; MS, 2013, Harvard Medical School

Ferri, Raymond T. 2003; MD, 1995, Medical College of Pennsylvania; PhD, 1995, Medical College of Pennsylvania

Gregorevic, Paul 2002, (Affiliate); PhD, 2000, University of Melbourne (Australia)

Hakimian, Shahin 2004; MA, 2000, Washington University; MD, 2000, Washington University

Hu, Shu-Ching 2001; MD, 1993, National Taiwan University; PhD, 2001, Johns Hopkins University

Jayadev, Suman 2000; MD, 2000, New York Medical College

Kim, Hojoong Michael 2003; MD, 2002, University of Illinois

Kim, Michelle Se-Kyung 2014; MA, 2006, Fuller Graduate School of Psychology; MA, 2008, Fuller Theological Seminary; PhD, 2011, Fuller Graduate School of Psychology

Lopez, Jonathan 2014; MD, 2007, Suny Brooklyn

Montano, Silvia Margarita 2006, (Affiliate); MD, 1991, Universidad De La Habana (Cuba); MPH, 2002, University of Washington

Oakes, Patricia Kathleen 2002; JD, 1992, Georgetown University; MD, 2002, University of Michigan

Oakley, John Christopher 1993; MD, 2001, University of Washington; PhD, 2001, University of Washington

Phatak, Vaishali Subhash 2007; MS, 1998, Lewis And Clark College; PhD, 2005, University of Wisconsin (Milwaukee)

Ransom, Christopher Bruce 2010; PhD, 2001, University of Alabama, Birmingham; MD, 2003, University of Alabama, Birmingham

Steinman, Kyle J. 2011; MD, 2001, University of California (Los Angeles); MS, 2008, University of California (San Francisco)

Tsai, Jeffrey Jen-Chieh 2012; MSEE, 1994, Stanford University; PhD, 2001, Cornell University; MD, 2003, Cornell University

von Geldern, Gloria 2007; MD, 2004, University of Leipzig (Germany)

Wang, Leo Hong-Li 2005; MD, 2005, Washington University; PhD, 2005, Washington University

Lecturers

Chen, Dong-Hui 1999; MD, 1990, Shanghai Medical University (China); PhD, 1999, Kobe University, Japan

Stockbridge, Margaret Ann 1999; PhD, 2011, University of Washington

Ye, Zu-Cheng 2000; MS, 1994, Peking University (China); PhD, 1999, University of Alabama

Obstetrics and Gynecology

Professors

Benedetti, Thomas Joseph * 1979; MD, 1973, University of Washington

Brown, Zane A. * 1976; MD, 1966, Temple University

Cheng, Edith Yee Tak 1987; MS, 1979, Sarah Lawrence College; MD, 1987, University of Washington

Chiang, Seine 2006; MD, 1990, Oregon Health Sciences University

Easterling, Thomas Rupert 1985; MD, 1981, University of North Carolina, Chapel Hill

Eckert, Linda O'Neal 1992; MD, 1987, University of California (San Diego)

Eschenbach, David Arthur 1968; MD, 1968, University of Wisconsin

Goff, Barbara Ann 1993; MD, 1986, University of Pennsylvania

Gravett, Michael G. 1977; MD, 1977, University of California (Los Angeles)

Greer, Benjamin Edward 1980; MD, 1966, University of Pennsylvania

Hickok, Durlin Edward * 1974, (Clinical); MD, 1973, University of Michigan; MPH, 1980, University of Washington

Hitti, Jane Evelyn 1993; MD, 1989, University of Vermont

Lein, John Nave 1963, (Emeritus); MD, 1955, University of Washington

Lentz, Gretchen Mary 1986; MD, 1986, University of Washington

Patton, Dorothy Louise 1981; MS, 1973, University of Puget Sound; PhD, 1981, University of Washington

Reed, Susan Dalton 1991; MS, 1979, Sarah Lawrence College; MD, 1986, Stanford University

Schulkin, Jay 2012, (Acting); PhD, 1983, University of Pennsylvania

Shy, Kirkwood Kline * 1973, (Emeritus); MD, 1973, Wayne State University; MPH, 1979, University of Washington

Steiner, Robert Alan 1974; PhD, 1975, University of Oregon

Stenchever, Morton A. 1976, (Emeritus); MD, 1956, State University of New York (Buffalo)

Swisher, Elizabeth Mary 1992; MD, 1992, University of California (San Diego)

Tamimi, Hisham Kamel 1977; MD, 1969, Cairo University (Egypt)

Vontver, Louis Andrew 1964, (Emeritus); MD, 1960, University of Minnesota; MEd, 1970, University of Washington

Associate Professors

Adams Waldorf, Kristina M. 1992; MD, 1998, Mayo Medical School/Graduate School

Amies Oelschlagel, Anne-Marie Elizabeth 1997; MD, 1997, Vanderbilt University

Fialkow, Michael Frederick 1994; MD, 1997, University of Washington; MPH, 2006, University of Washington

Gardella, Carolyn Marie 1995; MD, 1995, State Univ of New York (Stony Brook)

Gray, Heidi J. 1997; MD, 1997, University of California (Los Angeles)

Halbert, Sheridan Allen * 1973, (Affiliate); PhD, 1972, University of Washington

Irwin, Tracy Erin 2014; MPH, 2001, Northwestern University; MD, 2001, Northwestern University

Mao, Constance 1988; MD, 1988, University of Southern California

Mendiratta, Viksa 1998; MD, 1994, Ohio State University

Moore, Donald Earl 1977, (Emeritus); MD, 1967, Case Western Reserve University

Prager, Sarah Ward 2006; MD, 2000, University of Texas (Southwestern); MAS, 2006, University of California (San Francisco)

Assistant Professors

Debiec, Katherine Elizabeth 1999; MD, 2005, University of Washington

Hohmann, John George 1995, (Affiliate); PhD, 2001, University of Washington

Jolley, Jennifer Adams 2011; MD, 2004, University of California (Irvine)

Liao, John Ben 2010; MD, 1998, George Washington University; PhD, 2007, Yale University

Ma, Kimberly Kari 2011; MD, 2007, Vanderbilt University

Stephenson-Famy, Alyssa B. 1995; MD, 2004, University of Washington

Urban, Renata Rose 2011; MD, 2004, Boston University

Ophthalmology

Professors

Chen, Philip Peihai 1996; MD, 1991, Yale University

Kalina, Robert Edward 1967, (Emeritus); MD, 1960, University of Minnesota

Kinyoun, James Lovgren 1978; MD, 1971, University of Nebraska

Milam, Ann 1968, (Emeritus); PhD, 1967, University of Texas (Southwestern)

Neitz, John 2009; PhD, 1986, University of California (Santa Barbara)

Neitz, Maureen 2009; PhD, 1986, University of California (Santa Barbara)

Orcutt, James Craig 1977; PhD, 1976, University of Colorado (Denver); MD, 1977, University of Colorado (Denver)

Saari, John Charles * 1970, (Emeritus); MS, 1963, University of Minnesota; PhD, 1970, University of Washington

Shen, Tueng T. 2003; PhD, 1994, Massachusetts Institute of Technology; MD, 1997, Harvard University

Van Gelder, Russell Neil 2008; MD, 1994, Stanford University; PhD, 1994, Stanford University

Weiss, Avery Harold 1991; MD, 1974, Miami University (Ohio)

Associate Professors

Chuang, Elaine Lucille 1979, (Emeritus); MD, 1979, University of Texas (San Antonio)

Mudumbai, Raghu 2000; MD, 1994, Suny Brooklyn

Tarczy-Hornoch, Kristina 1998; DPhil, 1997, University of Oxford (UK); MD, 1998, University of California (San Francisco); MS, 2007, University of Southern California

Vemulakonda, Gurunadh 2008; MD, 2002, Washington University

Assistant Professors

Attaran Rezaei, Kasra 2014; MD, 2001, Tehran Azad University

Cabrera, Michelle Trager 2014; MD, 2005, University of California (San Francisco)

Chao, Jennifer Rayming 2009; PhD, 2002, Yale University; MD, 2003, Yale University

Francis, Courtney 2010; MD, 2005, University of Rochester

Hanna, Eissa M. 2012; MD, 2007, University of California (Davis)

Herlihy, Erin Patricia 2004; MD, 2003, Loyola University (Chicago)

Kelly, John Patrick 1993, (Affiliate); MA, 1989, State Univ of New York (Stony Brook); PhD, 1992, State Univ of New York (Stony Brook)

Lam, Deborah Lay Yan 2002; MD, 2002, Northwestern University

Lamba, Deepak Ashok 2003, (Affiliate); MBBS, 2000, University of Mumbai (India); MS, 2003, University of Illinois (Chicago); PhD, 2007, University of Washington

Lee, Bryan S. 2012; JD, 2005, Harvard University; MD, 2007, Washington University

Taravati, Parisa 2009; MD, 2005, University of Iowa

Wen, Joanne C. 2014; MD, 2008, University of California (Los Angeles)

Orthopaedics

Professors

Barei, David Paul 1999; MD, 1991, University of Ottawa (Canada); MSc, 1998, University of Ottawa (Canada)

Bellabarba, Carlo 1999; MD, 1992, McGill University (Canada)

Benirschke, Stephen Kurt 1985; MD, 1979, Case Western Reserve University

Bigos, Stanley James 1980, (Emeritus); MD, 1975, University of Missouri

Cavanagh, Peter Robert 2008; PhD, 1972, University of London, UK; DSc, 2004, University of London, UK

Chansky, Howard Alan 1992; MD, 1987, University of Pennsylvania

Chapman, Jens Robert 1990; MD, 1983, Technical University of Munich (Germany)

Conrad, Ernest Upshur III 1986; MD, 1979, University of Virginia

Eyre, David Rodney 1985; PhD, 1969, University of Leeds (UK)

Gross, Ted S. 2000; MS, 1985, Pennsylvania State University; PhD, 1993, State Univ of New York (Stony Brook)

Hanel, Douglas Paul 1992; MD, 1977, St Louis University

Hansen, Sigvard Theodore 1965, (Emeritus); MD, 1961, University of Washington

Henley, Michael Bradford 1988; MD, 1979, University of Washington

Leopold, Seth Samuel 2002; MD, 1993, Cornell University

Matsen, Frederick A. III * 1971; MD, 1968, Baylor College of Medicine

Mosca, Vincent Stephen 1985; MD, 1978, University of Rochester

Nork, Sean Edward 1997; MD, 1992, University of California (San Diego)

Sangeorzan, Bruce Joseph 1986; MD, 1981, Wayne State University

Smith, Douglas George 1989; MD, 1984, University of Chicago

Staheli, Lynn Taylor 1963, (Emeritus); MD, 1959, University of Utah

Strong, Douglas Michael 1989, (Affiliate); PhD, 1973, Medical College of Wisconsin

Teitz, Carol Claire 1974; MD, 1974, Yale University

Twaddle, Bruce Charles 2013; MBBS, 1984, University of Auckland (New Zealand)

Yandow, Suzanne Marie 2014, (Acting); MD, 1984, University of South Florida

Associate Professors

Allan, Christopher Hudson 1998; MD, 1992, Northwestern University

Beingessner, Daphne M. 2003; MD, 1997, University of Western Ontario (Canada); MS, 2003, University of Western Ontario (Canada)

Brage, Michael Erik 1991; MD, 1986, University of Illinois

Bransford, Richard Jackson 1996; MD, 1996, Vanderbilt University

Dunbar, Robert Paul 2002; MD, 1993, Georgetown University
Ferguson, Tania Ann 2013; MD, 1999, University of California (San Francisco); MS, 2011, University of California (Davis)
Green, John Robert III 2002; MD, 1991, University of Cincinnati
Huang, Jerry 2008; MD, 2001, University of California (Los Angeles)
Larson, Roger Vernal 1982; MD, 1973, University of Utah
Manner, Paul A. 2006; MD, 1991, McGill University (Canada)
Schmale, Gregory A. 2000; MEd, 1984, Southern Illinois University; MD, 1994, University of Washington
Taitzman, Lisa Audrie 2001; MD, 1994, Brown University; MPH, 1995, Harvard University
Warne, Winston John 2007; MD, 1989, Uniformed Services University of The Health Sciences
White, Klane Keele 2006; MS, 1993, University of Southern California; MD, 1997, George Washington University

Assistant Professors

Davidson, Darin Justyn 2011; MD, 2003, University of Ottawa (Canada); MHS, 2006, University of British Columbia (Canada)
Fernando, Navin Dhanushka 2014; MD, 2007, University of Western Ontario (Canada)
Firoozabadi, Reza 2011; MA, 2001, Boston University; MD, 2005, Boston University
Gee, Albert Ooguen 2012; MD, 2005, Washington University
Hsu, Jason E 2014; MD, 2007, Northwestern University
Kennedy, Stephen A. 2011; MD, 2006, University of British Columbia (Canada)
Kleweno, Conor Patrick 1997; MD, 2007, Harvard Medical School
Kwon, Ronald Young 2011; MS, 2005, Stanford University; PhD, 2008, Stanford University
Sassoon, Adam Anton 2014; MD, 2007, University of Southern California; MS, 2012, Mayo Medical School/ Graduate School

Otolaryngology – Head and Neck Surgery

Professors

Chen, Chu 1982, (Affiliate); MS, 1971, Ohio State University; PhD, 1982, University of Washington
Coltrera, Marc Dante 1986; MD, 1981, Yale University
Donaldson, James A. 1965, (Emeritus); MD, 1954, University of Minnesota
Duckert, Larry Gene 1978; MD, 1972, University of Minnesota; PhD, 1977, University of Minnesota
Futran, Neal David 1995; DMD, 1982, University of Pennsylvania; MD, 1987, St Univ of New York (Downstate Med Ctr)
Gates, George Arthur 1993, (Emeritus); MD, 1959, University of Michigan
Hillel, Allen David * 1983; MA, 1972, Stanford University; MD, 1976, Stanford University
Lurie, Diana Isabel 1990, (Affiliate); PhD, 1990, University of Pennsylvania
Manning, Scott Clark 1995; MD, 1980, Tulane University
Merati, Albert Lincoln 2007; MD, 1991, University of Washington
Moe, Kristen Sean 1989; MD, 1989, University of Washington

Norton, Susan J. * 1991; MS, 1973, Purdue University; PhD, 1982, University of Washington
Perkins, Jonathan Andrew 1994; DO, 1987, Osteopathic Medicine And Surgery (Iowa)
Pujol, Remy 2003, (Affiliate); PhD, 1971, University of Montpellier II (France)
Rubel, Edwin W. 1986; MS, 1967, Michigan State University; PhD, 1969, Michigan State University
Rubinstein, Jay T. 2004; MS, 1983, Brown University; MD, 1987, University of Washington; PhD, 1988, University of Washington
Sie, Kathleen C.Y. 1984; MD, 1984, University of Michigan
Tempel, Bruce L. 1988; PhD, 1983, Princeton University
Weaver, Edward Malcolm 1998; MD, 1993, Yale University; MPH, 2000, University of Washington
Weymuller, Ernest Alfred 1978; MD, 1966, Harvard University

Associate Professors

Davis, Greg E. 1995; MD, 2000, University of Washington; MPH, 2003, University of Washington
Feeney, Martin Patrick 1986, (Affiliate); MA, 1979, Washington State University; PhD, 1993, University of Washington
Hume, Clifford R. 1996; PhD, 1988, Cornell University; MD, 1996, Cornell University
Inglis, Andrew Franklin Jr. 1983; MD, 1981, Medical College of Pennsylvania
Mendez, Eduardo 1999; MD, 1999, University of Maryland
Meyer, Tanya Kim 2009; MD, 1996, University of California (San Diego)
Ou, Henry 1998; MA, 1998, Washington University; MD, 1998, Washington University
Pariikh, Sanjay Rajendra 2011; MD, 1994, University of British Columbia (Canada)
Parkinson, Aaron J 2014; MA, 1994, Macquarie University (Australia); PhD, 2006, University of Iowa
Rees, Thomas Stevenson 1971; MA, 1969, University of Redlands; PhD, 1972, University of Washington
Whipple, Mark Eliot 2001; MD, 1991, University of Washington; MS, 2001, Massachusetts Institute of Technology

Assistant Professors

Bhrany, Amit Dave 2001; MD, 2001, Boston University
Bohannon, Isaac A. 2010; MD, 2004, Drexel University
Horn, David L. 2010; MS, 1997, Georgetown University; MD, 2002, Medical College of Wisconsin
Houlton, Jeffrey J. 2014; MD, 2008, The University of Texas Medical Branch
Johnson, Kaalan Erik 2013; MD, 2004, Loma Linda University
Sardesai, Maya Guirish 2008; MD, 2002, Queens University
Lecturers
Nie, Kaibao 2005; MS, 1991, Shandong University (China); PhD, 1999, Tsinghua University (China)
Xu, Chang 2001; MS, 1989, Huazhong Agricultural University (China); MS, 2001, Bowling Green State University; PhD, 2002, Bowling Green State University

Pathology

Professors

Alpers, Charles E. 1986; MD, 1978, University of Rochester
Argenyi, Zsolt Balazs 2001; MD, 1978, Semmelweis Medical University (Hungary)
Bowen-Pope, Daniel Fick * 1979, (Emeritus); PhD, 1979, University of California (Berkeley)

Byers, Peter Howard 1974; MD, 1969, Case Western Reserve University
Crispe, Ian Nicholas 2009; MBBS, 1978, University of London, UK; PhD, 1984, University of London, UK
Disteche, Christine M. * 1980; LicMed, 1970, University of Liege (Belgium); PhD, 1976, University of Liege (Belgium)
Fang, Min 2008; MD, 1990, Shanghai Medical University (China); PhD, 1998, University of Alabama
Fligner, Corinne Lina 1976; MD, 1976, University of New Mexico
Garcia, Rochelle Lorraine 1988; MD, 1989, University of Washington
Grahame, Rodney 2010, (Affiliate); MBBS, 1955, University of London, UK; MD, 1964, University of London, UK
Hackman, Robert Cordell 1971, (Emeritus); MD, 1971, Stanford University
Horwitz, Marshall Scott 1983; PhD, 1988, University of Washington; MD, 1990, University of Washington
Kapur, Raj Paul 1988; PhD, 1986, University of Southern California; MD, 1988, University of Southern California
Kemp, Christopher James 1996, (Affiliate); MS, 1984, Oregon State University; PhD, 1989, University of Wisconsin (Madison)
Kiviat, Nancy Carol * 1975; MA, 1969, University of Washington; MD, 1975, University of Washington
Loeb, Lawrence Arthur 1978; MD, 1961, New York University; PhD, 1967, University of California (Berkeley)
Martin, George M. 1957, (Emeritus); MD, 1953, University of Washington
Miller, Arthur Dusty * 1987, (Affiliate); PhD, 1982, Stanford University
Monnat, Raymond Joseph Jr. * 1976; MD, 1976, University of Chicago
Montine, Thomas Jude 2002; PhD, 1988, University of Rochester; MD, 1991, McGill University (Canada)
Murry, Charles Emerson * 1989; MD, 1989, Duke University; PhD, 1989, Duke University
Narayanan, Appadurai Sampath * 1971, (Emeritus); MSc, 1963, University of Madras (India); PhD, 1967, University of Madras (India)
Nicosia, Roberto Francesco 1999; MD, 1976, University of Rome (Italy); PhD, 1984, Medical College of Pennsylvania
Norwood, Thomas H. * 1968; MD, 1968, University of Maryland
Porter, Peggy Lee 1987; MD, 1987, University of New Mexico
Preston, Bradley D. 2002, (Affiliate); PhD, 1983, University of Wisconsin
Promislow, Daniel Edward Lee 2013; PhD, 1990, Oxford University (UK)
Raab, Stephen Spencer 2011, (Affiliate); MD, 1988, State University of New York (Syracuse)
Rabinovitch, Peter Samuel * 1980; MD, 1979, University of Washington; PhD, 1980, University of Washington
Raines, Elaine White * 1975, (Research); MS, 1975, University of California (San Francisco)
Reay, Donald Thomas 1975, (Emeritus); MD, 1963, University of Utah; MPA, 1978, Seattle University
Reichenbach, Dennis D. 1960, (Emeritus); MD, 1958, University of Washington
Sale, George Edgar 1971, (Emeritus); MD, 1968, Stanford University
Schmidt, Rodney Alan 1984; MD, 1984, University of Washington; PhD, 1984, University of Washington
Schwartz, Stephen Mark 1967; MD, 1967, Boston University; PhD, 1973, University of Washington
Shaw, Cheng-Mei 1960, (Emeritus); MD, 1950, National Taiwan University

Shmookler Reis, Robert Joseph 2012, (Affiliate); DPhil, 1972, University of Sussex (UK)

Shulman, Howard Michael 1972, (Emeritus); MD, 1971, University of California (Los Angeles)

Siebert, Joseph Robert 1986; MS, 1975, University of Pittsburgh; MA, 1984, University of Washington; PhD, 1985, University of Washington

Sumi, Shuzo Mark 1963, (Emeritus); MD, 1956, University of Toronto (Canada)

True, Lawrence Dashiell * 1971; MD, 1971, Tulane University

Upton, Melissa Perry 2002; MD, 1978, Northwestern University

White, Lon Ray 2010, (Affiliate); MD, 1963, University of Washington; MPH, 1980, Johns Hopkins University

Wight, Thomas N. Ahum * 1973, (Affiliate); MS, 1968, University of New Hampshire; PhD, 1972, University of New Hampshire

Wolf, Norman S. * 1968, (Emeritus); DVM, 1953, Kansas State University; PhD, 1960, Northwestern University

Yeh, Meng-Che 2002; MD, 1989, National Taiwan University; PhD, 1997, University of Pennsylvania

Zhang, Jing 2002; MS, 1987, Second Military Medical University, China; PhD, 1995, Duke University

Associate Professors

Bielas, Jason H. 2003, (Affiliate); PhD, 2003, York University (Canada)

Deutsch, Gail 2008; MD, 1993, University of Chicago

Dintzis, Suzanne M. 2008; MD, 1993, Stanford University; PhD, 1993, Stanford University

Finn, Laura Susan 1998; MD, 1989, Pennsylvania State University

Hoch, Benjamin 2008; MD, 1999, Thomas Jefferson University

Kaeberlein, Matt Robert 2003; PhD, 2002, Massachusetts Institute of Technology

Kinsella, Michael George 1981, (Affiliate); PhD, 1978, University of Oregon

Laflamme, Michael A. 1999; PhD, 1998, Emory University; MD, 1999, Emory University

Loeb, Keith Randy 1995; PhD, 1994, Medical College of Wisconsin; MD, 1995, Medical College of Wisconsin

Mahoney, William 2004; PhD, 2004, University of Maryland

Myerson, David Henry * 1985; MD, 1979, Albert Einstein College of Medicine; PhD, 1979, Albert Einstein College of Medicine

Patterson, Kathleen 1992; MD, 1976, University of Iowa
Qvarnstrom, Eva Elisabet 1984, (Affiliate); DDS, 1975, University of Lund (Sweden); PhD, 1984, University of Lund (Sweden)

Ren, Jun 2005, (Affiliate); PhD, 1994, University of Alberta, Canada

Schmechel, Stephen Christopher 1998; MD, 1997, University of Minnesota; PhD, 1999, University of Minnesota

Schwarze, Ulrike 1993; MD, 1992, Technische Universität (Germany)

Smith, Kelly David 1996; MD, 1996, University of Iowa; PhD, 1996, University of Iowa

Sonnen, Joshua A. 2005, (Affiliate); MD, 2002, University of Southern California

Swisshelm, Karen Lynn * 1980, (Affiliate); PhD, 1989, University of Washington

Taniguchi, Toshiyasu 2008, (Affiliate); MD, 1990, University of Tokyo (Japan); PhD, 1999, University of Tokyo (Japan)

Thorning, David Rex 1969; MD, 1965, University of Kansas
Vasioukhin, Valeri 2002, (Affiliate); PhD, 1992, Academy of Science (Ussr)

Assistant Professors

Adler, David Alan 1982, (Affiliate); MS, 1978, State University of New York (Buffalo); PhD, 1996, University of Washington

Campbell, Jean Spear 1990, (Affiliate); PhD, 1990, University of Wisconsin (Madison)

Chen, Eleanor Y. 2013; MD, 2006, University of Minnesota; PhD, 2006, University of Minnesota

Dorschner, Michael Owen 1998; PhD, 1998, University of Wisconsin (Milwaukee)

Durnam, Diane Marie 1985, (Affiliate); PhD, 1981, University of Washington

Keene, Christopher Dirk 2005; PhD, 2003, University of Minnesota; MD, 2005, University of Minnesota

Liu, Yajuan 1995; PhD, 1995, State University of New York (Syracuse)

Najafian, Behzad 2010; MD, 1996, Tehran University (Iran)

Parrilla-Castellar, Edgardo Ramon 2013; PhD, 2004, Mayo Medical School/Graduate School; MD, 2006, University of Puerto Rico

Rendi, Mara Hester 2009; PhD, 2004, Dartmouth Medical School; MD, 2009, Dartmouth Medical School

Reyes, Morayma 2003; DPhil, 2001, University of Minnesota; MD, 2003, University of Minnesota

Risques, Rosa Ana 2003; PhD, 2001, Autonomous University of Barcelona

Sabath, Annette P. 1992, (Affiliate); MD, 1998, Oregon Health Sciences University

Tretiakova, Maria Sergeevna 2012; MD, 1994, Northwestern State Medical University named after I.I. Mechnikov (Russia); PhD, 1997, North-Western State Medical University named after I.I. Mechnikov (Russia)

Vakar-Lopez, Funda 2006; MD, 1988, University of Istanbul (Turkey)

Westerhoff, Maria Ahn 2011; MD, 2006, University of Illinois

Williams, Kandace Jo 1988, (Affiliate); PhD, 1987, Dartmouth University

Pediatrics

Professors

Adam, Margaret 2009; MS, 1993, Stanford University; MD, 1998, Stanford University

Baden, Harris Philip 1992; MD, 1989, University of Texas (Galveston)

Baker, Kevin Scott 2009; MD, 1988, University of Nebraska, Omaha; MS, 2002, University of Minnesota

Bamshad, Michael Joseph 2005; MD, 1989, University of Missouri; MA, 1991, University of Kansas

Beier, David Randolph 2012; MD, 1984, University of Washington; PhD, 1985, University of Washington

Bennett, Forrest Curt 1971; MD, 1970, University of Minnesota

Bergman, Abraham Baer 1964, (Emeritus); MD, 1958, Case Western Reserve University

Bernstein, Irwin David 1971; MD, 1967, New York University

Brei, Timothy John 2013; MD, 1984, University of Nebraska, Omaha

Breuner, Cora Collette 1991; MD, 1982, Thomas Jefferson University; MPH, 1998, University of Washington

Brogan, Thomas Vincent 1993; MD, 1990, University of California (Davis)

Burns, Jane Louise 1978; MD, 1978, University of Washington

Carpenter, Paul Andrew 1995; MBBS, 1988, University of Sydney (Australia)

Chance, Phillip Frazier 1980, (Emeritus); MD, 1978, University of Tennessee

Chen, Shi-Han 1972, (Emeritus); MS, 1963, National Taiwan University; PhD, 1968, University of Texas (Austin)

Christakis, Dimitri Alexander 1993; MD, 1993, University of Pennsylvania

Clarren, Sterling Keith 1974, (Affiliate); MD, 1973, University of Minnesota

Cox, Timothy Chilton 2006; PhD, 1994, University of Adelaide (Australia)

Cunningham, Michael Lawrence 1988; MD, 1988, University of Vermont; PhD, 1996, University of Washington

Del Beccaro, Mark Andrew 1985; MD, 1985, University of Washington

Diekema, Douglas Scott 1990; MD, 1985, University of North Carolina; MPH, 1993, University of Washington

Dobyns, William B. 2010; MD, 1978, Mayo Medical School/Graduate School

Emery, Helen M. 1973, (Emeritus); MBBS, 1971, University of Adelaide (Australia)

Englund, Janet A. 2002; MD, 1980, University of Michigan

Fantel, Alan G. * 1973, (Emeritus); MA, 1969, University of Oregon; PhD, 1974, University of Washington

Flynn, Joseph Thomas 2007; MD, 1987, State University of New York (Syracuse); MS, 2003, Albert Einstein College of Medicine

Frenkel, Lisa Marie 1994; MD, 1987, University of Kansas

Geyer, Jeffrey Russell 1982; MD, 1977, Wayne State University

Gibson, Ronald Lyne 1982; MD, 1982, Washington University; PhD, 1982, Washington University

Glass, Ian Amos 2000; MBChB, 1979, University of Otago (New Zealand); MD, 1991, University of Otago (New Zealand)

Gleason, Christine Anne 1997; MD, 1979, University of Rochester

Hahn, Sihoun 2006; MD, 1983, Korea University (Korea); PhD, 1995, Korea University (Korea)

Hansen, Thomas Nanastad 2005; MD, 1973, Baylor College of Medicine

Hawkins, Douglas Scott 1990; MD, 1990, Harvard University

Hayden, Patricia Wills 1958, (Emeritus); MD, 1953, University of Rochester

Hodson, William Alan 1966, (Emeritus); MD, 1959, University of Manitoba (Canada); MMSc, 1964, Ohio State University

Horn, Ivor Braden 2014; MD, 1994, Indiana University; MPH, 1999, George Washington University

Horslen, Simon Peter 2005; MBChB, 1984, University of Bristol (UK)

Jackson, John Craig 1979; MD, 1979, Vanderbilt University

Jenny, Carole 1983; MD, 1972, University of Washington; MBA, 1976, University of Pennsylvania

Jensen, Michael C. 2010; MD, 1990, University of Pennsylvania

Jones, Thomas Kenny 1978; MD, 1978, Jefferson Medical College

Juul Ledbetter, Sandra Elizabeth 1981; MD, 1981, University of Washington; PhD, 1997, University of Chicago

Klein, Eileen Joy 1988; MD, 1988, Johns Hopkins University

Law, Yuk Ming 2006; MD, 1987, University of California (Los Angeles)

Lewin, Mark Brent 2001; MA, 1982, University of California (Berkeley); MS, 1987, Hahnemann University; MD, 1991, University of Southern California

Liu, Lenna Li-Na 1992; MD, 1992, University of Pennsylvania; MPH, 1997, University of Washington

Majesky, Mark W. 1981; PhD, 1984, University of Washington

Mangione-Smith, Rita M. 2005; MD, 1991, Wayne State University; MPH, 1997, University of California (Los Angeles)

Marcuse, Edgar Korn 1971, (Emeritus); MD, 1967, Stanford University; MPH, 1973, University of Washington

Marshall, Susan Gayle 1979; MD, 1980, University of California (Los Angeles)

Matthews, Dana Christine 1984; MD, 1981, University of Washington

Mayock, Dennis Edward 1978; MD, 1975, Ohio State University

McDonald, Ruth Ann 1987; MD, 1987, University of Minnesota

McLaughlin, John F. 1970, (Emeritus); MD, 1970, Northwestern University

McPhillips, Heather Anne 1998; MD, 1994, University of Chicago

McQuinn, Tim Charles 2009; MD, 1979, University of Washington

Melzer, Sanford Morris 1990; MD, 1982, Mt Sinai School of Medicine

Meshinchi, Soheil 1997; PhD, 1990, University of Michigan, Ann Arbor; MD, 1994, Wayne State University

Miao, Carol H. 1981; MS, 1980, University of Wisconsin; PhD, 1987, University of Washington

Millen, Kathleen J. 2010; PhD, 1995, University of Toronto (Canada)

Murray, Karen Field 1990; MD, 1990, Johns Hopkins University

Neff, John M. 1981, (Emeritus); MD, 1960, Harvard University

Ning, Xue-Han 1994, (Affiliate); MD, 1960, Shanghai Medical University (China)

Novack, Alvin H. 1979, (Emeritus); MD, 1958, Temple University

Ochs, Hans Deiter 1968; MD, 1969, University of Freiburg (Germany)

Olson, James Michael 1991; MD, 1991, University of Michigan

Osborne, William R. A. 1975, (Emeritus); MSc, 1970, University of Bristol (UK); PhD, 1972, University of London, UK

Pagon, Roberta Anderson 1972; MD, 1972, Harvard University

Park, Julie Ruggieri 1988; MD, 1988, University of Vermont

Pendergrass, Thomas Wayne 1975; MD, 1971, University of Tennessee; MPH, 1979, University of Washington

Pihoker, Catherine Vanderwilt 1997; MD, 1987, Albany Medical College

Portman, Michael Allan 1992; MD, 1980, University of Cincinnati

Quan, Linda Knight 1971, (Emeritus); MS, 1969, Dartmouth College; MD, 1971, University of Washington

Ramsey, Bonnie Watts 1978; MD, 1976, Harvard University

Rawlings, David Jeffrey 2001; MD, 1984, University of North Carolina

Redding, Gregory James 1980; MD, 1974, Stanford University

Richardson, Laura Paul 1998; MD, 1994, University of Michigan; MPH, 2001, University of Washington

Rivara, Frederick Peter II * 1978; MD, 1974, University of Pennsylvania; PhD, 1980, University of Washington

Rose, Timothy Michael 1991; PhD, 1981, University of Geneva (Switzerland)

Rosenfeld, Margaret 1988; MD, 1988, Harvard University; MPH, 1995, University of Washington

Rubens, Craig Edward 1982, (Affiliate); PhD, 1978, Medical University of South Carolina; MD, 1982, University of Washington

Saelens, Brian E. 2006; MA, 1996, State University of New York (Buffalo)

Sanders, Jean Emily 1975, (Emeritus); MD, 1970, University of Iowa

Scharenberg, Andrew Mark 2000; MD, 1990, University of North Carolina

Scott, C. Ronald * 1964; MD, 1959, University of Washington

Shepard, Thomas Hill II 1955, (Emeritus); MD, 1948, University of Rochester

Shugerman, Richard Philip 1984; MD, 1984, University of Alabama

Smith, Arnold Lee 1978, (Emeritus); MS, 1964, University of Missouri; MD, 1964, University of Missouri

Smith, Charles Vincent 2007; PhD, 1974, Rice University

Smith, Mark Scott 1976, (Emeritus); MD, 1969, University of Virginia

Smith, Sherilyn 1994; MD, 1989, Baylor University

Stapleton, F. Bruder 1996; MD, 1972, University of Kansas

Stout, James Walden * 1986; MAT, 1981, Duke University; MD, 1986, Wake Forest University

Studholme, Colin B. 2011; MSc, 1991, University of Edinburgh (UK); PhD, 1997, University of London, UK

Symons, Jordan Matthew 1999; MD, 1992, Columbia University

Tarr, Phillip Irwin 1980, (Affiliate); MD, 1980, Yale University

Taylor, James Alexander 1987; MD, 1980, University of North Carolina

Walker, William Otis 1993; MD, 1979, Tulane University

Walker-Harding, Leslie Renee 2007; MD, 1990, University of Illinois

Wallace, Carol Ann Hickok 1974; MD, 1973, University of Michigan

Watkins, Sandra Lee 1981, (Emeritus); MD, 1981, University of Texas (Houston)

Watson, Robert Scott 1993; MD, 1993, University of Pennsylvania; MPH, 2000, University of Washington

Wedgwood, Ralph Josiah 1962, (Emeritus); MD, 1947, Harvard University

Welsh, John Patrick 2009; MA, 1986, University of Iowa; PhD, 1990, University of Iowa

Wilfond, Benjamin Simon 2006; MD, 1983, U of Medicine & Dentistry of New Jersey

Woodrum, David E. 1968, (Emeritus); MD, 1965, University of Illinois

Woodward, George Anthony 2003; MD, 1983, Temple University; MBA, 1999, University of Pennsylvania

Woolfrey, Ann Elizabeth 1989; MD, 1984, University of Minnesota

Zerr, Danielle Marie 1993; MD, 1993, Temple University; MPH, 1997, University of Washington

Zimmerman, Jerry John 1998; PhD, 1975, University of Wisconsin (Madison); MD, 1979, University of Wisconsin (Madison)

Zinner, Samuel Hamilton 2003; MD, 1994, University of California (Berkeley)

Associate Professors

Andrews, Robert Goff 1979; MD, 1976, University of Minnesota

Batra, Maneesh 2000; MD, 2000, Stanford University; MPH, 2006, University of Washington

Bender, Michael Angelo 1989; PhD, 1989, University of Washington; MD, 1990, University of Washington

Bjornson, Kristie Fay 1995; MS, 1988, University of Washington; PhD, 2006, University of Washington

Brown, Julie Catherine 1996; MD, 1991, McGill University (Canada)

Brownstein, Dena Ruth 1982; MD, 1982, University of Washington

Chabra, Shilpi 2003; MBBS, 1986, University of Bombay; MD, 1989, University of Bombay

Chun, Terrence 2004; MD, 1997, Hahnemann Medical College

Debley, Jason Scott 2000; MD, 1995, Northwestern University; MPH, 2003, University of Washington

Delaney, Colleen S. 1999; MS, 1991, Oxford University (UK); MD, 1996, Harvard University

Denno, Donna Marie 1993; MD, 1991, University of Michigan; MPH, 2007, University of Washington

Dichek, A. K. Helen L. 2001; MD, 1980, University of Louvain (Belgium)

Doherty, Daniel A. 1998; PhD, 1995, University of California (San Francisco); MD, 1998, University of California (San Francisco)

Ebel, Beth Ellen 1999; MS, 1989, Oxford University (UK); MD, 1996, Harvard University; MPH, 2001, University of Washington

Fechner, Patricia Yvonne 2006; MD, 1986, Northwestern University

Graham, Elinor Ann 1982, (Emeritus); MD, 1970, University of Rochester; MPH, 1993, Johns Hopkins University

Hamblett, Nicole M. 1994; MS, 1996, University of Washington; PhD, 1999, University of Washington

Heike, Carrie Lyn 1997; MD, 2000, University of Washington; MSc, 2006, University of Washington

Hing, Anne Victoria 1999; MD, 1985, Washington University

Hingorani, Sangeeta Ram 1990; MD, 1993, Albert Einstein College of Medicine

Hoffman, Lucas R. 1998; PhD, 1996, University of California (San Francisco); MD, 1998, University of California (San Francisco)

Holm, Vanja Adele 1956, (Emeritus); MD, 1954, Karolinska Institute (Sweden)

Hrabovszky Koves, Ildiko 2008; MD, 1994, University of Pecs (Hungary)

Johnston, Brian Duncan 1990; MD, 1990, University of California (San Diego)

Johnston, Troy Alan 1999; MD, 1991, University of Virginia

Kahn, Stuart Jonathan 1985, (Affiliate); MS, 1978, Rutgers University; MD, 1985, U of Medicine & Dentistry of New Jersey

Karr, Catherine J. 1987; MS, 1989, University of Washington; MD, 1999, University of Washington; PhD, 2004, University of Washington

Kean, Leslie Susan 2013; MPhil, 1988, Cambridge University (UK); PhD, 1995, Emory University; MD, 1999, Emory University

Kelley, Maureen Catherine 2007; MA, 1993, Bowling Green State University; PhD, 2001, Rice University

Kemna, Mariska S. 2008; MD, 1995, Erasmus University (Netherlands)

Knox, Isabella 2007; MD, 1979, University of Pennsylvania

Lewis, Charlotte Wood 1998; MNS, 1989, Cornell University; MD, 1994, University of California (San Francisco)

Mazor, Suzan 2004; MD, 1995, University of Illinois

McAdams, Ryan 2008; MD, 1998, Medical College of Wisconsin

McCarthy, Michael McCue * 1987, (Clinical); MD, 1976, University of Washington

McGuire, John Kennedy 2004; MD, 1993, Northwestern University

Mefford, Heather Christy 1994; PhD, 2001, University of Washington; MD, 2003, University of Washington

Melvin, Ann Jorns 1987; MPH, 1986, Tulane University; MD, 1986, Tulane University

Mendoza, Jason A. 2001; MD, 2001, Rush Medical College; MPH, 2004, University of Washington

Merritt, John Lawrence 2007; MD, 1999, Loma Linda University

Miller, Daniel Guthrie 1989; PhD, 1994, University of Washington; MD, 1996, University of Washington

Moreno, Megan Andreas 2005; MD, 2000, George Washington University; MEd, 2004, University of Wisconsin; MPH, 2008, University of Washington

Murphy, Janet Haworth 1969, (Emeritus); MBChB, 1967, Victoria University (UK)

Musa, Ndidiamaka Lucilda 2013; MD, 1987, University of Liberia

Okamura, Daryl M. 1988; MD, 1998, University of Hawaii

Oukka, Mohamed 2009; MS, 1991, Universite of Paris VII; PhD, 1996, Universite of Paris VII

Paris, Carolyn Anne 1995; MD, 1991, Cornell University

Rajagopal, Lakshmi 1999; MS, 1995, Madurai University (India); PhD, 1999, Jawaharlal Nehru University (India)

Roberts, Joan Sanford 1992; MD, 1992, University of Nevada

Roth, Christian Ludwig 2007; MD, 1990, University of Heidelberg (Germany)

Salerno, Jack 2003; MD, 1996, University of California (San Diego)

Sathyanarayana, Sheela 2002; MD, 2002, University of Southern California

Schenkman, Kenneth Aron 1990; MD, 1986, Indiana University

Seslar, Stephen 2008; PhD, 1993, Georgetown University; MD, 1996, Georgetown University

Shaffer, Michele Lee 2013; MS, 1999, Pennsylvania State University; PhD, 2002, Pennsylvania State University

Shafii, Taraneh 2000; MD, 1996, University of Louisville; MPH, 2003, University of Washington

Shimamura, Akiko 2007; MS, 1988, University of Rochester; PhD, 1990, University of Rochester; MD, 1991, University of Rochester

Sidbury, Robert 2000; MD, 1993, Duke University

Skoda-Smith, Suzanne 2008; MD, 1990, University of Miami (Florida)

Smith, Jodi M. 1999; MD, 1995, McGill University (Canada); MPH, 2004, University of Washington

Soriano, Brian Daniel 2007; MD, 1996, Medical College of Ohio

Spiers, Philip Sackville 1975, (Emeritus); PhD, 1966, Oxford University (UK)

Stevens, Anne Marguerite 1997; PhD, 1993, Baylor University; MD, 1995, Baylor University

Suskind, David Lewinter 2003; MD, 1997, Louisiana State University

Tabor, Holly Kathryn 2008; PhD, 2002, Stanford University

Tamura, Glen Sho 1987; MD, 1987, Stanford University; PhD, 1987, Stanford University

Torgerson, Troy 1998; MD, 1998, Vanderbilt University; PhD, 1998, Vanderbilt University

Wahbeh, Ghassan 2004; MD, 1990, University of Jordan

Wright, Jeffrey Alan 1988; MD, 1978, University of Missouri (Kansas City)

Yanay, Ofer 1998; MD, 1989, Hebrew University (Israel)

Yung, Delphine 1989; MD, 1997, Stanford University

Zheng, Jiang 2007; MS, 1985, Zhejiang University (China); MS, 1990, University of Kansas; PhD, 1992, University of Kansas

Assistant Professors

Ahrens, Kym Renee 2002; MD, 2002, University of Iowa; MPH, 2007, University of Washington

Albers, Erin Lynn 2012; MD, 2004, University of Virginia; MS, 2010, Vanderbilt University

Ambartsumyan, Lusine 2013; MD, 2007, Drexel University

Arya, Bhawna 2013; MD, 2006, University of Chicago

Aspesberro, Francois P. 1999; MD, 1994, Catholic University of Louvain (Belgium)

Beck, Anita E. 2005; MD, 1997, Washington University; PhD, 1997, Washington University

Bhat, Aarti Hejmadi 2011; MBBS, 1993, Lady Hardinge Medical College; MD, 1997, Vardhman Mahavir Medical College & Safdarjung Hospital

Bleakley, Marie 2002; MMSc, 2000, University of Newcastle (Australia); PhD, 2010, University of Sydney (Australia)

Brandling-Bennett, Heather Alicia 2009; MD, 2004, Harvard University

Breland, David J. 2009; MPH, 1996, University of California (Berkeley); MD, 1997, University of California (Davis)

Buddhe, Sujatha 2013; MBBS, 2003, Osmania University (India); MS, 2013, University of Michigan, Ann Arbor

Burns, Rebekah Anne 2013; MD, 2007, University of California (San Francisco)

Burroughs, Lauri Michelle 2001; MD, 1998, University of Wisconsin (Madison)

Caglar, Derya 2008; MD, 2001, New York Medical College

Chan, Titus Tai-Kong 2013; MD, 2003, University of Alberta, Canada; MSc, 2009, University of Utah; MPP, 2012, University of Utah

Chen, Maida Lynn 2005; MD, 1998, Northwestern University

Chow, Eric Jessen 2001; MPH, 2000, University of California (Berkeley); MD, 2001, University of California (San Francisco)

Clark, Jonna Derbenwick 2008; MD, 2003, Oregon Health Sciences University

Crowell, Claudia Syueping 2012; MD, 2006, University of Washington

Deen, Jason F. 2010; MD, 2006, University of Minnesota

Dervan, Leslie Ann 2011; MD, 2008, Harvard Medical School; MS, 2014, University of Washington

Di Gennaro, Jane Linsley 2001; MD, 2000, Louisiana State University

DiVall, Sara A 2014; MD, 1999, University of Wisconsin (Madison)

Evans, Yolanda Nicole 1999; MD, 2005, Oregon Health Sciences University; MPH, 2011, University of Washington

Farris, Reid William 2005; MD, 2005, University of North Dakota; MS, 2011, University of Washington

Files, Matthew Dalton 2010; MD, 2007, University of Mississippi

Gallagher, Emily Rose 2007; MPH, 2006, University of California (Berkeley); MD, 2007, Oregon Health Sciences University

Gardner, Rebecca A. 2006; MD, 2003, University of Maryland

Giefer, Matthew Joseph 2009; MD, 2006, Loyola University (Chicago)

Grow, H. Mollie Greves 2003; MD, 2003, University of Pennsylvania

Halbach, Susan Margaret 2004; MD, 2004, University of Chicago; MPH, 2011, University of Washington

Hartmann, Silvia M. 2011; MD, 2008, Brown University

Hayward, Kristen Nicole 2001; MD, 2001, University of California (San Francisco)

Heltshe, Sonya L. 2010; MS, 2004, University of Colorado (Denver); PhD, 2007, University of Colorado (Denver)

Hernandez, Joel D. 2010; MD, 1998, University of The Philippines

Ho, Phoenix Anh-Dung 2006; MD, 2003, Northeast Ohio Medical University

Hofstetter, Annika 2014; MS, 2004, Karolinska Institute (Sweden); MD, 2006, University of Washington; PhD, 2006, Karolinska Institute (Sweden); MPH, 2011, Columbia University

Hong, Borah Justina 2007; MD, 2007, University of Pittsburgh

Hsu, Evelyn Kanyu 2003; MD, 2003, University of Wisconsin

James, Richard Goff 2006; PhD, 2005, Harvard University

Jaspan, Heather Beryl 1999; MD, 1999, Tulane University; PhD, 1999, Tulane University

Katzenellenbogen, Rachel Adria 1999; MD, 1999, Johns Hopkins University

Kim, Grace Jiyoung 2013; MS, 2002, Tufts University; MD, 2006, Tufts University

King, Mary Alice 2001; MD, 2001, University of California (Irvine)

Kollmann, Tobias R. 1998, (Affiliate); MS, 1991, Albert Einstein College of Medicine; MD, 1998, Albert Einstein College of Medicine

Kronman, Matthew P. 2003; MD, 2003, Yale University; MSCE, 2011, University of Pennsylvania

Leary, Sarah 2009; MD, 2001, University of Tennessee

Lee, Dale Young 2014; MD, 2006, University of Southwestern Texas; MS, 2013, University of Pennsylvania

Leger, Kasey J 2014; MD, 2006, University of Texas (Houston); MS, 2014, University of Texas, Southwestern medical center

Lewis-Newby, Mithya 2005; MD, 2002, University of Washington

Lindell, Dennis Michael 2009; PhD, 2005, University of Michigan

Lion, Katherine Casey 2007; MPH, 2006, University of California (Berkeley); MD, 2007, University of California (San Francisco)

Lockhart, Carey Terra 2013; MD, 2007, Rush Medical College

Loren, David Jonathan 2004; MD, 1997, Rush Medical College

Luquetti, Daniela Varela 2009; MD, 2001, UNIVERSIDADE FEDERAL DE UBERLANDIA (BRAZIL); PhD, 2009, NATIONAL SCHOOL OF PUBLIC HEALTH (BRAZIL)

Maga, Ali Murat 2008; MA, 2004, University of Texas (Austin); PhD, 2008, University of Texas (Austin)

Mann, Paul Christopher 2010; MD, 2004, Southern Illinois University

Maves, Lisa Ann 1992; PhD, 1997, University of Washington

Merjane, Lina 2014; PNP, 2004, University of Aleppo

Munshi, Raj Prakash 2009; MD, 2005, New Jersey Medical School

Myers, Emily Farrell 2010; MD, 2007, University of Washington

Nanda, Kabita 2012; MD, 2003, Ross University

Nielsen, Katie Ruth 2006; MD, 2006, University of Iowa; MPH, 2013, University of Washington

Olson, Aaron Keith 2006; MD, 1999, University of Minnesota

O'Mahony, Lila Nichols 2001; MD, 2004, University of Washington

Ong, Thida 2009; MDCM, 2003, McGill University (Canada)

Opel, Douglas John 2002; MD, 2002, University of Chicago; MPH, 2009, University of Washington

Pak-Gorstein, Suzinne 2003; MPH, 1991, University of Michigan; MD, 2000, Michigan State University; PhD, 2001, University of Michigan

Piliponsky, Adrian 2011; PhD, 2003, Hebrew University (Israel)

Quintana Romero, Albert 2004; MSc, 2004, Universitat Autònoma de Barcelona; PhD, 2007, Universitat Autònoma de Barcelona

Reid, Jennifer R. 2004; MD, 1998, University of Washington

Ringold, Sarah 2001; MD, 2001, Harvard University; MS, 2008, University of Washington

Rosenberg, Abby Rachel 2006; MD, 2006, Stanford University; MS, 2012, University of Washington

Rutman, Lori Ellen 2011; MPH, 2006, University of California (Berkeley); MD, 2008, Stanford University

Salehi, Parisa 2013; MD, 2007, University of Nevada

Sawyer, Taylor Lee 2012; DO, 2001, Des Moines University; ME, 2010, University of Cincinnati

Schultz, Amy Hirshfeld 2005; MD, 1996, University of Pennsylvania

Shenoi, Susan 2008; MBBS, 1998, University of Mumbai (India); MS, 2011, University of Washington

Simon, Tamara 2010; MD, 2001, University of North Carolina; PhD, 2006, University of Colorado (Denver)

Smith, Lincoln S. 2003; MD, 1999, University of Wisconsin Soares, Jennifer Jean 2013; MD, 2007, University of Vermont

Stone, Kimberly Pothier 2005; MA, 1996, Tufts University; MS, 1999, University of California (Berkeley); MD, 2001, University of California (San Francisco)

Striegl, Amanda Michele 2004; MD, 2004, University of Colorado (Denver); MS, 2010, University of Washington

Sun, Angela 2012; MD, 2006, St. Louis University

Tandon, Pooja Sarin 2008; MD, 1999, Brown University; MPH, 2010, University of Washington

Taplin, Craig 2009; MBBS, 1997, University of New South Wales(Australia)

Tieder, Joel Stanford 2004; MD, 1999, Medical College of Georgia; MPH, 2006, University of Washington

Traudt, Christopher M. 2010; MD, 2000, University of Nebraska, Omaha

Uspal, Neil Gary 2011; MD, 2003, University of Pittsburgh Van Cleave, Alisa C 2013; MD, 2007, University of Washington

Vernon, Margaret Macmillan 2000; MD, 2000, University of Rochester

von Saint Andre-von Arnim, Amelie 2009; MD, 2004, Julius Maximilians University (Germany); PhD, 2008, Julius Maximilians University (Germany)

Wagner, Thor Andrew 2005; MD, 2000, Temple University Weissman, Scott J. 2000; MD, 1997, University of California (Irvine)

Wenger, Tara Lynn 2014; MS, 2004, University of Rochester; PhD, 2006, University of Rochester; MD, 2008, University of Rochester

Wrede, Joanna Elaine 2008; MD, 2008, Stanford University Wright, Davene Renee 2012; PhD, 2012, Harvard University

Lecturers

Emerson, Julia Childress 1987; MD, 1981, University of Virginia; MPH, 1987, University of Washington

Ogata Grothen, Beth W. 1997; MS, 1998, University of Washington

Polifka, Janine Edwards 1988; MA, 1984, University of Louisville; PhD, 1985, University of Louisville

Beavo, Joseph Anders Jr. 1977; PhD, 1970, Vanderbilt University

Bridges, Richard J. 2003, (Affiliate); PhD, 1984, Cornell University

Catterall, William A. * 1977; PhD, 1972, Johns Hopkins University

Chavkin, Charles 1984; PhD, 1982, Stanford University

Juchau, Mont Rawlings * 1969, (Emeritus); PhD, 1966, University of Iowa

Loomis, Ted Albert * 1947, (Emeritus); MS, 1941, University of Buffalo; PhD, 1943, University of Buffalo; MD, 1946, Yale University

McKnight, George Stanley 1976; PhD, 1976, Stanford University

Moon, Randall Todd * 1985; PhD, 1982, University of Washington

Nathanson, Neil Marc * 1979; PhD, 1975, Brandeis University

Scott, John Donald 2008; PhD, 1983, University of Aberdeen (UK)

Slattery, John Thomas 1978; PhD, 1978, State University of New York (Buffalo)

Stella, Nephi 1999; PhD, 1995, Ecole Polytechnique Federale De Lausanne

Storm, Daniel Ralph 1978; MS, 1967, University of Washington; PhD, 1971, University of California (Berkeley)

Vincenzi, Frank Foster * 1967, (Emeritus); MS, 1962, University of Washington; PhD, 1965, University of Washington

Zheng, Ning 2002; PhD, 1997, University of Texas (Southwestern)

Associate Professors

Daniels, Christopher K. 2003, (Affiliate); MS, 1975, University of Wisconsin; PhD, 1982, Stanford University

Gardner, Richard George 2006; PhD, 2000, University of California (San Diego)

Hague, Chris 2005; PhD, 2002, Creighton University

Hinds, Thomas Richard 1974, (Emeritus); PhD, 1972, Oregon State University

Shadle, Susan Emery 2003, (Affiliate); PhD, 1994, Stanford University

Wang, Edith Harriet * 1996; MA, 1987, Columbia University; MPhil, 1988, Columbia University; PhD, 1991, Columbia University

Assistant Professors

Balet Sindreu, Carlos 2004, (Affiliate); PhD, 2004, University of Barcelona (Spain)

Brunet, Sylvain 2001, (Affiliate); PhD, 1998, McGill University (Canada)

Maier, Sebastian Karl-Georg 1999, (Affiliate); MD, 1995, University of Wurzburg (Germany); DrMed, 1996, University of Wurzburg (Germany)

Ong, Shao-En 2010; PhD, 2004, University of Southern Denmark

Rohn, Tony T. 1990, (Affiliate); PhD, 1994, University of Washington

Yu, Frank Hong 1997, (Affiliate); MSc, 1990, University of British Columbia (Canada); PhD, 1997, McGill University (Canada)

Lecturer

Langeberg, Lorene 2008; BS, 1976, University of Colorado (Boulder)

Physiology and Biophysics

Professors

Almers, Wolfhard * 1974, (Affiliate); PhD, 1971, University of Rochester

Babcock, Donner Franklin 1986, (Emeritus); PhD, 1971, Oregon State University

Berger, Albert Jeffrey 1977, (Emeritus); MA, 1965, Princeton University; PhD, 1967, Princeton University; PhD, 1976, University of California (San Francisco)

Binder, Marc David 1978; MS, 1972, University of Southern California; PhD, 1974, University of Southern California

Bothwell, Mark Allen 1985; PhD, 1975, University of California (Berkeley)

Bregelmann, George Leslie * 1966, (Emeritus); PhD, 1967, University of Washington

Buck, Linda B. 2003, (Affiliate); PhD, 1980, University of Texas (unspecified)

Carlson, Steven S. 1985; PhD, 1975, University of California (Berkeley)

Cloud, Joseph G 2014, (Affiliate); MS, 1968, University of Wisconsin; PhD, 1974, University of Wisconsin

Cook, Daniel L. * 1978, (Research); MSME, 1970, University of Washington; MD, 1977, University of Washington; PhD, 1979, University of Washington

Detwiler, Peter Benton 1976; PhD, 1970, Georgetown University

Feigl, Eric O. 1969, (Emeritus); MD, 1958, University of Minnesota

Fetz, Eberhard Erich * 1967; PhD, 1966, Massachusetts Institute of Technology

Froehner, Stanley Charles 2000; PhD, 1973, California Institute of Technology

Fuchs, Albert F. * 1969, (Emeritus); MS, 1961, Drexel Institute of Technology; PhD, 1966, Johns Hopkins University Furilla, Robert Alan 2011, (Affiliate); MS, 1981, University of Alaska; PhD, 1986, University of British Columbia (Canada)

Gordon, Albert McCague * 1964, (Emeritus); PhD, 1961, Cornell University

Gordon, Sharona Elana 1993; PhD, 1993, Brown University Hildebrandt, Jacob * 1966; MSc, 1960, University of British Columbia (Canada); PhD, 1966, University of Washington

Hille, Bertil 1968; PhD, 1967, Rockefeller University Hlastala, Michael P. 1970, (Emeritus); PhD, 1969, State University of New York (Buffalo)

Klowden, Marc J. 2004, (Affiliate); MS, 1974, University of Illinois; PhD, 1976, University of Illinois

Koerker, Donna J. * 1970, (Emeritus); PhD, 1970, University of Michigan

Mackie, Kenneth Paul * 1987, (Affiliate); MD, 1984, Yale University

Raisbeck, Merl Francis 2002, (Affiliate); DVM, 1975, Colorado State University; MS, 1982, University of Missouri; PhD, 1984, University of Missouri

Reid, R. Clay 2014, (Affiliate); PhD, 1988, Rockefeller University; MD, 1991, Cornell University

Rieke, Frederick Martin 1997; PhD, 1991, University of California (Berkeley)

Rodnick, Kenneth J. 2004, (Affiliate); MS, 1983, Oregon State University; MA, 1984, Oregon State University; PhD, 1989, Stanford University

Rowell, Loring Bernard * 1962, (Emeritus); PhD, 1962, University of Minnesota

Santana, Luis Fernando 2001; MS, 1992, University of Hawaii; PhD, 1996, University of Maryland

Pharmacology

Professors

Bajjalieh, Sandra Mae 1995; MS, 1983, University of Illinois; PhD, 1989, University of Wisconsin (Madison)

Schwindt, Peter Charles * 1974, (Emeritus); MS, 1965, Massachusetts Institute of Technology; PhD, 1972, University of Washington

Shadlen, Michael Neil * 1995, (Affiliate); PhD, 1985, University of California (Berkeley); MD, 1988, Brown University
Smith, Orville Auverne * 1956, (Emeritus); MA, 1950, Michigan State University; PhD, 1953, Michigan State University
Stirling, Charles E. * 1968, (Emeritus); PhD, 1966, State Univ of New York (Upstate Med Ct)

Wise, Phyllis M. 2005, (Emeritus); MA, 1969, University of Michigan; PhD, 1972, University of Michigan

Wordeman, Linda Gay 1994; PhD, 1988, University of California (Berkeley)

Zagotta, William Nicholas * 1993; PhD, 1989, Stanford University

Associate Professors

Anderson, Curtis W. 2005, (Affiliate); MS, 1992, Northern Arizona University; PhD, 1996, Northern Arizona University
Asbury, Charles L. 2004; MS, 1993, Tulane University; PhD, 1999, University of Washington

Barria-Roman, Andres 2005; PhD, 1998, University of Chile
Buffalo, Elizabeth Ann 2013; MA, 1995, University of California (San Diego); PhD, 1999, University of California (San Diego)

Fairhall, Adrienne Louise 2003; MS, 1993, Weizmann Institute For Science (Israel); PhD, 1997, Weizmann Institute For Science (Israel)

Grimes, Mark L. 2004, (Affiliate); PhD, 1986, University of Oregon

Horwitz, Gregory D. 2007; MS, 1997, Stanford University; PhD, 1999, Stanford University

Owens, Jesse Lee 2003, (Affiliate); PhD, 1987, University of Alaska

Schulte, Marvin K. 2004, (Affiliate); MS, 1989, University of Minnesota; PhD, 1992, University of Minnesota

Sullivan, Jane Madden 2002; PhD, 1990, University of Utah
Van Brederode, Johannes Frederik Michael 1987, (Affiliate); MS, 1982, University of Amsterdam (Netherlands); PhD, 1987, Medical College of Wisconsin

Wells, Richard B. 2004, (Affiliate); MS, 1979, Stanford University; PhD, 1985, University of Idaho

Assistant Professors

Coppin, Christophe M. 2008, (Affiliate); MD, 1993, Tufts University; PhD, 1993, Tufts University

Eiger, Steven Manuel 1997, (Affiliate); PhD, 1984, University of Michigan

Fuerst, Peter Gerard 2011, (Affiliate); PhD, 2003, Iowa State University

Liu, Qinghang 2011; MD, 1994, Taishan Medical University (China); MS, 1997, Shanghai Medical University (China); PhD, 2004, University of Tennessee

Olsen, Shawn 2014, (Affiliate); PhD, 2009, Harvard University

Vella, Chantal Anne 2012, (Affiliate); MS, 1997, Calif Polytechnic State (San Luis Obis); PhD, 2004, University of New Mexico

Waters, David J 2013, (Affiliate); PhD, 1997, University of London, UK

Senior Lecturers

Linder, Thomas Michael 1975; PhD, 1971, University of Washington

Melby, Anna Elizabeth 1996; MS, 1987, University of California (San Diego); PhD, 1995, University of Oregon

Psychiatry and Behavioral Sciences

Professors

Belenky, Gregory Lucas 2005, (Affiliate); MD, 1971, Stanford University

Borson, Soo 1972, (Emeritus); MD, 1969, Stanford University

Bowden, Douglas McHose 1969; MD, 1965, Stanford University

Campbell, William Howard 2009; MD, 1982, Loyola University (Chicago); MBA, 1990, Jacksonville University

Carr, John Edward * 1963, (Emeritus); MA, 1958, Syracuse University; PhD, 1963, Syracuse University

Christopher, John Chambers 2009, (Affiliate); MEd, 1987, Harvard University; PhD, 1992, University of Texas (Austin)

Cowley, Deborah Suzanne 1980; MD, 1980, University of Pennsylvania

Craft, Suzanne * 1994, (Affiliate); PhD, 1985, University of Texas (Austin)

Doerr, Hans Oskar * 1967, (Emeritus); MD, 1962, Florida State University; PhD, 1965, Florida State University

Donovan, Dennis 1981; MA, 1972, Western Washington University; PhD, 1980, University of Washington

Dorsa, Daniel Michael * 1979, (Affiliate); PhD, 1977, University of California (Davis)

Dunn, Christopher Williams 1993; MS, 1990, University of Florida; PhD, 1994, University of Florida

Dyck, Dennis Gary 1992, (Affiliate); MA, 1970, Pepperdine University; PhD, 1973, University of Oklahoma

Fann, Jesse Ruey 1990; MD, 1989, Northwestern University; MPH, 1995, University of Washington

Felker, Bradford Laird 1997; MD, 1987, University of Virginia

Fortney, John Cooper 2014; PhD, 1992, University of Iowa
Heiman, Julia Rue * 1980, (Clinical); PhD, 1975, State Univ of New York (Stony Brook)

Horita, Akira * 1954, (Emeritus); MS, 1951, University of Washington; PhD, 1954, University of Washington

Katon, Wayne Jay * 1976; MD, 1976, University of Oregon
Kaysen, Debra 2002; MA, 1997, University of Missouri; PhD, 2003, University of Missouri

King, Bryan Harry 2005; MD, 1983, Medical College of Wisconsin
Larimer, Mary Elizabeth 1987; MS, 1990, University of Washington; PhD, 1992, University of Washington

Lin, Elizabeth Hiok-Boon * 1982, (Clinical); MD, 1979, Stanford University; MPH, 1984, University of Washington

McCauley, Elizabeth A. 1979; PhD, 1973, State University of New York (Buffalo)

McClellan, Jon Montgomery 1984; MD, 1984, University of Michigan

McCann, Barbara Sue * 1986; MS, 1982, Rutgers University; PhD, 1984, Rutgers University

McFall, Miles E. 1982; MA, 1979, University of Montana; PhD, 1981, University of Montana

Mohan, Philip John 1985, (Affiliate); PhD, 1967, Claremont Graduate School

Myers, Kathleen M. 1980; MS, 1972, University of Hawaii; MPH, 1979, University of Hawaii; MD, 1979, University of Hawaii

Neighbors, Clayton Thomas 2000, (Affiliate); MS, 1996, Lamar University; PhD, 2000, University of Houston

Neumaier, John Fredric 1983; PhD, 1989, University of Washington; MD, 1990, University of Washington

Pasic, Jagoda 1997; MD, 1978, University of Sarajevo; MS, 1983, University of Sarajevo; PhD, 1990, University of London:King'S College (UK)

Peskind, Elaine Roslyn 1986; MS, 1978, Washington State University; MD, 1986, University of Washington

Raskind, Murray 1970; MD, 1968, Columbia University

Ries, Richard Kirkland 1975; MD, 1975, Northwestern University

Robinson, Nancy Lou Mayer * 1969, (Emeritus); MA, 1953, Stanford University; PhD, 1958, Stanford University

Roesler, Thomas Allen 1977; MD, 1972, University of Washington

Romano, Joan Michele 1982; MS, 1974, University of Pittsburgh; PhD, 1982, University of Pittsburgh

Roy-Byrne, Peter Paul 1986, (Emeritus); MD, 1978, Tufts University

Saxon, Andrew John 1982; MD, 1977, Tufts University

Schaie, Klaus Warner 1963, (Affiliate); MS, 1953, University of Washington; PhD, 1956, University of Washington

Schmaling, Karen Barbara 1992, (Affiliate); MS, 1985, University of Washington; PhD, 1988, University of Washington

Speltz, Matthew L. 1980; MA, 1975, Western Washington University; PhD, 1980, University of Missouri

Stein, Mark Alan 2013; MA, 1972, Bowling Green State University; MA, 1978, Southern Illinois University; PhD, 1982, Southern Illinois University

Sullivan, Mark Daniel 1985; MA, 1982, Vanderbilt University; PhD, 1982, Vanderbilt University; MD, 1984, Vanderbilt University

Syrjala, Karen Leslie 1983; MA, 1983, Boston University; PhD, 1983, Boston University

Townes, Brenda Dessau * 1961, (Emeritus); MA, 1958, Mills College; PhD, 1970, University of Washington

Trupin, Eric Wallace 1973; MA, 1973, University of Wyoming; PhD, 1974, University of Wyoming

Tsuang, Debby Wen 1992; MD, 1988, University of Iowa; MS, 1992, University of Iowa

Turner, Eric E. 2009; MD, 1986, University of Washington; PhD, 1987, University of Washington

Turner, Judith Ann 1979; MA, 1975, University of California (Los Angeles); PhD, 1979, University of California (Los Angeles)

Unutzer, Jurgen 2003; MA, 1988, University of Chicago; MD, 1990, Vanderbilt University; MPH, 1996, University of Washington

Varley, Christopher Kilborn 1974; MD, 1973, University of Washington

Veith, Richard Charles 1973; MD, 1973, University of Washington

Vitaliano, Peter Paul * 1976; MS, 1973, Syracuse University; PhD, 1975, Syracuse University

Vitiello, Michael Vincent * 1977; PhD, 1980, University of Washington

Von Korff, Michael R. 1986, (Affiliate); ScD, 1978, Johns Hopkins University

Walker, Edward Anthony 1983; MM, 1979, Catholic University of America; MD, 1983, University of Washington

Walker, Roger Dale 1977, (Affiliate); MD, 1972, University of Oklahoma

Zatzick, Douglas F. 2000; MD, 1989, University of California (San Diego)

Associate Professors

Armstrong, Hubert E. 1966, (Emeritus); PhD, 1963, Syracuse University

Barnes, Robert Franklyn 1974, (Emeritus); MD, 1973, University of Utah

Bernier, Raphael Alexis 2007; MS, 1996, University of Wisconsin (Madison); MS, 2004, University of Washington; PhD, 2007, University of Washington

Boynton, Lorin 1995; MBChB, 1991, University of Cape-town (South Africa)

Brkanac, Zoran 1998; MD, 1993, University of Zagreb (Croatia)

Bruns, Eric Jerome 2005; PhD, 1997, University of Vermont
Bush, Nigel Edward 1987, (Affiliate); PhD, 1986, University of Southampton (UK)

Carlin, Albert Sheldon 1964, (Emeritus); MA, 1961, Syracuse University; PhD, 1964, Syracuse University

Carlisle, Lynda Lee 1987; MD, 1985, Medical College of Georgia

Chaney, Edmund Francis 1977, (Emeritus); PhD, 1976, University of Washington

Chwastiak, Lydia A. 1999; MA, 1991, Georgetown University; MD, 1993, University of Pennsylvania; MPH, 2001, University of Washington

Collins, Susan Elizabeth 2007; MA, 2000, Syracuse University; PhD, 2003, Syracuse University

Combs, Heidi Lynn 1991; MS, 1988, University of Washington; MD, 2000, University of Washington

Comtois, Katherine Ann 1991; MA, 1990, University of Maryland; PhD, 1992, University of Maryland

Dagadakis, Christos Stamatios 1976; MD, 1974, University of Washington; MPH, 1975, University of Washington

Davydow, Dmitry 2008; MD, 2002, University of Missouri (Kansas City); MPH, 2011, University of Washington

Dubach, Mark Frederick 1978, (Emeritus); PhD, 1983, University of Washington

Erickson, Richard Carl 1971, (Emeritus); PhD, 1969, University of Washington

Gahm, Gregory Alan 2010, (Affiliate); MA, 1984, State Univ of New York (Stony Brook); MS, 1984, State Univ of New York (Stony Brook); PhD, 1986, State Univ of New York (Stony Brook)

Grant, Therese Marie 1984; MEd, 1982, University of Oregon; PhD, 1999, University of Washington

Hamblin, Mark William 1990; MD, 1982, University of California (San Diego); PhD, 1982, University of California (San Diego)

Hilt, Robert J. 2006; MD, 1996, University of Rochester

Kim, Soo-Jeong 2011; MD, 1993, Seoul National University (Korea); MS, 1999, Seoul National University (Korea); MS, 2010, University of Florida

Kimmel, Ryan James 2007; MD, 2001, University of Washington

Kivlahan, Daniel Roy * 1983; MA, 1979, University of Missouri; PhD, 1983, University of Missouri

Kohen, Ruth 1988; MD, 1986, University of Aachen (Germany)

Lee, Terry Git 1987; MD, 1987, University of Minnesota

Levy, Mitchell 1996; MD, 1996, George Washington University

Lewis, Melissa Ardelle 2005; MS, 2002, Montana State University; PhD, 2005, North Dakota State University

Li, Gail 1996; MMed, 1986, Beijing Medical University (China); PhD, 1989, Beijing Medical University (China)

Lindgren, Kristen 2006; MS, 2002, University of Washington; PhD, 2006, University of Washington

Ludman, Evette 2004, (Affiliate); MA, 1985, University of Oregon; PhD, 1993, University of Oregon

Luxton, David Denning 2010, (Affiliate); MS, 2002, University of Texas (San Antonio); PhD, 2008, University of Kansas

Martell, Christopher Robert 1996, (Affiliate); MA, 1985, Hofstra University; PhD, 1988, Hofstra University

McDonell, Michael 2004; MS, 2001, Washington State University; PhD, 2004, Washington State University

Miller, Margaret A. 1981, (Affiliate); MS, 1976, Idaho State University; PhD, 1984, University of Washington

Murray, Suzanne B. 1991; MD, 1997, Temple University

Navas, Parvoneh Poorkaj 1992, (Affiliate); PhD, 1992, University of California (Los Angeles)

Pascualy, Ofelia Marcella 1984; MD, 1982, Universidad Javeriana (Colombia)

Petrie, Eric Cameron 1985; MS, 1981, University of Wisconsin (Madison); MD, 1985, University of Washington

Phillips, Paul 2004; PhD, 1999, University of London, UK

Poeschla, Brian Doering 2002; MD, 1986, Emory University

Radant, Allen David 1985; MD, 1985, University of California (Davis)

Reger, Mark A. 2001, (Affiliate); MA, 1998, Rosemead School of Psychology; PhD, 2001, Rosemead School of Psychology

Reoux, Joseph Paul 1995; MD, 1985, University of Texas (Houston)

Rockhill, Carol M. 2000; MS, 1993, University of Illinois; MD, 2000, University of Illinois; PhD, 2000, University of Illinois; MPH, 2007, University of Washington

Roll, John Michael 2005, (Affiliate); MA, 1990, St. Bonaventure University (New York); PhD, 1994, Washington State University

Romm, Sharon 1996; MD, 1972, Boston University

Russo, Joan Elizabeth 1982; PhD, 1989, University of Washington

Scher, Maryonda Edmondstone 1955, (Emeritus); MD, 1954, University of Washington

Shores, Molly McDonough 1989; MD, 1987, University of Washington

Simpson, Tracy Lynn 1997; MS, 1993, University of New Mexico; PhD, 1999, University of New Mexico

Smith, Wayne Russell 1978; PhD, 1979, Washington University; MPH, 1986, University of Washington

Snowden, Mark Brian 1990; MD, 1990, University of Washington

Storck, Michael Guy 1989; MD, 1980, Medical College of Ohio

Sulzbacher, Stephen I. 1966, (Emeritus); MA, 1964, Hollins College (Virginia); PhD, 1971, University of Washington

Thielke, Stephen Michael 1995; MA, 1994, University of Washington; MD, 2001, University of Washington; MS, 2008, University of Washington

Vander Stoep, Ann 1994; MS, 1979, University of Oklahoma; PhD, 1997, University of Washington

Verhulst, Johan Maria Frans 1971, (Emeritus); MD, 1964, Catholic University of Louvain (Belgium)

Villacres, Enrique Carlos 1981; MD, 1981, Medical College of Wisconsin

Waiblinger, Brian 1996, (Acting); MD, 1996, University of Washington

Webb, Sara Jane 2001; PhD, 2001, University of Minnesota

Wilson, Lawrence G. 1970, (Emeritus); MD, 1966, University of Kansas

Wingerson, Dane Kurt 1987; MD, 1987, University of Washington

Womack, William Martin 1961, (Emeritus); MD, 1961, University of Virginia

Yuodelis-Flores, Christine 1986; MD, 1985, University of Washington

Assistant Professors

Bauer, Amy Marrell 2011; MS, 1996, University of Stirling, Scotland; MS, 2001, University of California (Berkeley); MD, 2003, University of California (San Francisco)

Bedard-Gilligan, Michele Angela 2003; MS, 2006, University of Washington; PhD, 2009, University of Washington

Bentley, Susan M. 2003; DO, 1988, West Virginia School of Osteopathic Med

Bonner, Laura Mary 2001; MA, 1998, California School of Professional Psychology; PhD, 2003, California School of Professional Psychology

Borghesani, Paul Roger 2001; PhD, 1999, Harvard University; MD, 2001, Harvard University

Borisovskaya, Anna 2005; MD, 2005, University of Washington

Boydston, Lauren A. 2004; MD, 2004, Vanderbilt University

Braden, Jennifer Brennan 1999, (Affiliate); MD, 1998, Medical College of Wisconsin; MPH, 2001, University of Washington

Brenner, Carolyn Jill 2005; MD, 2005, University of Vermont

Carmel, Adam 2012, (Affiliate); PhD, 2012, California School of Professional Psychology

Clark, Jeremy James 2001; PhD, 2006, University of Washington

Clifasefi, Seema Lisa 2003; PhD, 2003, Victoria University (UK)

Collett, Brent 2001; MS, 2000, Utah State University; PhD, 2002, Utah State University

Crawford, Daniel Joseph 2004; MM, 1983, Northwestern University; MD, 2004, University of Washington

Croicu, Carmen Antonela 2005; MD, 1993, University of Bucharest (Romania)

Cronce, Jessica Marie 2008; MS, 2005, Yale University; MPhil, 2006, Yale University; PhD, 2009, Yale University

Dahl, Kitty 1985, (Affiliate); PhD, 1992, University of Washington

DeMers, Shaune Marie 1988; MD, 2000, University of Washington

Ferguson, Susan 2004; PhD, 2004, University of Michigan
Flynn, Cynthia Ann 2004; MA, 1992, New School For Social Research; MS, 1998, Vanderbilt University; PhD, 2005, Vanderbilt University

French, William Pangburn 2008; MD, 2003, University of Kentucky

Geisner, Irene Markman 1999; MEd, 1998, University of Pennsylvania; PhD, 2008, University of Washington

Gerdts, Jennifer Ann 2005; MS, 2008, University of Washington; PhD, 2012, University of Washington

Gudmundsen, Gretchen 2006; MA, 2003, University of Denver; PhD, 2007, University of Denver

Harrison, David Arnold 2007; PhD, 1999, University of California (Davis); MD, 2003, University of California (Davis)

Hawkins, Eric J. 2005; PhD, 2004, Brigham Young University

Hoerster, Katherine D. 2010; MPH, 2009, San Diego State University; PhD, 2010, San Diego State University

Howe, Catherine Qing 2006; MD, 1997, Peking University (China); PhD, 2003, Duke University

Hsiao, Ray Chih-Jui 2000; MD, 2000, Northwestern University

Jakupcak, Matthew 2004; PhD, 2003, University of Massachusetts

Kerns, Suzanne Elaine Upson 2004; PhD, 2006, University of South Carolina

Kilmer, Jason 2007; MS, 1993, University of Washington; PhD, 1997, University of Washington

Kodish, Ian Michael 2004; MD, 2004, University of Illinois; PhD, 2004, University of Illinois

Kuniyoshi, Jon Shinzen 2001; PhD, 1999, University of Southern California; MD, 2001, University of Southern California

Lehavot, Keren 2005; MS, 2007, University of Washington; PhD, 2011, University of Washington

Lewis, Cara Charissa 2010, (Affiliate); MS, 2006, University of Oregon; PhD, 2011, University of Oregon

Litt, Dana Michelle 2010; PhD, 2010, Georgetown University

Lostutter, Ty William 1994; MS, 2008, University of Washington; PhD, 2009, University of Washington

Lyon, Aaron Robert 2008; MA, 2005, De Paul University; PhD, 2009, De Paul University

Michael, Scott T. 2002; MA, 1999, University of Kansas; PhD, 2002, University of Kansas

Mitchell, Joel Christopher 2010; MA, 2004, Biola University; PhD, 2007, Biola University

Monroe-Devita, Maria 2006; MA, 1998, University of Nebraska; PhD, 2001, University of Nebraska

Pagulayan, Kathleen Farrell 2003; MA, 2000, University of Cincinnati; PhD, 2004, University of Cincinnati

Parker, Myra Elizabeth 2003; JD, 2001, University of Arizona; MPH, 2002, University of Arizona; PhD, 2010, University of Washington

Phillips, Michael Robert 1980, (Affiliate); MD, 1974, McMaster University (Canada)

Ratzliff, Anna Kristina Marguerite de Haas 2005; PhD, 2003, University of California (Irvine); MD, 2005, University of California (Irvine)

Schoenfelder, Erin Nicole 2014; MA, 2008, Arizona State University; PhD, 2012, Arizona State University

Skopp, Nancy Ann 2010, (Affiliate); MSW, 1996, University of Houston; MA, 2001, University of Houston; PhD, 2005, University of Houston

Stappenbeck, Cynthia Ann 2011; MA, 2002, State University of New York (Buffalo); PhD, 2011, University of Texas (Austin)

Stephens, Kari Astley 1993; MS, 2001, University of Washington; PhD, 2008, University of Washington

Strachan, Eric Daniel 2003; MA, 1999, University of Colorado (Colorado Springs); MLS, 2003, University of Nebraska, campus unspecified; PhD, 2004, University of Nebraska, campus unspecified

Trittschuh, Emily Hope 2008; PhD, 2006, Northwestern University

Varkovitzky, Ruth Luba 2014; MA, 2008, Northern Illinois University; PhD, 2012, Northern Illinois University

Veitengruber, Jason P. 1991; MD, 2000, University of Washington

Wagner, Amy Williamson 2000, (Affiliate); MS, 1989, University of Washington; PhD, 1995, University of Washington

Whitsett, Stan French 2001, (Affiliate); MSc, 1976, University of South Alabama; PhD, 1982, University of Tennessee

Zweifel, Larry S. 2005; PhD, 2005, Johns Hopkins University

Senior Lecturers

Leblang, Joshua 2005; MEd, 1994, University of Florida; EDS, 1994, University of Florida

Szot, Patricia 1987; MS, 1982, Idaho State University; PhD, 1987, Oregon State University

Lecturers

Backus, Frank I. 1965, (Emeritus); MD, 1992, University of Washington

Wright, Robert G. 1955, (Emeritus); MD, 1954, University of Rochester

Radiation Oncology

Professors

Groudine, Mark Terry * 1976; MD, 1975, University of Pennsylvania; PhD, 1976, University of Pennsylvania

Kalet, Ira Joseph * 1968, (Emeritus); MA, 1966, Princeton University; PhD, 1968, Princeton University

Koh, Wui-Jin 1984; MD, 1984, Loma Linda University

Laramore, George Ernest 1976; MS, 1966, University of Illinois; PhD, 1969, University of Illinois; MD, 1976, University of Miami (Florida)

Mayr, Nina M. 2013; MD, 1985, University of Munich (Germany)

Morgan, William F. 2009, (Affiliate); MSc, 1977, University of Canterbury (New Zealand); PhD, 1980, University of Canterbury (New Zealand); DSc, 2003, University of Canterbury (New Zealand)

Phillips, Mark Howard 1991; PhD, 1982, University of Wisconsin (Madison)

Russell, Kenneth John 1985; MD, 1979, Harvard University

Sandison, George 2008; MSc, 1979, University of London, UK; PhD, 1987, University of Manitoba (Canada)

Wilbur, Daniel Scott 1986; PhD, 1978, University of California (Irvine)

Associate Professors

Apisarnthanarax, Smith 2013; MD, 2002, Brown University

Bloch, Charles Dennis 2013; MS, 1983, Michigan State University; PhD, 1987, Michigan State University

Chvetsov, Alexei 2011; MS, 1985, Moscow Institute of Engineering Physics; PhD, 1992, Moscow Institute of Engineering Physics

Ford, Eric Cassel 2003; MA, 1994, Columbia University; PhD, 1997, Columbia University

Kane, Gabrielle Martina 2007; MBChB, 1975, Trinity College (Ireland); MEd, 1998, University of Toronto (Canada); EdD, 2005, University of Toronto (Canada)

Kim, Edward Young 2010; MD, 2001, Case Western Reserve University

Kim, Janice Nam 2006; MS, 1997, Chicago Medical School; MD, 2001, Chicago Medical School

Liao, Jay Justin 2007; MD, 2002, University of Michigan

Meyer, Juergen 2001; PhD, 2001, Coventry University

Parvathaneni, Upendra 2006; MBBS, 1993, Annamalai University (India)

Patel, Shilpen 2006; MD, 2001, University of Texas (Galveston)

Quang, Tony S. 2007; MD, 2002, Drexel University

Rengan, Ramesh 2013; MD, 2001, University of Michigan, Ann Arbor; PhD, 2001, University of Michigan, Ann Arbor

Rockhill, Jason K. 2000; PhD, 1997, University of Illinois; MD, 1998, University of Illinois

Schwartz, Jeffrey Lawrence 1995; PhD, 1979, University of Texas (Dallas)

Stewart, Robert D. 2010; MS, 1990, Kansas State University; PhD, 1997, Kansas State University

Wallner, Kent Emerson 1997; MD, 1981, Ohio State University

Assistant Professors

Balkin, Ethan Ruvaie 2011; PhD, 2011, University of Missouri (Columbia)

Bowen, Stephen R. 2011; MS, 2009, University of Wisconsin; PhD, 2011, University of Wisconsin

Ermoian, Ralph Philip 2007; MS, 1993, Stanford University; MD, 2003, University of California (San Francisco)

Fang, Li-Ming Christine 2006; MD, 2005, University of Utah

Halasz, Lia Moriguchi 2005; MD, 2006, Harvard University

Hendrickson, Kristi 1991; MS, 1993, University of Washington; PhD, 1999, University of Washington

Kim, Minsun 2007; MS, 2000, Columbia University; PhD, 2010, University of Washington

Smith, Wade P. 2004; PhD, 2003, State Univ of New York (Stony Brook)

St. James, Sara T 2014; MSc, 2005, McGill University (Canada); PhD, 2010, University of California (Davis)

Tsang, Yolanda Diana 2014; MPhil, 2004, University of Cambridge (UK); MD, 2009, Harvard Medical School

Young, Lori 1993; MS, 1990, University of Utah; PhD, 1998, University of Washington

Zeng, Jing 2012; MD, 2007, Duke University

Radiology

Professors

Anzai, Yoshimi 2000; MD, 1986, Chiba University (Japan)

Beauchamp, Norman J. 2002; MD, 1990, Michigan State University

Blackmore, Christopher Craig 1995, (Affiliate); MD, 1990, University of Rochester; MPH, 1997, University of Washington

Chesnut, Charles H. * 1966; MD, 1966, University of Florida

Chew, Felix Sze-Kway 2004; MD, 1979, University of Florida; MEd, 1995, Harvard University; MBA, 2004, Duke University

Cohen, Wendy Anne 1987; MD, 1975, Harvard University

Conley, Kevin Edward * 1988; MS, 1983, University of Wisconsin; PhD, 1983, University of Wisconsin (Madison)

Dager, Stephen Roger 1979; MD, 1978, University of Nebraska

Dubinsky, Theodore Jay 1984; MD, 1983, University of Maryland

Effmann, Eric Leonard 1991, (Emeritus); MD, 1967, Indiana University

Ghodke, Basavaraj 2002; MBBS, 1989, University of Bombay; MD, 1993, University of Bombay

Godwin, Joseph David 1986; MD, 1971, Stanford University

Grabowski, Thomas 2009; MD, 1986, Vanderbilt University

Hayes, Cecil Edward 1991; AM, 1966, Harvard University; PhD, 1973, Harvard University

Haynor, David Robert * 1979; PhD, 1971, University of California (Berkeley); MD, 1979, Harvard University

Hoffer, Fredric A. 2006, (Affiliate); MD, 1975, University of Iowa

Jarvik, Jeffrey Gil 1993; MD, 1987, University of California (San Diego)

Kinahan, Paul Eugene 2001; MS, 1988, University of British Columbia (Canada); PhD, 1994, University of Pennsylvania

Krohn, Kenneth Albert 1981; PhD, 1971, University of California (Davis)

Kushmerick, Martin Joseph * 1988, (Emeritus); MD, 1963, University of Pennsylvania; PhD, 1966, University of Pennsylvania

Lehman, Constance Dobbins 1990; MS, 1986, Yale University; MPH, 1987, Yale University; MD, 1990, Yale University; PhD, 1990, Yale University

Lewellen, Thomas Kirby * 1967, (Emeritus); PhD, 1972, University of Washington

Lewis, David Howard 1985; MD, 1985, Virginia Commonwealth University

Maki, Jeffrey Harold 1998; PhD, 1990, Duke University; MD, 1991, Duke University

Maravilla, Kenneth Richard 1986; MD, 1970, State University of New York (Brooklyn)

Moss, Albert A. 1984, (Emeritus); MD, 1967, State University of New York (Syracuse)

Nelp, Wil Borchers 1962, (Emeritus); MD, 1955, Johns Hopkins University

Nelson, James Alonzo * 1986, (Emeritus); MD, 1965, Harvard University

Nowinski, Wieslaw 2004, (Affiliate); MS, 1977, Technical University of Warsaw (Poland); PhD, 1985, University

of Lodz (Poland); DSc, 1994, Polish Academy of Science (Poland)

Parisi, Marguerite T. 2001; MD, 1977, State University of New York (campus unspecified); MS, 1995, University of California (Los Angeles)

Rajendran, Joseph Gnanaprasad 1994; MBBS, 1973, Madurai University (India); MD, 1980, Christian Medical College Reddy, Gautham 2008; MPH, 1991, George Washington University; MD, 1991, George Washington University

Richards, Todd Lynn * 1985; PhD, 1984, University of California (Berkeley)

Richardson, Michael Lewellyn 1984; MD, 1975, Baylor College of Medicine

Rohrmann, Charles Albert Jr. 1975; MD, 1966, University of Washington

Shaw, Dennis Webster Wallace 1983; MD, 1983, University of Washington

Shuman, William Phelps 1979; MD, 1973, State Univ of New York (Upstate Med Ct)

Stern, Eric James 1992; MD, 1985, U of Medicine & Dentistry of New Jersey

Stewart, Brent Kevin * 1993; PhD, 1988, University of California (Los Angeles)

Talner, Lee Bland 1993, (Emeritus); MD, 1963, Yale University

Valji, Karim 2007; MD, 1982, Harvard University

Vesselle, Hubert Jean 1997; MS, 1986, Case Western Reserve University; PhD, 1990, Case Western Reserve University; MD, 1991, Case Western Reserve University

Yang, Xiaoming 2006; MD, 1983, Suzhou Medical College (China); MS, 1986, Peking Union Medical College (China); PhD, 1991, University of Kuopio (Finland)

Yuan, Chun 1991; PhD, 1988, University of Utah

Yuh, William T.C. 2013; MS, 1974, Auburn University; MD, 1980, University of Alabama, Birmingham

Associate Professors

Bhargava, Puneet 2006; MBBS, 1997, KARNATAKA INSTITUTE OF MEDICAL SCIENCES, INDIA

Bhutta, Sadaf Tariq 2013; MBBS, 1996, King Edward Medical College (Pakistan)

Brewer, David Kent 1977, (Emeritus); MD, 1972, Harvard University

Chapman, Teresa 1994; MA, 2000, Washington University; MD, 2000, Washington University

Cuevas, Carlos 2001; MD, 1992, Pontificia Universidad Catolica De Chile

Dalley, Roberta W. 1987; MD, 1982, University of Utah

Dighe, Manjiri K. 2003; MBBS, 1998, University of Mumbai (India); MD, 2002, University of Mumbai (India)

Fink, James R. 2005; MD, 1998, University of California (Los Angeles)

Glickerman, David Jonathan 1990; MD, 1983, Albany Medical College

Green, Douglas Erwin 2007; MD, 1991, University of Vermont

Gross, Joel A. 2000; MS, 1985, University of California (San Diego); MD, 1990, University of California (Davis)

Gunn, Martin Lee David 2002; MBChB, 1994, University of Auckland (New Zealand)

Ha, Alice Soojung 2009; MS, 2003, University of Pennsylvania; MD, 2003, University of Pennsylvania

Hallam, Danial Kelly 2000; MS, 1985, Stanford University; MD, 1989, Stanford University

Ishak, Gisele Elias 2005; MD, 2000, Lebanese University (Beirut)

Iyer, Ramesh Subramaniam 2002; MD, 2005, New York University

Kanal, Kalpana M. 2000; MS, 1991, University of Texas (unspecified); PhD, 1996, University of Texas (unspecified)

Kim, Sooah 2014; MD, 1991, Ewha Womens University, Korea; MS, 2003, Chungbuk National University (Korea)

Kolokythas, Orpheus 2002, (Affiliate); MD, 1996, University of Ulm (Germany)

Lee, Janie Moe 2013; MD, 1998, University of Pennsylvania; MSc, 2005, Harvard College

Lee, Jean Hwa 2004; MD, 1996, Korea University (Korea); MMSc, 2001, Korea University (Korea); PhD, 2004, Korea University (Korea)

Li, Tao 2012; MD, 1985, Fourth Military Medical Univ (China); PhD, 1992, Academy of Chinese PLA Military Medical Science, China

Linnau, Ken F. 2000; MD, 1996, University of Vienna, Austria

Marcinek, David Joseph 2000; PhD, 2000, Stanford University

Marglin, Stephen Irving 1980, (Emeritus); MD, 1968, Yale University

Medverd, Jonathan Russell 1995; MD, 1995, New York University

Mitsumori, Lee M. 1988, (Affiliate); MSBE, 1994, University of Washington; MD, 1996, University of Hawaii

Monsky, Wayne Laurence 2012; MS, 1988, Georgetown University; MD, 1995, Georgetown University; PhD, 1995, Georgetown University

Moshiri, Mariam 2005; MD, 1995, Suny Brooklyn

Mulcahy, Hyojeong 2007; MD, 1992, Chonnam National University, Korea; MS, 1997, University of Ulsan (Korea)

Otto, Randolph Kevin 2007; MD, 1985, University of Michigan

Paladin, Angelisa M. 1998; MD, 1999, Chicago Medical School

Phillips, Grace Sian 2002; MD, 1997, Johns Hopkins University

Pipavath, Sudhakar Naik Jadav 2002; MBBS, 1997, All-India Institute of Medical Sciences; MD, 2000, All-India Institute of Medical Sciences

Posse, Stefan 1995, (Affiliate); PhD, 1990, University of Berne (Switzerland)

Relyea-Chew, Annemarie 2005; MA, 1985, University of Florida; JD, 1989, Syracuse University; MS, 2005, Wake Forest University

Rogers, James Virgil 1975, (Affiliate); MD, 1975, Emory University

Rosenbaum, David Michael 1983, (Emeritus); MD, 1977, Albert Einstein College of Medicine

Shibata, Dean Kazuo 1990; MD, 1989, Stanford University Shriki, Jabi Elijah 2014; MD, 2000, University of Texas (San Antonio)

Stearns, Charles William 1996, (Affiliate); MS, 1986, Massachusetts Institute of Technology; PhD, 1990, Massachusetts Institute of Technology

Sze, Raymond Wang 2000, (Affiliate); MD, 1990, U of Medicine & Dentistry of New Jersey

Takasugi, Julie Emiko 1988; MD, 1982, University of California (Los Angeles)

Thapa, Mahesh Man 2001; MD, 2000, University of Southern California

Vaidya, Sandeep 2004; MBBS, 1995, University of Bombay

Assistant Professors

Adduci, Alexander J. 2000; MD, 2000, Georgetown University; PhD, 2000, Georgetown University

Allison, Stephen Killefer 1997; MD, 2007, University of Southern California

Andre, Jalal B 2011; MD, 2004, Drexel University

Bastawrous, Sarah 2009; DO, 2003, Chicago College of Osteopathic Medicine

Benjert, Jayson Lee 1999; DO, 2005, Kirksville College of Osteopathic Med

Coy, David Laughlin 1992, (Affiliate); PhD, 1998, University of Washington; MD, 2000, University of Washington

Ferguson, Mark Robert 2004; MD, 2003, University of Michigan

Fink, Kathleen Rene Tozer 2000; MD, 2000, Indiana University

Hall, Christopher S 2014, (Affiliate); MS, 1992, Washington University; PhD, 1996, Washington University

Hamilton-Craig, Christian Ramsay 2010, (Affiliate); MBBS, 1999, University of Adelaide (Australia)

Hoff, Michael N 2013; MSc, 2006, University of British Columbia (Canada); PhD, 2012, University of British Columbia (Canada)

Hoffman, Hunter Goodwyn 1987, (Affiliate); MS, 1989, University of Washington; PhD, 1992, University of Washington

Ingraham, Christopher R. 2006; MD, 2006, New York University

Johnson, Guy Edward 1999; PharmD, 2002, University of Washington; MD, 2007, New York Medical College

Kicska, Gregory A. 2009; MD, 2003, Yeshiva University; PhD, 2003, Yeshiva University

Kogut, Matthew Jacob 2004; MD, 2004, Ohio State University

Kwan, Sharon Wing-Yi 2011; MD, 2005, Stanford University

Lalwani, Neeraj 2012; MBBS, 1999, University of Rajasthan; MD, 2004, U Seychelles, American Institute of Medicine (USAIM)

Lee, Christoph Ilsuk 2012; MD, 2005, Yale University; MSHS, 2011, University of California (Los Angeles)

Lehnert, Bruce Edwin 2006; MD, 2005, University of New Mexico

Luckman, Judith 2004, (Affiliate); MD, 1992, Ben-Gurion University

Maximin, Suresh T 2013; MD, 1988, Northeast Ohio University College of Medicine

McNeeley, Michael Fielden 2009; MD, 2008, University of Tennessee

Mossa-Basha, Mahmud 2012; MD, 2005, University of Toledo

Padia, Siddharth A. 2010; MD, 2003, Johns Hopkins University

Parnell, Shawn Elizabeth 2002; MD, 2001, Eastern Virginia Medical School

Perez, Francisco Alberto 1998; PhD, 2005, University of Washington; MD, 2007, University of Washington

Porrino, Jack A. Jr. 2010; MD, 2005, University of Nevada

Robinson, Jeffrey D. 1996; MD, 1985, University of Minnesota

Sadro, Claudia T. 2008; MD, 1993, University of British Columbia (Canada)

Sandstrom, Claire Kalsch 2007; MD, 2006, Duke University

Scheel, John Robert 2012; PhD, 2005, University of California (San Diego); MD, 2006, University of California (San Diego)

Stanescu, Arta Luana 2006; MD, 1994, Univ of Med And Pharm Carol Davila (Rom)

Swanson, Jonathan Ogden 2004; MD, 2003, University of Pennsylvania

Wang, Carolyn L. 2009; MD, 2003, University of Texas (Southwestern)

Wang, Jinnan 2003, (Affiliate); MS, 2003, Tsinghua University (China); PhD, 2008, University of Washington

Rehabilitation Medicine

Professors

Anderson, Marjorie Elizabeth * 1971, (Emeritus); PhD, 1969, University of Washington

Bombardier, Charles Henry * 1989; MS, 1984, Washington State University; PhD, 1987, Washington State University

Brockway, Jo Ann * 1975, (Emeritus); MA, 1972, University of Iowa; PhD, 1975, University of Iowa

Childers, Martin Kent 2012; DO, 1990, Western University of Health Sciences; PhD, 2002, University of Missouri (Columbia)

Czerniecki, Joseph Michael * 1982; MD, 1981, University of British Columbia (Canada); MS, 1985, University of Washington

Deitz, Jean Louise * 1979, (Emeritus); MEd, 1970, University of Florida; PhD, 1976, University of Florida

Delateur, Barbara Jane * 1963, (Affiliate); MD, 1963, University of Washington; MS, 1968, University of Washington

Dikmen, Sureyya S. * 1974; MA, 1967, University of Michigan; PhD, 1973, University of Washington

Ehde, Dawn Marie 1991; MA, 1989, University of North Dakota; PhD, 1992, University of North Dakota

Esselman, Peter Carey * 1981; MPT, 1979, University of Washington; MD, 1986, University of Washington

Fraser, Robert Thomas 1976; MS, 1972, University of Southern California; PhD, 1976, University of Wisconsin; MPA, 1984, Seattle University

Goldstein, Barry * 1987; PhD, 1981, University of California (Los Angeles); MD, 1986, University of California (Los Angeles)

Halar, Eugen M. * 1968, (Emeritus); MD, 1959, University of Zagreb (Croatia)

Hammond, Margaret Campbell * 1979, (Emeritus); MD, 1978, Medical College of Wisconsin

Haselkorn, Jodie Kangas * 1985; MPH, 1985, University of Michigan; MD, 1985, Louisiana State University

Hays, Ross McGandy * 1983; MD, 1978, University of Washington

Jaffe, Kenneth Marc * 1975; MD, 1975, Harvard University; MRM, 1982, University of Washington

Jensen, Mark Philip * 1987; MA, 1984, Arizona State University; PhD, 1989, Arizona State University

Johnson, Kurt Lewis * 1990; MEd, 1979, University of Washington; PhD, 1984, University of Wisconsin

Kartin, Deborah 1984; MS, 1988, University of Washington; PhD, 1996, University of Washington

Kraft, George Howard * 1969, (Emeritus); MD, 1963, Ohio State University; MS, 1967, Ohio State University

Little, James Wendell * 1978, (Emeritus); PhD, 1976, University of Chicago; MD, 1977, University of Chicago

Massagli, Teresa Luisa * 1985; MD, 1982, Yale University

McCoy, Sarah Westcott 1980; MPT, 1979, University of Washington; PhD, 1993, University of Washington

Patterson, David Roy * 1984; PhD, 1982, Florida State University

Pepping, Mary * 1981, (Emeritus); MA, 1975, California State University, Los Angeles; PhD, 1981, Washington State University

Shumway-Cook, Anne * 1995, (Emeritus); MS, 1973, University of Oregon; PhD, 1983, University of Oregon

Slimp, Jefferson C. * 1976, (Emeritus); MA, 1974, University of Wisconsin; PhD, 1976, University of Wisconsin (Madison)

Stolov, Walter C. 1960, (Emeritus); MA, 1951, University of Minnesota; MD, 1956, University of Minnesota

Warren, Charles Gerald * 1963, (Clinical); MPH, 1971, University of Washington

Yorkston, Kathryn Mary * 1975; MS, 1972, University of Oregon; PhD, 1975, University of Oregon

Associate Professors

Apkon, Susan 2009; MD, 1994, University of Vermont

Barr, Karen Patricia 2001; MD, 1993, Northeast Ohio University College of Medicine

Britell, Catherine Wolleat * 1985, (Clinical); MD, 1973, University of Southern California

Burns, Stephen Patrick 1992; MD, 1992, Brown University

Guthrie, Mark Richard * 1983; MPT, 1980, University of Washington; PhD, 1990, University of Washington

Hafner, Brian J. 2006; PhD, 2003, University of Washington

Hakimi, Kevin N. 2000; MD, 2000, Wayne State University

Hoffman, Jeanne Marie 1999; MA, 1995, Arizona State University; PhD, 2000, Arizona State University

Jirikowic, Tracy L. 1993; MS, 1995, University of Washington; PhD, 2003, University of Washington

Kanny, Elizabeth Madeline * 1972, (Emeritus); MA, 1977, Seattle University; PhD, 1996, University of Washington

Kelly, Valerie Elizabeth 2003; MS, 1999, Washington University; PhD, 2003, Washington University

Kinney, Gregory A. 1997; PhD, 1996, Northwestern University

Maitland, Murray Ernest 2006; MS, 1989, University of British Columbia (Canada); PhD, 1996, University of Calgary (Canada)

Mc Millan, Jo Ann * 1958, (Emeritus); BS, 1953, North Texas State College

McQuade, Kevin 2004; MPH, 1986, University of Washington; PhD, 1995, University of Iowa

Molton, Ivan R. 2005; MA, 2001, University of Colorado (Colorado Springs); PhD, 2006, University of Miami (Florida)

Moritz, Chet Thomas 2004; PhD, 2003, University of California (Berkeley)

Odderson, Ib Rask * 1985; MS, 1973, University of Copenhagen (Denmark); PhD, 1979, Indiana University; MD, 1985, Vanderbilt University

Powell, Janet Marie 1998; MS, 1998, University of Washington; PhD, 2001, University of Washington

Reyes, Maria Regina L. 2004; MD, 1992, Pennsylvania State University

Rodriguez, Arthur Alfred * 1999, (Emeritus); MD, 1972, University of Wisconsin (Madison); MS, 1978, University of Minnesota

Stiens, Steve Andrew 1987; MD, 1986, University of Cincinnati; MS, 1991, University of Washington

Turner, Aaron P. 1995; MS, 1997, University of Washington; PhD, 2001, University of Washington

Wiechman, Shelley A. 1994; MS, 1994, University of Arizona; PhD, 2000, University of Washington

Williams, Rhonda Maetel 1998; MA, 1995, Arizona State University; PhD, 1999, Arizona State University

Assistant Professors

Alschuler, Kevin Nemschoff 2010; MS, 2006, Eastern Michigan University; PhD, 2010, Eastern Michigan University

Baylor, Carolyn Rae 1996; MS, 1993, University of Washington; PhD, 2007, University of Washington

Campea, Scott J 2013; MD, 2003, University of Pennsylvania

Chaytor, Naomi Sage 2004; MS, 2001, Washington State University; PhD, 2004, Washington State University

Crane, Deborah Ann 2005; MPH, 2005, Tulane University; MD, 2005, Tulane University

Dyer, Joshua R. 2008; MS, 2005, Indiana University; PhD, 2008, Indiana University

Fogelberg, Donald J. 2010; PhD, 2008, University of Southern California

Friedly, Janna L. 2001; MD, 2001, Oregon Health Sciences University

Heckman, Jeffrey Todd 2012; DO, 2006, University of New England

Holdefer, Robert N. 2009; MA, 1985, Southern Illinois University; PhD, 1985, Southern Illinois University

Johnson, Shana L. 2008; MD, 2004, Medical College of Wisconsin

Jutte, Jennifer Erin 2008; MPH, 2001, Emory University; PhD, 2009, Washington State University

Mack, David Lee 2012; MA, 1993, Indiana University; PhD, 2005, Indiana University

Martinez, Vicente 2008; PhD, 2008, University of Michigan

McGough, Ellen L. 1990; MEd, 2003, University of Washington

McNalley, Thomas Edward 2005; MA, 1987, University of Virginia; MD, 2004, University of Iowa

Morgenroth, David Crespi 2004; MD, 2003, SUNY Brooklyn

Mroz, Tracy Mitchell 2014; MS, 2005, Boston University; PhD, 2013, Johns Hopkins University

Pitonyak, Jennifer Sambrook 2014; MS, 1997, Washington University; PhD, 2013, University of the Sciences, Philadelphia

Pradhan, Sujata D. 2008; MS, 2000, University of Bombay; MS, 2002, University of Pittsburgh; PhD, 2007, University of Pittsburgh

Suri, Pradeep 2003; MD, 2002, University of Michigan, Ann Arbor; MSc, 2011, Harvard University

Svircev, Jelena Natascha 2005; MD, 2001, University of Wisconsin

White, David Martin * 1987, (Clinical); MA, 1983, University of Alabama; PhD, 1987, University of Alabama

Zumsteg, Jennifer Michelle 2005; MD, 2005, University of Chicago

Senior Lecturers

Hertling, Darlene 1964, (Emeritus); BS, 1956, University of California (Berkeley)

Okumura, Ramona Michiko 1990; BA, 1974, Valparaiso University; BS, 1975, Valparaiso University; BS, 1981, University of Washington

Yamane, Ann 1979; BS, 1976, University of Washington

Lecturers

Bennett, Kimberly Dewees 1996; PhD, 1974, University of California (Los Angeles)

Dralle, Alan Jerome 1968, (Emeritus); BS, 1968, University of Washington

Robinson, Cynthia Ann 1992; MS, 1990, Long Island University; PhD, 2010, University of Washington

Rollinger, Barbara Elizabeth 1978; MHA, 1986, University of Washington; MS, 1988, University of Washington

Surgery

Professors

Aldea, Gabriel Sorin 1998; MD, 1981, Columbia University

Allen, Margaret Dale 1985, (Affiliate); MD, 1974, University of California (San Diego)

Anderson, Benjamin Olney 1994; MD, 1985, Albert Einstein College of Medicine

Arbabi, Saman 1992; MD, 1992, University of California (Davis); MPH, 2001, University of Washington

Ashbaugh, David George 1982, (Emeritus); MD, 1957, Ohio State University

Beach, Kirk Watson * 1973, (Emeritus); MSChE, 1968, University of California (Berkeley); PhD, 1971, University of California (Berkeley); MD, 1976, University of Washington
 Bulger, Eileen Metzger 1992; MD, 1992, Cornell University
 Byrd, David Roland 1982; MS, 1978, Tulane University; MD, 1982, Tulane University

Chen, Jonathan Michael 2013; MD, 1994, Columbia University

Clowes, Alexander Whitehill * 1980; MD, 1972, Harvard University

Cuschieri, Joseph 2000; MD, 1994, Wayne State University
 Dellinger, Evan Patchen * 1977; MD, 1970, Harvard University

Engrav, Loren Henry 1977, (Emeritus); MD, 1969, University of California (Los Angeles)

Fichera, Alessandro 2012; MD, 1989, Catholic University
 Flum, David Reed 2000; MD, 1991, University of Miami (Florida); MPH, 2002, University of Washington

Foy, Hugh Martin 1978; MD, 1978, University of Nebraska
 Gibran, Nicole Simone 1990; MD, 1985, Boston University
 Gruss, Joseph Selwyn 1991; MBChB, 1969, University of Witwatersrand (S. Africa)

Hatsukami, Thomas Susumu 1982; MD, 1982, University of California (Los Angeles)

Heimbach, David Milton 1974, (Emeritus); MD, 1964, Cornell University

Horvath, Karen Dombek 1998; MD, 1990, New York Medical College

Kohler, Ted Raney 1978; MD, 1976, Harvard University

Langdale, Lorrie Aileen 1985; MD, 1979, University of Washington

Maier, Ronald Vitt 1974; MD, 1973, Duke University
 Meissner, Mark Harmon 1985; MD, 1985, University of Colorado (campus unspecified)

Miller, Donald Wesley 1975, (Emeritus); MD, 1965, Harvard University

Mock, Charles Newman 1992; MD, 1980, Brown University; MPH, 1994, University of Washington; PhD, 1997, University of Washington

Mulligan, Michael Scott 1999; MD, 1989, University of Connecticut

Neligan, Peter Camillus 2007; MBChB, 1975, Trinity College (Ireland)

Oelschlager, Brant Kurt 1995; MD, 1995, University of North Carolina, Chapel Hill

O'Keefe, Grant Edward 1994; MD, 1988, University of Alberta, Canada

Pellegrini, Carlos A. 1993; MD, 1971, University of Rosario Medical School (Argentina)

Perkins, James Dennis 1989; MD, 1979, University of Arkansas

Rayhill, Stephen C. 2010; MD, 1987, Columbia University

Reyes, Jorge Dionisio 2004; MD, 1979, Federal Univ of Minas Gerais (Brazil)

Sawin, Robert 1987; MS, 1976, University of Iowa; MD, 1982, University of Pittsburgh

Sinanan, Mika Narad * 1980; MD, 1980, Johns Hopkins University

Sobel, Michael 2001; MD, 1975, Albert Einstein College of Medicine

Starnes, Benjamin Ware 2006; MD, 1992, Jefferson Medical College

Vedder, Nicholas Blair 1981; MD, 1981, Case Western Reserve University

Verrier, Edward Donald 1989; MD, 1974, Tufts University
 Waldhausen, John Henry Trescher 1992; MD, 1986, Pennsylvania State University

Winn, Robert Kirk 1974, (Emeritus); MSEE, 1969, University of Washington; PhD, 1974, University of Washington
 Winterscheid, Loren Covart 1957, (Emeritus); PhD, 1953, University of Pennsylvania; MD, 1954, University of Pennsylvania

Wood, Douglas Earl 1992; MD, 1983, Harvard University
 Yeung, Raymond Sze-Wang 1997; MD, 1982, University of Toronto (Canada)

Zierler, Robert Eugene 1978; MD, 1976, Johns Hopkins University

Associate Professors

Avansino, Jeffrey Ronald 1999; MD, 1999, University of Nevada

Bakthavatsalam, Ramasamy 1999; MBBS, 1984, Madras Medical College (India); MS, 1988, Madras Medical College (India)

Birgfeld, Craig B. 2006; MD, 2000, Medical College of Virginia

Calhoun, Kristine E. 2005; MD, 1998, University of Washington

Dick, Andre Ainsworth S. 2006; MD, 1999, State University of New York (Buffalo)

Drugas, George 2008; MD, 1984, Northwestern University
 Evans, Heather L. 2007; MD, 1999, University of Rochester; MS, 2004, University of Virginia

Friedrich, Jeffrey Barton 2000; MD, 2000, University of Texas (Houston)

Goldin, Adam Bradley 1997; MD, 1997, Rush Medical College; MPH, 2003, University of Washington

Gow, Kenneth William 2007; MD, 1991, University of Manitoba (Canada); MS, 1997, University of British Columbia (Canada)

Healey, Patrick James 1993; MD, 1987, Boston University
 Hopper, Richard Alan 2001; MD, 1993, Memorial University of Newfoundland; MSc, 1997, University of Toronto (Canada)

Javid, Patrick 2008; MD, 1999, University of Michigan
 Krane, Mukta Katdare 2014; MD, 2002, Mount Sinai School of Medicine

Ledbetter, Daniel James 1981; MD, 1981, University of Florida

Louie, Otway 2008; MD, 1997, Tufts University
 Lynge, Dana Christian 1993; MD, 1985, McGill University (Canada)

Mann, Gary Neil 2000; MBChB, 1989, University of Witwatersrand (S. Africa)

McIntyre, Lisa Kuwamura 1989; MD, 1995, University of Washington

McMullan, D. Michael 2002; MD, 1994, University of Texas (Southwestern)

Meehan, John James 2008; MD, 1993, University of Iowa
 Mokadam, Nahush Ashok 2005; MD, 1998, University of Pennsylvania

Park, James Oh 2007; MD, 1998, University of Pennsylvania

Permut, Lester Cal 2002; MD, 1983, Boston University

Pham, Tam Ngoc 2005; MD, 1998, University of California (San Diego)

Said, Hakim Kassim 2006; MS, 1994, Johns Hopkins University; MD, 1998, University of Michigan

Singh, Niten 2009; MS, 1993, Georgetown University; MD, 1997, Uniformed Services University of The Health Sciences

Tatum, Roger P. 2002; MD, 1995, Northwestern University

Tran, Nam Thanh 1992; MD, 1996, University of Washington

Van Eaton, Erik Gentry 1996; MD, 2001, University of Washington

Varghese, Thomas K. 2007; MBBS, 1995, University of Kerala (India); MS, 2003, Northwestern University
 Wright, Andrew Stone 2005; MD, 1998, University of Louisville

Wu, Peter Chang Chung 2004; MD, 1993, Jefferson Medical College

Assistant Professors

Backhus, Leah Monique 2009; MD, 2000, University of Southern California

Cheng, Aaron Ming 2007; MD, 2000, Harvard Medical School

Colohan, Shannon 2011; MD, 2004, Dalhousie University (Canada); MS, 2007, London Sch of Hygiene & Trop Med (UK)

Davidson, Giana Hystad 2003; MD, 2006, University of Washington; MPH, 2010, University of Washington

Farjah, Farhood 2002; MD, 2002, Oregon Health Sciences University; MPH, 2007, University of Washington

Figueredo, Edgar Jose 2001; MD, 1988, Universidad El Bosque, Colombia

Gougoutas, Alexander Jacob 2012; MD, 2006, University of Pennsylvania

Hermesen, Joshua Leon 2011; MD, 2004, Medical University of South Carolina

Hinojosa, Marcelo W. 2011; MD, 2004, University of California (Irvine)

Javid, Sara 2008; MD, 1999, Harvard University

Keys, Kari Anne 2006; MD, 2006, University of California (San Francisco)

Khandelwal, Saurabh 2008; MD, 2002, Rush Medical College

Ko, Jason Hyunsuk 2011; MD, 2004, Duke University

Mandell, Samuel Price 2005; MD, 2005, University of Massachusetts; MPH, 2009, University of Washington

Marquardt, Deborah Lane 2002; MD, 2002, Loma Linda University

Montenovo, Martin Ignacio 2004; MD, 2001, University of Rosario Medical School (Argentina)

Nazarian, Susanna Matsen 2013; MD, 2003, Johns Hopkins University; PhD, 2009, Johns Hopkins University

Nuri, Muhammad Ataunur Khalid 2014; MBBS, 1998, Aga Khan University (Pakistan)

Pal, Jay D. 2013; PhD, 1999, Chicago Medical School; MD, 2001, Chicago Medical School

Parr, Zoe Eden 2011; MD, 2004, University of Calgary (Canada)

Pillarisetty, Venu 2009; MD, 1999, Columbia University

Quiroga, Elina 2002; MD, 1998, University of Buenos Aires (Argentina)

Riehle, Kimberly Jean 2001; MD, 2001, Emory University

Shalhub, Sherene 2003; MPH, 1999, University of South Florida; MD, 2003, University of South Florida

Shin, Susanna Hewon 2014; MD, 2002, Eastern Virginia Medical School

Sibulesky, Lena 2013; MD, 2001, Tufts University

Smith, Jason William 2012; MD, 2002, Loyola University (Chicago)

Sweet, Matthew P 2011; MD, 2002, University of Southern California; MS, 2007, University of California (San Francisco)

Tang, Gale Lynn 2008; MD, 1998, University of Michigan

Tse, Raymond 2009; MD, 2005, University of Toronto (Canada)

Urology

Professors

Ansell, Julian S. 1959, (Emeritus); MD, 1951, Tufts University; PhD, 1959, University of Minnesota

Berger, Richard Eugene 1975, (Emeritus); MD, 1973, University of Chicago

Brannen, George Elsdon 1978, (Emeritus); MD, 1969, Northwestern University

Chapman, Warren Howe 1957, (Emeritus); MD, 1952, University of Chicago

Dalkin, Bruce 2008; MD, 1985, Northwestern University

Ellis, William John 1991; MD, 1985, Johns Hopkins University

Grady, Richard Welker 1996; MD, 1990, University of Michigan

Joyner, Byron David 1999; MD, 1988, Harvard University

Krieger, John Newton 1982; MD, 1974, Cornell University

Lange, Paul Henry 1988, (Emeritus); MD, 1967, Washington University

Lin, Daniel Wei 1994; MD, 1994, Vanderbilt University

Merguerian, Paul Arthur 2011; MD, 1980, Hadassah Medical Center; MS, 2009, Dartmouth College

Mitchell, Michael E. 1989, (Emeritus); MD, 1969, Harvard University

Vessella, Robert Louis Jr. 1989, (Emeritus); PhD, 1974, University of Mississippi

Wessells, Hunter 2000; MD, 1988, Georgetown University

Yang, Claire Cheng 1993; MD, 1988, Vanderbilt University

Associate Professors

Dash, Atreya 2013; MD, 1998, University of Vermont

Gore, John Lawrence 2009; MD, 2001, Baylor College of Medicine; MS, 2009, University of California (Los Angeles)

Harper, Jonathan David 2009; MD, 2003, University of Oklahoma

Lendvay, Thomas Sean 2004; MD, 1999, Temple University

Miller, Jane Louise 1985; MD, 1985, University of Oklahoma

Porter, Michael 1997; MD, 1997, University of Iowa; MS, 2001, University of Washington

Sutherland, Suzette Elisabeth 2013; MS, 1990, St. Cloud State University; MD, 1997, Case Western Reserve University

Voelzke, Bryan B. 2008; MD, 2000, University of Texas (San Antonio)

Walsh, Thomas James 2000; MD, 2000, Northwestern University; MS, 2004, University of Washington

Assistant Professors

Shnorhavorian, Margaret 2005; MPH, 1999, University of California (Berkeley); MD, 2000, University of California (San Diego)

Sorensen, Mathew D. 2004; MD, 2004, University of Colorado (Denver); MS, 2008, University of Washington

Wright, Jonathan Lawrence 1998; MD, 2001, University of Washington; MS, 2005, University of Washington

Lecturer

Muller, Charles Holbrook 1980; MA, 1972, University of Colorado (Boulder); PhD, 1976, University of California (Berkeley)

School of Nursing

Professors

Batey, Marjorie Viola * 1956, (Emeritus); MS, 1956, University of Colorado (Boulder); PhD, 1968, University of Colorado (Boulder)

Beaton, Randal David * 1976, (Emeritus); PhD, 1972, University of Washington

Belza, Basia L. * 1991; MN, 1982, University of Virginia; PhD, 1991, University of California (San Francisco)

Berkowitz, Bobbie Ann * 1988, (Emeritus); MN, 1981, University of Washington; PhD, 1990, Case Western Reserve University

Berry, Donna Lynn * 1988, (Affiliate); MSN, 1981, University of Texas (Houston); PhD, 1992, University of Washington

Blackburn, Susan T. * 1973, (Emeritus); MN, 1973, University of Washington; PhD, 1979, University of Washington

Booth-Laforce, Cathryn Louise * 1977; MA, 1971, Ohio State University; PhD, 1974, Ohio State University

Brandt, Patricia Ann * 1975, (Emeritus); MS, 1968, University of Colorado (Boulder); PhD, 1981, University of Washington

Brown, Marie Annette * 1975; MN, 1973, University of Washington; PhD, 1983, University of Washington

Budzynski, Helen Kogan * 1968, (Emeritus); MA, 1956, Columbia University; PhD, 1968, University of California (Los Angeles)

Chrisman, Noel Judson * 1973; PhD, 1966, University of California (Berkeley); MPH, 1967, University of California (Berkeley)

Cochrane, Barbara Bean 1985; MN, 1986, University of Washington; PhD, 1992, University of Washington

Craven, Ruth F. * 1968, (Emeritus); MN, 1968, University of Washington; EdD, 1984, Seattle University

Cunningham, Susanna Lee * 1969; MS, 1969, University of Washington; PhD, 1978, University of Washington

Demiris, George 2006; MS, 1994, University of Heidelberg (Germany); PhD, 2000, University of Minnesota

Dimond, Margaret F. * 1988, (Emeritus); MN, 1971, University of Iowa; PhD, 1978, University of Wisconsin (Madison)

Doorenbos, Ardith 2006; MSN, 2000, Madonna University; PhD, 2002, Wayne State University

Dougherty, Cynthia Marie 1985; MA, 1983, University of Iowa; PhD, 1990, University of Washington

Eggert, Leona Louise * 1973, (Emeritus); MA, 1970, University of Washington; PhD, 1984, University of Washington

Emami, Azita 2013; RN, 1993, Karolinska Institute (Sweden); MNS, 1994, Karolinska Institute (Sweden); PhD, 2000, Karolinska Institute (Sweden)

Gallucci, Betty Bierut * 1973, (Emeritus); MLifeSc, 1971, North Carolina State University; PhD, 1973, North Carolina State University

Graham, Katherine Young * 1978, (Emeritus); MN, 1967, University of Washington; MA, 1972, University of Washington; PhD, 1978, University of Washington

Hegyvary, Sue T. 1986, (Emeritus); MN, 1966, Emory University; PhD, 1974, Vanderbilt University

Heitkemper, Margaret Eunice * 1975; MN, 1975, University of Washington; PhD, 1981, University of Illinois

Horn, Barbara J. * 1977, (Emeritus); MS, 1957, Indiana University; PhD, 1971, University of Michigan

Houck, Gail M 2014; MN, 1977, Oregon Health Sciences University; PhD, 1987, University of Washington

Jarrett, Monica Eileen * 1980; MN, 1981, University of Washington; PhD, 1988, University of Washington

Kieckhefer, Gail Marie * 1987; MSN, 1977, St. Louis University; PhD, 1985, University of Washington

Killien, Marcia Gruis * 1973; MN, 1974, University of Washington; PhD, 1982, University of Washington

Kurth, Ann Elizabeth 1998, (Affiliate); MPH, 1987, Columbia University; MSN, 1990, Yale University; PhD, 2003, University of Washington

Landis, Carol Ann * 1991; MS, 1973, University of California (San Francisco); DNS, 1988, University of California (San Francisco)

Lentz, Martha Jane * 1975, (Emeritus); MA, 1975, University of Washington; PhD, 1984, University of Washington

Lewis, Frances Marcus * 1978; MN, 1968, University of Washington; MA, 1973, Stanford University; MA, 1974, Stanford University; PhD, 1977, Stanford University

Logsdon, Rebecca Goudelock * 1986, (Research); MA, 1976, Oklahoma State University; PhD, 1986, Oklahoma State University

Magyary, Diane Louise * 1981; MN, 1977, University of Washington; PhD, 1981, University of Washington

McCurry, Susan Melancon * 1991, (Research); MSc, 1977, University of Nevada (Las Vegas); MS, 1984, University of Nevada (Las Vegas); PhD, 1991, University of Nevada (Reno)

Mitchell, Pamela Holsclaw * 1965; MS, 1965, University of California (San Francisco); PhD, 1991, University of Washington

Murphy, Shirley Ann * 1985, (Emeritus); MEd, 1965, Gonzaga University; PhD, 1981, Portland State University

Osborne, Oliver H. * 1969, (Emeritus); MA, 1960, New York University; PhD, 1968, Michigan State University

Patrick, Maxine I. Lambrecht * 1951, (Emeritus); MN, 1953, University of Washington; DPH, 1970, University of California (Los Angeles)

Pollack, Sylvia * 1968, (Emeritus); PhD, 1967, University of Pennsylvania; MA, 1993, Antioch University

Prinz, Patricia Nasser 1976, (Emeritus); PhD, 1969, Stanford University

Salazar, Mary K. 1984, (Emeritus); MN, 1986, University of Washington; PhD, 1991, Seattle University

Salmon, Marla 2008; DSc, 1977, Johns Hopkins University; MS, 1999, University of Portland

Schepp, Karen Gulseth * 1988; MN, 1967, University of Washington; PhD, 1985, University of Arizona

Simpson, Terri Ann * 1991; MS, 1975, University of California (San Francisco); PhD, 1988, University of Washington

Spieker, Susan J. * 1983; PhD, 1982, Cornell University

Strickland, Carolyn June B. * 1977; MS, 1976, University of Washington; PhD, 1983, University of Washington

Swanson, Kristen Marie * 1985, (Affiliate); MSN, 1978, University of Pennsylvania; PhD, 1983, University of Colorado (Boulder)

Teri, Linda * 1984; PhD, 1980, University of Vermont

Thomas, Karen Ann Johnson * 1981; MA, 1977, University of Iowa; PhD, 1986, University of Washington

Thompson, Frances Elaine Adams * 1972, (Emeritus); MA, 1972, University of Washington; PhD, 1990, University of Washington

Webster-Stratton, Carolyn * 1976, (Emeritus); MPH, 1972, Yale University; MSN, 1972, Yale University; PhD, 1979, University of Washington

Whitney, Joanne Davis * 1982; MS, 1979, University of Michigan; PhD, 1991, University of California (San Francisco)

Wolf-Wilets, Vivian Christine * 1969, (Emeritus); MA, 1964, University of Chicago; PhD, 1969, University of Chicago

Woods, Nancy Ann Fugate 1978; MN, 1969, University of Washington; PhD, 1978, University of North Carolina

Woods, Susan Louise * 1975, (Emeritus); MA, 1975, University of Washington; PhD, 1991, Oregon Health Sciences University

Zierler, Brenda Kaye 1988; PhD, 1996, University of Washington

Associate Professors

Altman, Gaylene Marie 1975; MN, 1973, University of Washington; PhD, 1992, University of Washington

Baker, Margaret Wooding 2002; MS, 1997, Otterbein College; PhD, 2000, University of Washington

Bekemeier, Elizabeth Ruth 1997; MPH, 1994, Johns Hopkins University; MSN, 1994, Johns Hopkins University; PhD, 2007, University of Washington

Betrus, Patricia Ann * 1978; MN, 1979, University of Washington; PhD, 1985, University of Washington

Blainey, Carol Ann * 1967, (Emeritus); MN, 1967, University of Washington

Boutain, Doris M. 1995; MN, 2000, University of Washington; PhD, 2000, University of Washington

Bridges, Elizabeth J. 2004; MN, 1991, University of Washington; PhD, 1998, University of Washington

Buchanan, Diana Marie 2005; MSN, 2001, University of Virginia; PhD, 2005, University of Virginia

Carnevali, Doris Scholin Benson 1947, (Emeritus); RN, 1943, University of Washington; MN, 1961, University of Washington

Carr, Catherine Ann 1993, (Emeritus); MSN, 1979, University of Kentucky; PhD, 1993, University of Michigan

Carrere, Sybil 1989, (Affiliate); MA, 1978, University of California (Santa Barbara); PhD, 1990, University of California (Irvine)

Elmore, Shawn Kathleen * 1983; MN, 1982, University of Washington; PhD, 1990, University of Washington

Ensign, Barbara Josephine * 1994; MS, 1986, Virginia College of Medicine; MPH, 1992, Johns Hopkins University; DrPH, 1994, Johns Hopkins University

Fox, Edward John 1986, (Affiliate); MPA, 1986, California State University, San Francisco; PhD, 1993, University of Washington

Horn, Beverly Mary * 1976, (Emeritus); MN, 1962, University of Washington; PhD, 1975, University of Washington

Johnson, Leonard Clark * 1994, (Emeritus); MEd, 1973, University of Washington; PhD, 1977, University of Washington

Jordan, Pamela Lynne * 1984; MS, 1975, Rush University; PhD, 1984, University of Michigan

Kang, Rebecca Ruth 1974, (Emeritus); MN, 1974, University of Washington; PhD, 1985, University of Washington

Kim, Eunjung 2001; MSN, 1996, University of Wisconsin (Madison); PhD, 2001, University of Wisconsin (Madison)

Kozuki, Yoriko 2000; MS, 1995, Columbia University; PhD, 2000, University of California (San Francisco)

Lewis, Linda Lee * 1989, (Emeritus); MS, 1981, University of Illinois; PhD, 1987, University of Illinois

Lober, William Barry 1997; MS, 1992, University of California (Berkeley); MD, 1994, University of California (San Francisco)

Lovell, David Gilbert * 1984, (Emeritus); PhD, 1975, University of Wisconsin; MSW, 1993, University of Washington

Lustyk, Mary Kathleen 1983, (Affiliate); PhD, 1992, University of Washington

McGrath, Barbara Burns * 1987, (Research); MA, 1981, University of Washington; PhD, 1993, University of Washington

Mitchell, Ellen Sullivan * 1974, (Emeritus); NursDiploma, 1957, Johns Hopkins University; MN, 1967, University of Florida; PhD, 1986, University of Washington

Motzer, Sandra Adams 1976, (Emeritus); MN, 1976, University of Washington; PhD, 1992, Oregon Health Sciences University

Newton, Katherine Marie 1977, (Affiliate); MA, 1977, University of Washington; PhD, 1995, University of Washington

Nguyen, Huong Q. 2003, (Affiliate); MS, 1999, University of California (San Francisco); PhD, 2003, University of California (San Francisco)

O'Connor, Frederica Wieneke * 1986, (Emeritus); MSN, 1974, University of Illinois; MS, 1984, Northwestern University; PhD, 1986, Northwestern University

Perry, Cynthia 2005, (Affiliate); MSN, 1990, Yale University; PhD, 2005, Oregon Health Sciences University

Pesznecker, Betty Louise 1958, (Emeritus); BS, 1951, University of Washington

Schroeder, Carole Anne * 1993, (Emeritus); MSN, 1985, University of Nevada; PhD, 1993, University of Colorado (Denver)

Schultz, Phyllis Rachel * 1989, (Emeritus); MN, 1966, Emory University; MA, 1977, University of Denver; PhD, 1981, University of Denver

Schwartz, Anna Lisa 1998, (Affiliate); MS, 1991, Florida State University; MS, 1994, Arizona State University; PhD, 1997, University of Utah

Shannon, Sarah Elizabeth 1984; MSN, 1992, University of Washington; PhD, 1992, University of Washington

Thompson, Hilaire J. 2004; MS, 1996, Virginia Commonwealth University; PhD, 2003, University of Pennsylvania

Tsai, Jenny Hsin-Chun 1992; MN, 1994, University of Washington; PhD, 2001, University of Washington

Voss, Joachim G. 2006; MS, 2000, University of Bremen (Germany); PhD, 2003, University of San Francisco

Walsh, Elaine M. 1994; MN, 1991, University of California (Los Angeles); PhD, 1999, University of Washington

Ward, Deborah * 1987, (Emeritus); MSN, 1977, Yale University; PhD, 1987, Boston University

Ward, Teresa M. 2006; MSN, 2000, Drexel University; PhD, 2006, University of California (San Francisco)

Wild, Lorie Reitman 1984, (Affiliate); MN, 1983, University of Washington; PhD, 1996, University of Washington

Young, Lynne 2001, (Affiliate); MSN, 1990, University of British Columbia (Canada); PhD, 1997, University of British Columbia (Canada)

Assistant Professors

Ahroni, Jessie H. 1997, (Affiliate); MN, 1987, University of Washington; PhD, 1997, Walden University

Anderson, Kathryn Lynn 2005, (Affiliate); MN, 1981, University of Washington; PhD, 1993, Oregon Health Sciences University

Armstrong, Sarah 2012, (Affiliate); MSN, 1981, University of Wisconsin; JD, 2002, University of Washington

Barrington, Wendy E. 2007; MPH, 2005, University of New Mexico; PhD, 2012, University of Washington

Benfield, Ruth Margaret Fletcher 1978, (Affiliate); MS, 1971, University of California (San Francisco)

Birch, Marian 2001, (Affiliate); DMH, 1983, University of California (San Francisco)

Buccola-Tournay, Virginia Ann 2013, (Affiliate); MN, 2012, University of Washington; DNP, 2013, University of Washington

Carter, Becky Sue 2003, (Affiliate); MN, 1998, University of Washington; DNP, 2009, University of Washington

Chen, Wei-Ti 2005, (Affiliate); MSN, 1995, University of Texas (Austin); DNSc, 2002, Columbia University

Connon, Catherine Louise 1988, (Affiliate); MN, 1990, University of Washington; PhD, 1999, University of Washington

Delaney, Sharon 2006, (Affiliate); MS, 1992, South Dakota State University

Delarose, Teresa Ann 1983, (Affiliate); MN, 1984, University of Washington

Desrosier, Marjorie L. 1986, (Affiliate); MN, 1979, University of Washington; PhD, 1993, University of Washington

Dewing, Kori Anne 2005, (Affiliate); MN, 2003, University of Washington; DNP, 2011, University of Washington

Draye, Mary Ann 1973, (Emeritus); MPH, 1968, University of Michigan

Driever, Marie Josephine 2010, (Affiliate); MN, 1970, University of California (Los Angeles); PhD, 1985, University of Washington

Fleming, Robin J. 1997, (Affiliate); MN, 2002, University of Washington; PhD, 2008, University of Washington

Gilbert, Elizabeth Austin 1996, (Affiliate); MSN, 1983, University of Washington; PhD, 2005, University of Washington

Gimbel-Sherr, Sarah Odell 2005; MA, 1996, School for International Training; MPH, 2006, University of Washington; PhD, 2013, University of Washington

Hoffman, Barbara Lee 2012, (Affiliate); DNP, 2012, University of Washington

Jiwani, Gulrose 2004, (Affiliate); MN, 1989, Memorial University of Newfoundland; PhD, 2010, University of Washington

Jones, Mary Charlotte 1964, (Emeritus); MS, 1962, Boston University

Kantrowitz-Gordon, Ira 2000; MN, 1998, University of Washington; PhD, 2013, Washington State University

Kaplan, Louise 1996, (Affiliate); MN, 1981, University of Washington; PhD, 1992, Brandeis University

Keepnews, David M. 2001, (Affiliate); MPH, 1986, University of California (Berkeley); JD, 1988, University of California (San Francisco); MA, 2000, Brandeis University; PhD, 2001, Brandeis University

Kline, Susan Marie 1991, (Affiliate); MN, 1986, University of Washington; DNP, 2009, University of Washington

Kulbel, Michele 2005, (Affiliate); MN, 2007, University of Washington; DNP, 2009, University of Washington

Landis, Andrea M. 2007; MSN, 1999, George Mason University; PhD, 2007, Emory University

Larson, Margaret Linnea * 1958, (Emeritus); RN, 1944, St. Luke's School of Nursing; MN, 1967, University of Washington

Latta, Linda 1998, (Affiliate); MSN, 1975, California State University, Los Angeles; MA, 1990, Claremont Graduate School; PhD, 1990, Claremont Graduate School

Laurent, Debra Jean 1979, (Affiliate); MN, 1979, University of Washington

Leichman, Suzanne Sexton 1987, (Affiliate); MN, 1977, University of Washington

Li, Yu-Fang 2004, (Affiliate); MS, 1993, University of Maryland; PhD, 1998, University of Maryland

Livingston, Carolyn Ann 1973, (Affiliate); MSN, 1972, University of Washington; PhD, 1981, Institute For Adv St of Human Sexuality

Loan, Lori A. 2000, (Affiliate); MS, 1992, University of Washington; PhD, 2000, University of Washington

Lowe, Jeanne R. 1992, (Affiliate); PhD, 2010, University of Washington

Matt, Susan B. 1995, (Affiliate); MN, 1994, University of Washington

McCarthy, Mary Agnes Smith 2001, (Affiliate); MN, 1989, University of Washington; PhD, 2006, University of Washington

Mennet, Lisa Ann 2006, (Affiliate); MA, 1994, University of Washington; PhD, 2011, University of Washington

O'Connor, Mary Rebecca 2013; PhD, 2013, University of Washington

Owens, Darrell Alen 2003, (Affiliate); MS, 1995, St. Mary's College of California; PhD, 2002, Kennedy-Western University; MSN, 2005, Seattle Pacific University

Ozuna, Judith Margaret 1971, (Affiliate); MN, 1976, University of Washington

Popalisky, Jean C. 1996, (Affiliate); MN, 1991, University of Washington; DNP, 2009, University of Washington

Price, Martha Joyce * 1990, (Affiliate); MSN, 1977, West Virginia University; DNS, 1988, University of California (San Francisco)

Reding, Kerryn W. 2003; MPH, 2002, University of Michigan; PhD, 2008, University of Washington

Sadak, Tatiana 2008; MN, 2008, University of Washington; PhD, 2011, University of Washington

Scarcliff, Katherine Jean 1975, (Affiliate); MN, 1976, University of Washington; MPH, 1983, University of Washington; JD, 1988, Seattle University

Schuman, Nancy Ellen 1981, (Affiliate); MN, 1981, University of Washington

Smith-Dijulio, Kathleen 1994, (Affiliate); MA, 1975, University of Washington; PhD, 2007, University of Washington

Solchany, Joanne E. 1995, (Affiliate); MSN, 1991, University of California (San Francisco); PhD, 2000, University of Washington

Sweeny, Sarah Jean 1974, (Affiliate); MA, 1974, University of Washington

Tachibana, Charleen Kae 1993, (Affiliate); MN, 1989, University of Washington

Tang, Hsin-Yi 1998; MS, 1998, University of Washington; PhD, 2004, University of Washington

Thomas, Robin Barnes 1987, (Affiliate); MSN, 1978, University of Virginia; PhD, 1986, University of Washington

Tinker, Lesley F. 1995, (Affiliate); MS, 1987, University of California (Davis); PhD, 1992, University of California (Davis)

Venkatraman, Sonia 1998, (Affiliate); MS, 2004, University of Oregon; PhD, 2010, University of Oregon

Walker, Amy J 2010; MSN, 1997, Vanderbilt University; PhD, 2008, Oregon Health Sciences University

Senior Lecturers

Albert, Marilyn Louise 1985, (Emeritus); MSN, 1974, Boston University

Christianson, Phyllis L. 1988; MN, 1990, University of Washington

Kroening, Kathleen M. 1990; MN, 1992, University of Washington

Lecturers

Banta-Wright, Sandra Ann 1994; MSN, 1989, University of Washington; PhD, 2012, Oregon Health Sciences University

Darling, Wendy Rosmond 2013; BSN, 2008, Seattle University

Frevort, Rebecca Anne 1997; MS, 1981, University of Utah

Griffin, Yvonne Lynn 1997; MSN, 2002, Case Western Reserve University

Johnston, Margaret M. 2004; MEd, 2004, Seattle University

Pipes, Peggy L. 1968, (Emeritus); MA, 1952, Columbia University; MPH, 1966, University of Michigan

School of Pharmacy

Medicinal Chemistry

Professors

Atkins, William Mark 1991; MA, 1982, Harvard University; PhD, 1988, University of Illinois

Baillie, Thomas Allan * 1981; PhD, 1973, University of Glasgow (UK); MSc, 1978, London Contemp. Dance School (England)

Catalano, Carlos Enrique 2006; PharmD, 1983, University of California (San Francisco); PhD, 1987, University of California (San Francisco)

Elmer, Gary Wells * 1971, (Emeritus); MS, 1967, University of Connecticut; PhD, 1970, Rutgers University

Krupski, Edward 1944, (Emeritus); MS, 1941, University of Washington; PhD, 1949, University of Washington

Nelson, Wendel Lane * 1965; PhD, 1965, University of Kansas

Rettie, Allan Edward * 1984; PhD, 1983, University of Newcastle-On-Tyne (UK)

Associate Professors

Kunze, Kent Luvern 1989; PhD, 1981, University of California (San Francisco)

Totah, Rheem Angela 2002; MS, 2000, University of Kansas; PhD, 2002, University of Kansas

Assistant Professors

Lee, Kelly K. 2009; PhD, 2001, Johns Hopkins University

Nath, Abhinav 2003; PhD, 2008, University of Washington

Pharmaceutics

Professors

Ho, Rodney J.Y. * 1990; MS, 1985, University of Tennessee; PhD, 1987, University of Tennessee

Hu, Shiu-Lok 1988; PhD, 1978, University of Wisconsin (Madison)

Levy, Hanamia Rene 1970, (Emeritus); PhD, 1970, University of California (San Francisco)

Shen, Danny Dah-Ying 1984; PhD, 1975, State University of New York (Buffalo)

Thummel, Kenneth Eugene 1989; PhD, 1987, University of Washington

Unadkat, Jashvant D. * 1985; PhD, 1982, University of Manchester (UK)

Wang, Joanne 2000; MS, 1993, University of Illinois; PhD, 1998, University of California (San Francisco)

Associate Professors

Isoherranen, Nina Johanna 2003; MS, 1998, University of Helsinki (Finland); PhD, 2003, Hebrew University (Israel)

Kelly, Edward John 1991; MS, 1986, University of California (Riverside); PhD, 1996, University of Washington

Mao, Qingcheng 2002; MSc, 1988, East China Normal University; PhD, 1995, University of Berne (Switzerland)

Assistant Professors

Klatt, Nichole Rose 2012; PhD, 2009, Emory University

Lin, Yvonne S. 1997; PhD, 2002, University of Washington

Pharmacy

Professors

Anderson, Gail Denise * 1981; MS, 1981, University of Washington; PhD, 1987, University of Washington

Bauer, Larry Alan * 1980; PharmD, 1980, University of Kentucky

Beier, Manju T. 2013, (Affiliate); PharmD, 1981, University of Utah

Burkhart, Vincent Depaul 1982, (Emeritus); MS, 1972, University of Maryland

Christensen, Dale Blaquiere 1976, (Affiliate); MS, 1972, Oregon State University; PhD, 1977, University of Minnesota

Ellsworth, Allan Joseph 1981; PharmD, 1977, Philadelphia Coll of Pharmacy & Science

Fassett, William Edmond 1979, (Affiliate); MBA, 1983, University of Puget Sound; PhD, 1992, University of Washington

Fullerton, Dwight S. 1995, (Affiliate); PhD, 1971, University of California (Berkeley)

Gardner, Jacqueline S. * 1990, (Emeritus); MPH, 1972, University of Hawaii; PhD, 1980, University of Washington

Garrison, Louis P. 1983; PhD, 1981, Stanford University

Gray, Shelly Lynn 1995; PharmD, 1989, University of Michigan; MS, 2001, University of Washington

Hansten, Philip Douglas 1989, (Emeritus); PharmD, 1968, University of California (San Francisco)

Hebert, Mary Frances 1996; PharmD, 1987, University of California (San Francisco)

Horn, John R. * 1977; PharmD, 1977, University of Cincinnati

Luce, Bryan Rogers 2012, (Affiliate); MSPH, 1974, University of Massachusetts; MBA, 1975, University of Massachusetts; PhD, 1979, University of California (Los Angeles)

McCune, Jeannine S. 1998; PharmD, 1995, University of North Carolina, Chapel Hill

Odegard, Peggy Lynn Soule 1986; PharmD, 1990, University of Washington

Orr, Jack Edward 1956, (Emeritus); PhD, 1943, University of Wisconsin

Plein, Joy B. * 1966, (Emeritus); MS, 1951, University of Washington; PhD, 1956, University of Washington

Sisk, Jane E 2014, (Affiliate); MA, 1965, George Washington University; PhD, 1976, McGill University (Canada)

Sullivan, Sean Dale * 1992; MS, 1984, University of Texas (unspecified); PhD, 1992, University of California (Berkeley)

Veenstra, David Leroy 1997; PharmD, 1996, University of California (San Francisco); PhD, 1996, University of California (San Francisco)

Watkins, John Bennett 1997, (Affiliate); MS, 1976, University of Washington; MPH, 1993, University of Washington

Williams, Donald Herbert 1971, (Affiliate); BPharm, 1958, Massachusetts College of Pharmacy

Associate Professors

Baluch, William Marc 1978, (Affiliate); MS, 1978, University of Washington

Beaty, Sarah Jane 1993, (Affiliate); MBA, 1990, City University (Seattle)

Bennett, Sharon Wraith 1979, (Affiliate); BS, 1974, University of Washington

Black, Douglas John 1981; PharmD, 1983, University of Washington

Bomgaars, Donald Lee 1987, (Affiliate); MBA, 1985, University of Utah; MS, 1985, University of Utah

Boudreau, Denise Marie 1998, (Affiliate); MS, 1996, University of Rhode Island; PhD, 2002, University of Washington

Boyer, Susan Marie Teil 1987, (Affiliate); MS, 1981, Ohio State University

Brakebill, Janet Irene 1984, (Affiliate); PharmD, 1982, University of Washington

Carlson, James Arthur 1986, (Affiliate); PharmD, 1982, University of Minnesota

Chan, Ling Tak-Neander 1994; PharmD, 1996, University of Washington

Clegg, Cynthia Alison 1988, (Affiliate); BPharm, 1984, University of Washington

Devine, Emily Elizabeth 1999; PharmD, 1978, University of The Pacific; MBA, 1999, University of California (San Francisco); PhD, 2008, University of Washington

Dodge, Allene M. 2012, (Affiliate); BS, 1981, University of Washington

Donnelly, Kim A. 1985, (Affiliate); BPharm, 1982, Washington State University

Fijalka, Steven Andrew 1984, (Affiliate); PharmD, 1986, University of Washington

Fuller, Timothy S. 1975, (Affiliate); MS, 1974, Ohio State University

Graham, Daina L. 2005, (Affiliate); MS, 1977, University of Oregon

Gross, David Earl 1983, (Affiliate); PharmD, 1986, University of Washington

Hansen, Jan Elias 2011, (Affiliate); PhD, 1988, University of South Carolina

Harvey, Eric Michael 1995, (Affiliate); MBA, 1988, University of Florida; PharmD, 1988, University of Florida

Hazlet, Thomas Kurt 1996; PharmD, 1977, University of California (San Francisco); DPH, 1991, University of California (Berkeley)

Humm, Lorraine Kay 1977, (Affiliate); PharmD, 1997, University of Washington

Leith, Patricia O'Connor 1990, (Affiliate); PharmD, 1992, University of Washington

Lynch, Timothy Wayne 2001, (Affiliate); PharmD, 1998, University of Washington

Oliver, Larry William 1991, (Affiliate); PharmD, 1989, University of Utah

Penna, Peter 1977, (Affiliate); PharmD, 1969, University of California (San Francisco)

Pickette, Steven G. 1996, (Affiliate); PharmD, 2010, University of Washington

Rose, Lynn Massman 1985, (Affiliate); PhD, 1981, University of Geneva (Switzerland)

Scott, Dale Harold 1978, (Affiliate); MS, 1978, Ohio State University; MBA, 1989, University of Washington

Sheridan, Beverly Ann 1991, (Affiliate); JD, 1986, University of Toledo

Smith, David Harold 1987, (Affiliate); MS, 1995, University of Washington; PhD, 1998, University of Washington

Steuten, Lotte Maria Gertruda 2014, (Affiliate); MSc, 2001, University of Maastricht (Netherlands); PhD, 2006, University of Maastricht (Netherlands)

Wareham, Pamela Sue Gehrke 1978, (Affiliate); BS, 1977, Washington State University

Weber, Stanley Steven 1996; PharmD, 1975, University of Cincinnati

Wilson Norton, Jennifer 1995, (Affiliate); BPharm, 1993, University of Washington

Woolf, Roger A. 1991, (Affiliate); PharmD, 1985, University of Washington

Assistant Professors

Atherly, Deborah Elaine 1991, (Affiliate); MPH, 1991, University of Washington; PhD, 2009, University of Washington

Bell, Deane M. 1990, (Affiliate); MS, 1982, Seattle University

Best, Jennie Haines 2002, (Affiliate); MA, 1994, George Mason University; PhD, 2007, University of Washington

Bunker, Gail Ann 1998, (Affiliate); BS, 1980, University of Washington

Carlson, Joshua J. 2003; MPH, 2004, University of Washington; PhD, 2007, University of Washington

Conway, Collin S. 2000, (Affiliate); PharmD, 2005, University of Washington

Custer, Brian Scott 1997, (Affiliate); MPH, 1999, University of Washington; PhD, 2003, University of Washington

Danielson, Jennifer M. 2007; MBA, 1993, Drake University; PharmD, 2009, University of Colorado (Denver)

Doherty, Philip D. 2005, (Affiliate); MS, 1990, Boston University; MBA, 2000, University of Washington

Driesner, Nancy K. 1988, (Affiliate); PharmD, 1990, University of Washington

Hwang-Ho, Lily Shouchuan 1993, (Affiliate); PharmD, 1987, University of California (San Francisco)

Jeppesen, Stanley 1983, (Affiliate); MPA, 1974, University of Puget Sound; PharmD, 1983, University of Washington

Johnson, Eric Stephan 1992, (Affiliate); MPH, 1994, University of Washington; PhD, 1999, University of Washington

Johnson, Suzanne Gerda 1992, (Affiliate); PharmD, 1992, Purdue University

Kabalin, Michael A. 1998, (Affiliate); MS, 1991, University of Southern California; MBA, 1998, University of Southern California; PharmD, 1998, University of Southern California

Kanyok, Thomas Paul 2010, (Affiliate); PharmD, 1990, University of Kentucky

Keskinaslan, Abdulkadir 2013, (Affiliate); MD, 1992, University of Istanbul (Turkey); MBA, 1999, Yeditepe University (Turkey); MPH, 2000, Harvard University

Kowalski, Jonathan William 2011, (Affiliate); PharmD, 1997, University of Wisconsin; MS, 1999, University of Arizona

Lee, Todd Allen 1997, (Affiliate); PharmD, 1997, Drake University; PhD, 2001, University of Washington

Magee, Sara 2009, (Affiliate); BSC, 1968, University of Sheffield (UK)

Maxon, Michael Scott 1984, (Affiliate); PharmD, 1993, University of Washington

Murphy, Chad O. 2003, (Affiliate); PharmD, 2000, University of Washington

Naden, Ellen Bascom 1980, (Affiliate); BScPharm, 1978, University of Washington

Nicholas, Gary Clinton 1984, (Affiliate); BS, 1977, Idaho State University

Osborn, Jacqueline Diane 1989, (Affiliate); PharmD, 1991, University of Washington

Perkins, John Earl 1996, (Affiliate); PhD, 1998, Union Institute And University

Rea, Janet Rose 2009, (Affiliate); MSPH, 1983, University of Washington

Riddle, Steven Mark 2000, (Affiliate); BS, 1984, Washington State University

Schultz, Diane Kay 2002, (Affiliate); BS, 1986, Washington State University

Singer, Steven Edward 1988, (Affiliate); BS, 1980, University of Washington

Staggs, Trang Pham 1985, (Affiliate); PharmD, 1996, University of Washington

Sullivan, Donna 1997, (Affiliate); PharmD, 1996, Mercer University

Tamura, Kathryn Junko 1989, (Affiliate); PharmD, 1995, University of Washington

Teal, Karen K. 1995, (Affiliate); MA, 1994, University of Massachusetts; PhD, 2000, University of Massachusetts

Varon, Sepideh Farivar 2011, (Affiliate); MPH, 2000, Boston University; PhD, 2005, University of California (Los Angeles)

Vo, Thuy Thi 1997, (Affiliate); PharmD, 1995, University of Washington

Wanaka, Steven David 1982, (Affiliate); BPharm, 1981, University of Washington

Webb, Dean Clifford 1983, (Affiliate); MPharm, 1981, University of Texas (unspecified)

Werth, Brian James 2013; PharmD, 2010, University of New Mexico

Werttemberger, Eric D. 1991, (Affiliate); PharmD, 1984, University of Nebraska, Omaha

Yunker, Frank Joseph 1993, (Affiliate); MBA, 1991, University of Phoenix

Senior Lecturers

Feagin, Jean Ellen 1993; PhD, 1982, Stanford University

Hammer, Dana Purkerson 2001; MS, 1995, Purdue University; PhD, 1999, Purdue University

Lecturers

Karwaki, Tanya Elena 1991; MA, 1990, University of California (Davis); JD, 1996, University of Washington

Murphy, Nanci Lee 1989; PharmD, 1997, University of Washington

Daniel J. Evans School of Public Affairs

Professors

Allard, Scott W 2014; PhD, 1999, University of Michigan, Ann Arbor

Anderson, Caroline Leigh 1984; MA, 1987, University of Washington; PhD, 1989, University of Washington

Archibald, Sandra O. 2003; MA, 1971, University of California (Berkeley); PhD, 1984, University of California (Davis)

Bochniarz, Zbigniew M. 2007, (Affiliate); MA, 1968, Warsaw School of Economics (Poland); PhD, 1976, Warsaw School of Economics (Poland)

Bostrom, Ann Helen Haugerud 2007; MBA, 1986, Western Washington University; PhD, 1990, Carnegie Mellon University

Cullen, Alison Catherine * 1995; MS, 1989, Harvard University; DSc, 1992, Harvard University

Dobel, J. Patrick * 1985; MA, 1972, Princeton University; PhD, 1976, Princeton University

Gordon, Andrew C. * 1988, (Emeritus); PhD, 1970, Columbia University

Gordon, Margaret T. * 1988, (Emeritus); MS, 1962, Northwestern University; PhD, 1972, Northwestern University

Gugerty, Mary Kay 2001; MPA, 1993, Harvard University; PhD, 2001, Harvard University

Hyman, Barry Ira * 1975, (Emeritus); MS, 1961, St Louis University; PhD, 1965, Virginia Polytechnic Institute and State University

Klawitter, Marieka M. * 1990; MPP, 1983, University of Michigan; MS, 1986, University of Wisconsin; PhD, 1992, University of Wisconsin

Kleit, Rachel Garshick 1999, (Affiliate); MA, 1993, Tufts University; PhD, 1999, University of North Carolina, Chapel Hill

Layton, David Frost 2001; MA, 1993, University of Washington; PhD, 1995, University of Washington

Locke, Hubert Gaylord * 1976, (Emeritus); MA, 1962, University of Michigan

Long, Mark Christian 2004; MPP, 1996, University of Michigan; MA, 1998, University of Michigan; PhD, 2002, University of Michigan

McCurdy, Howard E. 1995, (Affiliate); MA, 1965, University of Washington; PhD, 1969, Cornell University

Pirog, Maureen A. 2008, (Affiliate); MA, 1975, Boston College; PhD, 1981, University of Pennsylvania

Plotnick, Robert David 1984; MA, 1973, University of California (Berkeley); PhD, 1976, University of California (Berkeley)

Smith, Steven Rathgeb 1996, (Affiliate); MSW, 1978, Washington University; PhD, 1988, Massachusetts Institute of Technology

Thomas, Craig Warren 2006; MPP, 1988, University of California (Berkeley); PhD, 1997, University of California (Berkeley)

Vigdor, Jacob 2014; PhD, 1999, Harvard University

Zerbe, Richard Olis 1975, (Emeritus); PhD, 1969, Duke University

Zumeta, William Mark * 1985; MPP, 1973, University of California (Berkeley); PhD, 1978, University of California (Berkeley)

Associate Professors

Cook, Joseph H. 2007; MS, 2004, University of North Carolina, Chapel Hill; PhD, 2007, University of North Carolina, Chapel Hill

Dively, Dwight Douglas 1988, (Affiliate); MPA, 1982, Princeton University

Evans, Laura Elizabeth 2004; MPP, 1996, University of Michigan; PhD, 2005, University of Michigan

Facer, Rex L 2013, (Affiliate); MPA, 1993, Brigham Young University; PhD, 2002, University of Georgia

Herranz, Joaquin 2004; MCP, 1989, University of California (Berkeley); PhD, 2004, Massachusetts Institute of Technology

Hill, Heather D 2014; MPP, 1999, University of Michigan, Ann Arbor; PhD, 2007, Northwestern University

Marlowe, Justin James 2009; MPA, 2001, Northern Michigan University; MA, 2002, University of Wisconsin (Milwaukee); PhD, 2004, University of Wisconsin (Milwaukee)

Page, Stephen Bennett 1999; SM, 1989, Massachusetts Institute of Technology; PhD, 1999, Massachusetts Institute of Technology

Suarez, David F. 2013; MA, 2002, Stanford University; PhD, 2006, Stanford University

Assistant Professors

Dillon, Brian M. 2013; MPhil, 2005, University of Cambridge (UK); MA, 2009, Cornell University; PhD, 2011, Cornell University

Fyall, Rachel Krefetz 2014; MPA, 2006, George Washington University; PhD, 2014, Indiana University

Hall, Crystal C. 2008; PhD, 2008, Princeton University

Kosack, Stephen Joseph 2013; MA, 2004, Yale University; MPhil, 2004, Yale University; PhD, 2008, Yale University

Perez, Maria D. 2012; MA, 1999, Pontificia Universidad Catolica De Chile; MA, 2009, Stanford University; PhD, 2012, Stanford University

Senior Lecturers

Gale, Diana Hadden 1982, (Emeritus); MUP, 1969, University of Washington; PhD, 1981, University of Washington

Harrison, David Sprague 1986, (Emeritus); MPA, 1979, Harvard University

Vigdor, Elizabeth Anne 2014; MS, 1995, Harvard School of Public Health; PhD, 1999, Harvard University

Lecturers

Johnston, Richard Michael 2002; MA, 2004, University of Washington; PhD, 2009, University of Washington

Leiser, Stephanie Ann 2009; MPP, 2005, University of Michigan, Ann Arbor; MS, 2012, University of Washington

School of Public Health

Biostatistics

Professors

Anderson, Garnet Larae * 1983, (Affiliate); MA, 1983, State Univ of New York (Binghamton); PhD, 1989, University of Washington

Barlow, William Eric * 1989, (Research); MA, 1976, University of Toronto (Canada); MS, 1982, University of Washington; PhD, 1986, University of Washington

Breslow, Norman 1967, (Emeritus); PhD, 1967, Stanford University

Chen, Ying Qing 2005, (Affiliate); PhD, 1999, Johns Hopkins University

Diehr, Paula Katherine Hagedorn 1970, (Emeritus); MS, 1967, University of California (Los Angeles); PhD, 1970, University of California (Los Angeles)

Emerson, Scott Shields * 1984; MD, 1981, University of Virginia; MS, 1984, University of Virginia; PhD, 1988, University of Washington

Etzioni, Ruth B. Douglas * 1991, (Affiliate); MS, 1987, Carnegie Mellon University; PhD, 1990, Carnegie Mellon University

Feigl, Polly 1969, (Emeritus); MA, 1957, University of Minnesota; PhD, 1961, University of Minnesota

Fisher, Lloyd Delbert * 1966, (Emeritus); MA, 1965, Dartmouth College; PhD, 1966, Dartmouth College

Fleming, Thomas Richard 1984; MA, 1974, University of Maryland; PhD, 1976, University of Maryland

Gooley, Theodore Alan * 1993, (Affiliate); PhD, 1990, University of Arizona

Halloran, Mary Elizabeth 2006; MD, 1983, Freie University of Berlin (Germany); MPH, 1985, Harvard University; DSc, 1989, Harvard University

Heagerty, Patrick J. 1995; MS, 1991, State University of New York (Albany); PhD, 1995, Johns Hopkins University

Hughes, James Patrick 1981; MS, 1980, University of Washington; PhD, 1993, University of Washington

Kooperberg, Charles Louis * 1991, (Affiliate); MA, 1985, Delft University of Technology (Netherlands); PhD, 1991, University of California (Berkeley)

Kopecky, Kenneth James * 1977, (Affiliate); MS, 1975, Oregon State University; PhD, 1977, Oregon State University

Kronmal, Richard A. * 1964; PhD, 1964, University of California (Los Angeles)

Leblanc, Michael Leo * 1987, (Research); MA, 1984, University of Waterloo (Canada); PhD, 1989, University of Washington

Leisenring, Wendy Margaret 1992, (Affiliate); MS, 1990, Harvard University; ScD, 1992, Harvard University

Lumley, Thomas Simon 1995, (Affiliate); MSc, 1994, University of Oxford (UK); PhD, 1998, University of Washington

McKnight, Barbara 1981; MS, 1979, University of Wisconsin; PhD, 1981, University of Wisconsin

Pepe, Margaret * 1982, (Affiliate); MS, 1984, University of Washington; PhD, 1986, University of Washington

Peterson, Arthur Vincent * 1975; MS, 1971, Stanford University; PhD, 1975, Stanford University

Prentice, Ross L. * 1974; MSc, 1968, University of Toronto (Canada); PhD, 1970, University of Toronto (Canada)

Rutter, Carolyn M. * 1996, (Affiliate); MS, 1988, University of California (Los Angeles); PhD, 1991, University of California (Los Angeles)

Self, Steven Glenn * 1984; MS, 1977, California State University, Long Beach; PhD, 1981, University of Washington

Storer, Barry Eliot * 1996, (Affiliate); MA, 1977, University of Montana; PhD, 1984, University of Washington

Tangen, Catherine Marie 1997, (Affiliate); MS, 1990, University of North Carolina; PhD, 1997, University of North Carolina

Thompson, Mary Lou * 1989, (Research); PhD, 1979, University of Gottingen (Germany)

Van Belle, Gerald 1974, (Emeritus); MA, 1964, University of Toronto (Canada); PhD, 1967, University of Toronto (Canada)

Wahl, Patricia Walker * 1971, (Emeritus); PhD, 1971, University of Washington

Wang, Ching-Yun 1993, (Affiliate); MS, 1985, National Taiwan University; PhD, 1993, Texas A&M University

Weir, Bruce Spencer 2006; PhD, 1968, North Carolina State University

Xu, Li * 1996, (Affiliate); MS, 1991, University of Washington; PhD, 1994, University of Washington

Zheng, Yingye 1997, (Affiliate); MA, 1996, Washington University; MS, 1999, University of Washington; PhD, 2002, University of Washington

Zhou, Xiao-Hua Andrew 2002; MS, 1987, University of Calgary (Canada); PhD, 1991, Ohio State University

Associate Professors

Chan, Kwun Chuen Gary 2008; PhD, 2008, Johns Hopkins University

Cook, Andrea 2000, (Affiliate); MS, 2003, Harvard University; PhD, 2005, Harvard University

Dai, Yu 2002, (Affiliate); MD, 1998, Peking University (China); MS, 2000, University of Pittsburgh; MS, 2002, University of Minnesota; PhD, 2007, University of Washington

Holte, Sarah E. 1993, (Affiliate); MA, 1987, University of Oregon; PhD, 1990, University of Oregon

Huang, Ying 2001, (Affiliate); MS, 1999, Iowa State University; MS, 2000, Iowa State University; PhD, 2007, University of Washington

Hubbard, Rebecca A. 2002, (Affiliate); MSc, 2001, University of Edinburgh (UK); MSc, 2002, Oxford University (UK); MS, 2004, University of Washington; PhD, 2007, University of Washington

Inoue, Lurdes Tani 2002; MS, 1995, University of San Paulo (Brazil); MS, 1998, Duke University; PhD, 1999, Duke University

Janes, Holly Elizabeth 2000, (Affiliate); MA, 2000, University of Massachusetts; PhD, 2005, University of Washington

Kerr, Kathleen F. 2001; MA, 1994, University of Southern California; MS, 1998, University of Southern California; PhD, 1999, University of Southern California

May, Susanne 2008; MS, 1994, Universität Karlsruhe, Germany; PhD, 2000, University of Massachusetts

Nelson, Jennifer L. 1994, (Affiliate); MS, 1996, University of Washington; PhD, 1999, University of Washington

Polissar, Nayak Lincoln * 1974, (Affiliate); MA, 1968, Princeton University; PhD, 1974, Princeton University

Rice, Kenneth Martin 2004; PhD, 2002, Cambridge University (UK)

Yanez, Norbert David III * 1993; MS, 1989, Arizona State University; PhD, 1993, Arizona State University

Assistant Professors

Carone, Marco 2014; PhD, 2010, Johns Hopkins University

Di, Chongzhi 2010, (Affiliate); PhD, 2009, Johns Hopkins University

Edlefsen, Paul Thatcher 2012, (Affiliate); AM, 2005, Harvard University; PhD, 2009, Harvard University

Fong, Youyi 2004, (Affiliate); MS, 1999, Indiana University; PhD, 2000, Indiana University; PhD, 2010, University of Washington

Hoering, Antje 1991, (Affiliate); MA, 1988, Oregon State University; PhD, 1991, University of Heidelberg (Germany)

Othus, Megan Kay Diane 2011, (Affiliate); AM, 2006, Harvard University; PhD, 2009, Harvard University

Shojaie, Ali 2010; MSc, 2001, Amir Kabir University of Tech (Iran); MS, 2005, Michigan State University; MS, 2010, University of Michigan; PhD, 2010, University of Michigan

Shortreed, Susan Marlene 2001, (Affiliate); MS, 2004, University of Washington; PhD, 2006, University of Washington

Simon, Noah 2013; PhD, 2013, Stanford University

Szpiro, Adam A. 2006; PhD, 1999, Brown University

Thornton, Timothy 2009; PhD, 2005, University of Chicago

Environmental and Occupational Health

Professors

Burbacher, Thomas M. * 1974; PhD, 1983, University of Washington

Bussiere, Jeanine Louise 2000, (Affiliate); MS, 1986, Western Washington University; PhD, 1989, Washington State University

Cangelosi, Gerard A. 1985; PhD, 1983, University of California (Davis)

Checkoway, Harvey 1987, (Affiliate); MPH, 1975, Yale University; PhD, 1978, University of North Carolina

Cirone, Patricia Anne 1995, (Affiliate); MS, 1975, New York University; PhD, 1979, New York University

Costa, Lucio Guido 1983; PharmD, 1977, University of Milan (Italy)

Dannenberger, Andrew Loeb 2009, (Affiliate); MD, 1979, Stanford University; MPH, 1983, Johns Hopkins University

Eaton, David L. 1979; PhD, 1978, University of Kansas

Echeverria, Diana 1991, (Affiliate); MS, 1982, University of Michigan; PhD, 1987, University of Michigan

Faustman, Elaine Marie 1981; PhD, 1981, Michigan State University

Fenske, Richard Arnold 1990; MA, 1972, Columbia University; MA, 1976, University of California (Berkeley); MPH, 1978, University of California (Berkeley); PhD, 1984, University of California (Berkeley)

Franklin, Gary Michael * 1988, (Research); MD, 1969, George Washington University; MPH, 1982, University of California (Berkeley)

Frumkin, Howard 2010; MPH, 1982, Harvard University; MD, 1982, University of Pennsylvania; DrPH, 1993, Harvard University

Gallagher, Evan Patrick 1991; MA, 1986, Duke University; PhD, 1991, Duke University

Garland, John Joseph 2009, (Affiliate); MS, 1972, University of Minnesota; PhD, 1990, Oregon State University

Gautam, Romesh Kumar 1991, (Affiliate); MS, 1979, Punjab Agriculture University (India); PhD, 1987, Meerut University (India)

Gilbert, Steven Galen * 1990, (Affiliate); PhD, 1986, University of Rochester

Kalman, David Allen 1976; PhD, 1978, University of Washington

Kaufman, Joel Daniel * 1988; MD, 1986, University of Michigan; MPH, 1990, University of Washington

Kavanagh, Terrance James 1985; MS, 1980, Michigan State University; PhD, 1985, Michigan State University

Keifer, Matthew Charles 1982, (Affiliate); MD, 1982, University of Illinois

Kissel, John Christopher * 1990; MS, 1974, Harvard University; PhD, 1985, Stanford University

Klaassen, Curtis D 2014, (Affiliate); MS, 1966, University of Iowa; PhD, 1968, University of Iowa

Koenig, Jane Quinn 1970, (Emeritus); MS, 1961, University of Washington; PhD, 1963, University of Washington
 Luchtel, Daniel L. * 1969, (Emeritus); PhD, 1969, University of Washington

Meador, James 2014, (Affiliate); MS, 1981, San Diego State University; PhD, 1988, University of Washington
 Morgan, Michael S. 1974, (Emeritus); DSc, 1972, Massachusetts Institute of Technology

Omenn, Gilbert S. * 1969, (Affiliate); MD, 1965, Harvard University; PhD, 1972, University of Washington

Omiecinski, Curtis John * 1983, (Affiliate); PhD, 1980, University of Washington

Roberts, Marilyn Cheryl 1981; MS, 1977, University of Washington; PhD, 1978, University of Washington

Robkin, Maurice Abraham * 1967, (Emeritus); PhD, 1961, Massachusetts Institute of Technology

Rosenfeld, Michael Ellis 1982; MS, 1978, University of Vermont; PhD, 1981, University of Wisconsin (Madison)

Seixas, Noah Sartorius * 1992; MS, 1982, Harvard University; PhD, 1990, University of Michigan

Sheppard, Elizabeth Anne * 1989; MSc, 1985, Johns Hopkins University; PhD, 1992, University of Washington

Silverstein, Barbara Ann * 1990, (Affiliate); MSN, 1970, University of California (San Francisco); MPH, 1982, University of Michigan; PhD, 1985, University of Michigan

Sprugel, Katherine Hilliker 1983, (Affiliate); PhD, 1983, Michigan State University

Stein, John Egil 2005, (Affiliate); PhD, 1980, University of Washington

Vedal, Sverre 2004; MD, 1976, University of Colorado (Boulder); MSc, 1983, Harvard University

Wilson, John T. * 1974, (Emeritus); MD, 1950, Columbia University; DSc, 1956, University of Cincinnati

Woods, James Sterrett * 1979, (Emeritus); MS, 1968, University of Washington; PhD, 1970, University of Washington; MPH, 1978, University of North Carolina

Xia, Zhengui 1987; MS, 1985, Wuhan University (China); PhD, 1991, University of Washington

Yost, Michael George * 1993; MS, 1984, University of California (Berkeley); PhD, 1989, University of California (Berkeley)

Zarbl, Helmut * 1996, (Affiliate); DCS, 1975, Marianopolis College, Canada; PhD, 1983, McGill University (Canada)

Associate Professors

Ammann, Harriet Maria 1993, (Affiliate); MS, 1965, New Mexico Highlands University; PhD, 1978, North Carolina State University

Bao, Stephen S. 1999, (Affiliate); MSc, 1985, Shanghai University (China); PhD, 1995, Lulea University of Technology, Sweden

Boyle, David Scott 2008, (Affiliate); PhD, 1995, Edinburgh University, Scotland

Brodkin, Carl Andrew * 1989, (Clinical); MD, 1983, University of Colorado (Denver)

Carlsten, Christopher R. 2000, (Affiliate); MD, 2000, Stanford University; MPH, 2006, University of Washington

Daniell, William E. * 1984; MD, 1979, Tufts University; MPH, 1986, University of Washington

Doolittle, Theus Lee * 1970, (Emeritus); MS, 1955, University of California (Los Angeles); PhD, 1963, University of Southern California

Griffiths, Robin Frank 2012, (Affiliate); MBChB, 1978, University of Bristol (UK); MPP, 1994, Victoria University of Wellington (New Zealand)

Guizzetti, Marina 1994, (Affiliate); MS, 1987, University of Pavia (Italy); PhD, 1993, University of Milan (Italy)

Hatlen, Jack Bernard * 1952, (Emeritus); MS, 1958, University of Washington

Johnson, Peter Wallace 2001; MS, 1998, University of California (Berkeley); PhD, 1998, University of California (Berkeley)

Lewandowski, Thomas A. 1995, (Affiliate); MPH, 1990, University of Michigan; PhD, 2000, University of Washington
 Lincoln, Jennifer Marie 2014, (Affiliate); MNS, 1997, University of Alaska; MSPH, 2006, Johns Hopkins University
 Lorenzana, Roseanne Marie 1990, (Affiliate); DVM, 1981, University of Illinois; PhD, 1986, University of Illinois

Meschke, John Scott 2002; JD, 1993, University of Kansas; MS, 1996, Indiana University; PhD, 2001, University of North Carolina, Chapel Hill

Ponce, Rafael 1988, (Affiliate); MS, 1990, University of Washington; PhD, 1995, University of Washington

Rabinowitz, Peter M. 1987; MD, 1982, University of Washington; MPH, 1995, Yale University

Scholz, Nathaniel 1991, (Affiliate); MA, 1991, Boston University; PhD, 1997, University of Washington

Seto, Edmund 2013; MS, 1995, University of California (Berkeley); PhD, 2000, University of California (Berkeley)

Simpson, Christopher David 2000; MSc, 1992, University of Waikato; PhD, 1997, University of British Columbia (Canada)

Van Buren, Judy Ann 2004, (Affiliate); MPH, 1990, Johns Hopkins University; DPH, 1997, Johns Hopkins University
 Whittaker, Stephen George 1989, (Affiliate); PhD, 1983, University College, London (UK)

Wu, Chang-Fu 1996, (Affiliate); MS, 1998, University of Washington; PhD, 2002, University of Washington

Assistant Professors

Choi, Won-Seok 2005, (Affiliate); MS, 1998, Yonsei University (Korea); PhD, 2002, Yonsei University (Korea)

Cui, Yue 2014; PhD, 2010, University of Kansas, Kansas City

Kim, Kyung Han 2009, (Affiliate); MA, 1997, Seoul National University (Korea); PhD, 2005, University of Michigan

Kim, Sun-Young 2005, (Affiliate); MPH, 2002, Seoul National University (Korea); PhD, 2005, Seoul National University (Korea)

Krejsa, Cecile Marie 1993, (Affiliate); PhD, 2000, University of Washington

Leader, Brandon Troy 1998, (Affiliate); PhD, 2006, University of Washington

Millies, Bruce Arthur 2010, (Affiliate); JD, 1977, Northeastern University; MS, 1986, University of Washington

Riederer, Anne M. 2014, (Affiliate); MSF, 1991, Georgetown University; MS, 2000, Harvard School of Public Health; ScD, 2004, Harvard School of Public Health

Schoen, Mary Elizabeth 2014, (Affiliate); MS, 2006, Carnegie Mellon University; PhD, 2008, Carnegie Mellon University

Spector, June Thalia 2009; MD, 2005, Yale University; MPH, 2009, Johns Hopkins University

Spielholz, Peregrin O. 1994, (Affiliate); MSE, 1992, University of Michigan; PhD, 1999, University of Washington

Tsai, Ming-Yi 1997, (Affiliate); MSE, 1999, University of Washington; PhD, 2007, University of Washington

Senior Lecturers

Cohen, Martin Alan 1997; MS, 1985, Harvard University; ScD, 1990, Harvard University

Freeman, Stanley Howard 1976, (Emeritus); MA, 1958, New York University

Monteith, Lee Elmer 1954, (Emeritus); MS, 1956, University of Washington

Morris, Sharon Lee 1982, (Emeritus); BA, 1965, Reed College

Treser, Charles David * 1980; MPH, 1976, University of Michigan

Lecturers

Camp, Janice Elouise 1982, (Emeritus); MSN, 1984, University of Washington; MSPH, 1984, University of Washington

Gleason, Richard James 1997; MSPH, 1980, University of Washington

Epidemiology

Professors

Astley, Susan Jean * 1980; MS, 1979, Oregon State University; PhD, 1990, University of Washington

Austin, Melissa Ann * 1988, (Emeritus); MS, 1975, University of California (Los Angeles); PhD, 1985, University of California (Berkeley)

Becker, Thomas Mark * 1995, (Affiliate); MA, 1976, University of New Mexico; MD, 1981, Case Western Reserve University; PhD, 1986, University of New Mexico

Beresford, Shirley Anne Alexander 1987; MSc, 1971, University of Sussex (UK); MA, 1973, University of Cambridge (UK); PhD, 1981, University of London:King's College (UK)

Buchwald, Dedra Stephanie 1987; MD, 1981, University of California (San Diego)

Buist, Diana Susan Mackenzie 1995, (Affiliate); MPH, 1995, Yale University; PhD, 1999, University of Washington
 Campbell, Lee Ann 1985; MS, 1979, Pennsylvania State University; PhD, 1982, Pennsylvania State University

Critchlow, Cathy Williams * 1979, (Affiliate); MS, 1978, University of Washington; PhD, 1993, University of Washington

Cummings, Peter * 1992, (Emeritus); MD, 1970, Case Western Reserve University; MPH, 1993, University of Washington

Daling, Janet Roscoe * 1978, (Emeritus); MA, 1973, University of Washington; PhD, 1977, University of Washington

Davis, Robert Lowell * 1991, (Affiliate); MD, 1983, University of California (San Diego)

Davis, Scott * 1980; MS, 1977, University of Rochester; PhD, 1980, University of Washington

Drewnowski, Adam 1998; MA, 1971, Oxford University (UK); PhD, 1977, Rockefeller University

Duerr, Ann Christian 2004, (Affiliate); PhD, 1981, Massachusetts Institute of Technology; MD, 1985, Harvard University; MPH, 1988, Johns Hopkins University

Edwards, Karen Louise 1991, (Affiliate); MS, 1991, California State University, campus unspecified; PhD, 1996, University of Washington

Emanuel, Irvin * 1961, (Emeritus); MA, 1956, University of Arizona; MD, 1960, University of Rochester; MS, 1966, University of Washington

Foege, William H. 2004, (Affiliate); MD, 1967, University of Washington; MPH, 1968, Harvard University

Foy, Hjordis M. * 1965, (Emeritus); MD, 1953, Karolinska Institute (Sweden); MS, 1967, University of Washington; PhD, 1968, University of Washington

Gale, James Lyman 1967, (Emeritus); MD, 1961, Columbia University; MS, 1969, University of Washington

Grayston, J. Thomas * 1960, (Emeritus); MD, 1948, University of Chicago; MS, 1952, University of Chicago

Heckbert, Susan Russell * 1981; MD, 1981, Case Western Reserve University; MPH, 1987, University of Washington; PhD, 1990, University of Washington

Holt, Victoria Lynn 1989; MPH, 1987, University of Washington; PhD, 1990, University of Washington

Jackson, Lisa Anne * 1988, (Research); MD, 1988, University of Virginia; MPH, 1996, University of Washington

Karter, Andrew John 2005, (Affiliate); MS, 1989, University of California (Davis); PhD, 1993, University of California (Davis)

Kimball, Ann Marie 1976, (Emeritus); MD, 1976, University of Washington; MPH, 1981, University of Washington
Koepsell, Thomas Dickey 1972, (Emeritus); MD, 1972, Harvard University; MPH, 1979, University of Washington
Koutsky, Laura Ann * 1981, (Emeritus); MSPH, 1981, University of Washington; PhD, 1987, University of Washington
Kristal, Alan Richard * 1987; MS, 1976, Framingham State College; MPH, 1979, Northwestern University; DrPH, 1984, Columbia University

Kukull, Walter Anthony * 1981; MS, 1974, Western Washington University; PhD, 1983, University of Washington
Kuo, Cho-Chou 1966, (Emeritus); MD, 1960, National Taiwan University; PhD, 1970, University of Washington

Lacroix, Andrea Zauderer * 1989, (Affiliate); MPH, 1981, University of North Carolina; PhD, 1984, University of North Carolina

Lee, John A. H. * 1966, (Emeritus); MBChB, 1949, University of Edinburgh (UK); DPH, 1952, London Sch of Hygiene & Trop Med (UK); MD, 1955, University of Edinburgh (UK)

Lovejoy, Jennifer C. 2007, (Affiliate); MA, 1986, Emory University; PhD, 1988, Emory University

McTiernan, Anne * 1989, (Research); MS, 1976, State University of New York (Buffalo); PhD, 1982, University of Washington; MD, 1989, New York Medical College

Moolgavkar, Suresh Hiraji * 1982; MBBS, 1966, University of Bombay; PhD, 1973, Johns Hopkins University

Mueller, Beth Anne * 1984; MPH, 1980, University of California (Los Angeles); DrPH, 1984, Tulane University

Neuhouser, Marian L. 1992, (Affiliate); PhD, 1996, University of Washington

O'Carroll, Patrick William 1995, (Affiliate); MPH, 1983, Johns Hopkins University; MD, 1983, Johns Hopkins University

Potter, John Donne * 1995, (Emeritus); MBBS, 1971, University of Queensland (Australia); PhD, 1984, University of Queensland (Australia)

Rosendaal, Frits Richard * 1994, (Affiliate); MD, 1985, Erasmus University (Netherlands)

Rossing, Mary Anne * 1988, (Research); DVM, 1980, University of Illinois; MPH, 1988, University of Washington; PhD, 1993, University of Washington

Schiff, Melissa A. 1999; MD, 1987, University of Michigan; MPH, 2001, University of Washington

Scholes, Delia 1994, (Affiliate); MS, 1977, University of New Mexico; PhD, 1990, University of Washington

Schwartz, Stephen Marc * 1989; MPH, 1984, Yale University; PhD, 1990, University of Washington

Sherman, Karen Joyce 1983, (Affiliate); PhD, 1983, Cornell University; MPH, 1986, University of Washington

Smith, Nicholas Lannon 1993; MPH, 1993, University of California (Berkeley); PhD, 1997, University of Washington

Stanford, Janet Lee * 1986, (Research); MPH, 1982, Emory University; PhD, 1985, Johns Hopkins University

Stergachis, Andreas Stergos 1980; MS, 1976, University of Minnesota; PhD, 1979, University of Minnesota

Thomas, David Bartlett * 1975, (Emeritus); MD, 1963, University of Washington; MPH, 1969, Johns Hopkins University; DPH, 1972, Johns Hopkins University

Tsu, Vivien Davis * 1992, (Affiliate); MA, 1971, University of California (Berkeley); MPH, 1977, University of California (Los Angeles); PhD, 1991, University of Washington

Vaughan, Thomas Leonard * 1982; MD, 1978, University of Illinois; MPH, 1983, University of Washington

Weiss, Noel Scott 1973; MD, 1967, Stanford University; MPH, 1969, Harvard University; DPH, 1971, Harvard University

White, Joan Emily * 1982, (Emeritus); MS, 1979, University of Washington; PhD, 1982, University of Washington

Williams, Michelle Ann * 1991, (Affiliate); MS, 1986, Tufts University; MS, 1988, Harvard University; ScD, 1991, Harvard University

Zhao, Lue-Ping * 1985, (Affiliate); MS, 1985, Shanghai Medical University (China); MS, 1987, University of Washington; PhD, 1989, University of Washington

Associate Professors

Anderson, Laurie Martin 1999, (Affiliate); MS, 1974, Boston College; MPH, 1990, Emory University; PhD, 1994, University of California (Los Angeles)

Baseman, Janet Gail 1999; MPH, 1999, University of Texas (Houston); PhD, 2005, University of Washington

Bensley, Lillian Lair Southwick 1983, (Affiliate); MS, 1979, University of Washington; PhD, 1982, University of Washington

Bobo, Janet Kay 1980, (Affiliate); MSW, 1983, University of Washington; PhD, 1990, University of Washington

Carlson, Christopher 1992, (Affiliate); PhD, 2000, Stanford University

Chu, Joseph * 1975, (Clinical); MD, 1975, Georgetown University; MPH, 1981, University of Washington

Chubak, Jessica 2002, (Affiliate); MS, 2002, University of Otago (New Zealand); PhD, 2007, University of Washington

Coronado, Gloria Diane 1993, (Affiliate); MS, 1997, University of Washington; PhD, 2001, University of Washington

Dublin, Sascha 1993, (Affiliate); PhD, 1999, University of Washington; MD, 2001, University of Washington

Duncan, Glen E. 2003; MS, 1994, Ball State University; PhD, 1997, University of Tennessee

Enquobahrie, Daniel Asmamaw 2003; MD, 1996, Addis Ababa University (Ethiopia); MPH, 2005, University of Washington; PhD, 2007, University of Washington

Ferrara, Assiamira 2002, (Affiliate); MD, 1987, University of Naples (Italy); PhD, 1996, University of Naples (Italy)

Goldbaum, Gary Mitchell * 1989; MD, 1978, University of Colorado (Denver); MPH, 1989, University of Washington

Hawes, Stephen Edward 1991; MS, 1993, University of Washington; PhD, 2001, University of Washington

Helgersen, Steven Dale * 1973, (Clinical); MA, 1971, University of Washington; MD, 1973, University of Washington; MPH, 1980, University of Washington

Hoover, Jeanette Joanne * 1968, (Emeritus); MD, 1960, University of Illinois; MPH, 1972, University of Washington

Mandelson, Margaret Tracy 1985, (Affiliate); MPH, 1985, Boston University; PhD, 1994, University of Washington

Manhart, Lisa E. 1997; MPH, 1994, Tulane University; PhD, 2002, University of Washington

Mbori-Ngacha, Dorothy Atieno 1995, (Affiliate); MBChB, 1983, University of Nairobi (Kenya); MMed, 1988, University of Nairobi (Kenya); MPH, 1998, University of Washington
Nduati, Ruth W. 1991, (Affiliate); MBChB, 1981, University of Nairobi (Kenya); MMed, 1987, University of Nairobi (Kenya); MPH, 1994, University of Washington

Starr, Jacqueline Rose 1997, (Affiliate); MPH, 2000, University of Washington; MS, 2000, University of Washington; PhD, 2003, University of Washington

Stehman-Breen, Catherine O. 1990, (Affiliate); MD, 1990, University of Chicago; MS, 1996, University of Washington

Stehr-Green, Paul Anton 1995, (Affiliate); MA, 1975, University of Pittsburgh; MPH, 1979, University of Pittsburgh; DPH, 1982, University of Pittsburgh

Winer, Rachel L. 2000; MPH, 2002, University of Washington; PhD, 2005, University of Washington

Assistant Professors

Baer, Atar 1998, (Affiliate); MPH, 1997, University of Michigan; PhD, 2002, University of Washington

Buskin, Susan Elizabeth 1993, (Affiliate); MPH, 1988, University of Washington; PhD, 1992, University of Washington

Cassels, Susan Lynn 1998, (Affiliate); PhD, 2005, Princeton University

Cohen, Jennifer Hadary 1999, (Affiliate); MPH, 1993, University of South Carolina; PhD, 1999, Cornell University

Fleming, Jessica Ann 2010, (Affiliate); MSc, 1998, Harvard University; PhD, 2009, University of Washington

Fretts, Amanda Mae 2005; MPH, 2007, University of Washington; PhD, 2011, University of Washington

Jackson, Michael Lawrence 2002, (Affiliate); MPH, 2004, University of Washington; PhD, 2007, University of Washington

Malmgren, Judith April 1988, (Affiliate); MS, 1985, University of Washington; PhD, 1995, University of Washington

Oren, Eyal 2002, (Affiliate); MS, 2004, University of Washington; PhD, 2010, University of Washington

Phipps, Amanda Irene 2006; MPH, 2003, University of California (Berkeley); PhD, 2010, University of Washington

Rowhani-Rahbar, Ali 2005; MD, 2002, Mashhad University of Medical Sciences, Iran; MPH, 2005, Yale University; PhD, 2009, University of Washington

Shultz, David Arthur 1990, (Affiliate); PhD, 1991, University of Washington; MS, 1995, University of Washington

Singh, Kanwarjit 2008, (Affiliate); MA, 1979, Oxford University (UK); MBA, 1981, Massachusetts Institute of Technology

Wasserman, Cathy Rose 1998, (Affiliate); MPH, 1990, University of California (Berkeley); PhD, 1996, University of California (Berkeley)

Senior Lecturers

Bruemmer, Barbara Ann 1988, (Emeritus); MS, 1983, University of Washington; PhD, 1993, University of Washington

Williams, Marcia Frances 1978; MPA, 1992, University of Washington; PhD, 2000, University of Washington

Health Services

Professors

Altamore, Rita Ann * 1981, (Clinical); MD, 1977, Boston University; MPH, 1984, University of Washington

Andersen, Marin Robyn 1999, (Affiliate); MA, 1992, State Univ of New York (Stony Brook); PhD, 1994, State Univ of New York (Stony Brook); MPH, 1996, University of Washington

Basu, Anirban 2011; MS, 1997, University of Toledo; MS, 1999, University of North Carolina; PhD, 2004, University of Chicago

Beery, William L. 1986, (Affiliate); MPH, 1973, University of North Carolina

Bradley, Katharine Anthony 1990, (Affiliate); MD, 1987, Stanford University; MPH, 1993, University of Washington

Chapko, Michael K. * 1978, (Emeritus); MA, 1970, Hunter College; PhD, 1972, City University of New York

Cheadle, Allen Dodds * 1987, (Affiliate); PhD, 1987, University of California (Berkeley)

Connell, Frederick Alan 1976, (Emeritus); MD, 1972, New York University; MPH, 1978, University of Washington

Conrad, Douglas Alan 1977; MHA, 1973, University of Washington; MBA, 1977, University of Chicago; PhD, 1978, University of Chicago

Day, Robert Winsor * 1968, (Emeritus); MD, 1956, University of Chicago; MPH, 1958, University of California (Berkeley); PhD, 1962, University of California (Berkeley)

Deyo, Richard Alden * 1979, (Affiliate); MD, 1975, Pennsylvania State University; MPH, 1981, University of Washington

Dowling, William Laine 1974, (Emeritus); MBA, 1961, University of Chicago; MA, 1970, University of Michigan; PhD, 1971, University of Michigan

Grembowski, David 1980; MA, 1975, Washington State University; PhD, 1982, University of Washington

Grossman, David C. 1988; MD, 1982, University of California (Los Angeles); MPH, 1990, University of Washington
Harris, Jeffrey Randall 2001; MD, 1978, University of Texas (Southwestern); MPH, 1993, Johns Hopkins University; MBA, 2003, University of Washington

Hedrick, Susan Christine * 1983, (Emeritus); MA, 1975, Michigan State University; PhD, 1982, Michigan State University

Huebner, Colleen Ellen 1982; PhD, 1991, University of Washington; MPH, 1994, University of Washington

Johnson, Donna 1990; MS, 1979, Syracuse University; PhD, 1995, University of Washington

Kessler, Larry 2001; ScD, 1978, Johns Hopkins University
Martin, Diane P. 1973, (Emeritus); MA, 1972, Temple University; PhD, 1979, University of Washington

Maynard, Charles Clark * 1975, (Emeritus); MA, 1974, Washington State University; MSW, 1977, University of Washington; PhD, 1986, University of Washington

McClure, Jennifer Bonner 2002, (Affiliate); MA, 1994, Louisiana State University; PhD, 1996, Louisiana State University

Meischke, Hendrika Wilhelmina * 1991; MPH, 1987, University of Michigan; PhD, 1992, Michigan State University
Moinpour, Carol McMillen 1982, (Affiliate); MA, 1965, Ohio State University; PhD, 1973, University of Washington

Nicola, Ray Michael 1986, (Acting); MD, 1973, University of Oregon; MHS, 1976, University of Michigan

Oberle, Mark William 1988, (Emeritus); MD, 1974, Johns Hopkins University; MPH, 1979, University of California (Berkeley)

Patrick, Donald Lee 1987; MS, 1968, Columbia University; PhD, 1972, Columbia University

Perrin, Edward Burton * 1962, (Emeritus); MA, 1956, Columbia University; PhD, 1960, Stanford University

Plough, Alonzo Louis * 1995, (Clinical); MA, 1975, Cornell University; MPH, 1977, Yale University; PhD, 1978, Cornell University

Reiber, Gayle Eliason * 1991; MPH, 1975, Johns Hopkins University; PhD, 1989, University of Washington

Richardson, Mary L. * 1977, (Emeritus); MHA, 1978, University of Washington; PhD, 1984, University of Washington

Ross, Austin 1977, (Emeritus); MPH, 1955, University of California (Berkeley)

Spigner, Clarence * 1994; MPH, 1982, University of California (Berkeley); DPH, 1987, University of California (Berkeley)

Taylor, Victoria Mary Caroline * 1989, (Research); MD, 1978, Nottingham University; MPH, 1989, University of Washington

Thompson, Engelberta 1989; MA, 1978, Western Michigan University; PhD, 1981, Western Michigan University

Urban, Nicole Denise * 1977, (Emeritus); MS, 1973, Harvard University; DSc, 1978, Harvard University

Wagner, Edward Harris * 1984, (Emeritus); MD, 1965, State University of New York (Buffalo); MPH, 1972, University of North Carolina

Associate Professors

Allan, Susan M. 2008; JD, 1977, Harvard University; MD, 1981, Harvard Medical School; MPH, 1992, Johns Hopkins University

Banta-Green, Caleb J. 1996, (Affiliate); MSW, 1996, University of Washington; MPH, 1997, University of Washington; PhD, 2008, University of Washington

Bell, Michelle * 1984, (Emeritus); MSW, 1967, University of Washington; PhD, 1984, University of Washington

Carlini, Beatriz Helena 2003, (Affiliate); PhD, 1992, Pontificia Universidade Catolica de Sao Paulo (PUC-SP); MPH, 2005, University of Washington

Farquhar, Stephanie Ann 1988, (Affiliate); MA, 1994, University of Colorado (Boulder); PhD, 2000, University of Michigan

Fishman, Paul Arthur 1985, (Affiliate); MA, 1983, American University; MA, 1990, University of Washington; PhD, 1990, University of Washington

Hannon, Margaret A. 2001; MA, 1999, University of North Carolina, Chapel Hill; MPH, 2001, University of North Carolina, Chapel Hill; PhD, 2001, University of North Carolina, Chapel Hill

Johnson, Christopher Elliot 2012; PhD, 1998, University of Minnesota

Kopjar, Branko 1997; MD, 1987, University of Zagreb (Croatia); MSc, 1991, University of Zagreb (Croatia); PhD, 1996, University of Oslo (Norway)

McGregor, Bonnie Alice 2000, (Affiliate); MS, 1999, University of Miami (Florida); PhD, 2000, University of Miami (Florida)

Ralston, James D. 1989, (Affiliate); MD, 1994, University of Washington; MPH, 2002, University of Washington

Rasmussen, Eric D. 2006, (Affiliate); MD, 1990, Stanford University

Reid, Robert John 2005, (Affiliate); MD, 1986, University of Alberta, Canada; MPH, 1993, Johns Hopkins University; PhD, 1998, Johns Hopkins University

Tu, Shin-Ping 1993, (Affiliate); MD, 1989, University of Cincinnati; MPH, 1996, University of Washington

Turner, Anne McNaughton 1989; MD, 1985, Dartmouth Medical School; MLIS, 2001, University of Washington; MPH, 2005, University of Washington

Assistant Professors

Bell, Janice F. 1991, (Affiliate); MN, 2001, University of Washington; MPH, 2001, University of Washington; PhD, 2005, University of Washington

Ceballos, Rachel M. 2005; MS, 2002, Pennsylvania State University; PhD, 2005, Pennsylvania State University

Coe, Norma Beth 2013; PhD, 2005, Massachusetts Institute of Technology

Court, Beverly Junkert 2003, (Affiliate); MHA, 1980, University of Washington; PhD, 2007, University of Washington

El-Bastawissi, Amira Y. 1997, (Affiliate); MBChB, 1981, Alexandria University, Egypt; MSc, 1984, Ohio State University; PhD, 1993, University of Texas (Houston)

Farver, Catherine Lee 1990, (Affiliate); BA, 1980, Eastern Washington University

Fink, Kenneth Stuart 1996, (Affiliate); MD, 1996, University of Pennsylvania

Hereford, James Fred 1990, (Affiliate); MS, 1989, Montana State University

Hsu, Clarissa Wen-Ling 1990, (Affiliate); PhD, 2000, University of Washington

Karasz, Hilary Nicole 1994, (Affiliate); MA, 1993, San Francisco State; PhD, 2006, University of Washington

Ko, Linda 2011; MS, 1999, University of Texas (El Paso); MPH, 2000, Boston University; PhD, 2008, University of North Carolina

Koelemay, Kathryn 2004, (Affiliate); MD, 1979, Louisiana State University; MPH, 2005, University of Washington

Lind, Bonnie Kay 1985, (Affiliate); MS, 1987, University of Washington; PhD, 2005, University of Washington

McAfee, Timothy Armstrong 1989, (Affiliate); MPH, 1984, University of California (Berkeley); MS, 1984, University of California (Berkeley); MD, 1986, University of California (San Francisco)

McCullough, Brendan John 1999, (Affiliate); PhD, 2005, University of Washington; MD, 2007, University of Washington

Ornelas, India J. 1994; MPH, 1999, University of Washington; PhD, 2009, University of North Carolina, Chapel Hill
Otten, Jennifer Jill 2012; MS, 1998, Tufts University; PhD, 2009, University of Vermont

Penfold, Robert Benjamin 2011, (Affiliate); MA, 1997, University of Waterloo (Canada); PhD, 2004, University of Toronto (Canada)

Petrescu-Prahova, Miruna 2008; MA, 2002, University of Bucharest (Romania); MA, 2008, University of California (Irvine); PhD, 2009, University of California (Irvine)

Rosenberg, Dori E. 2010, (Affiliate); MPH, 2003, San Diego State College; PhD, 2010, University of California (San Diego)

Senturia, Kirsten Diana * 1997, (Clinical); MA, 1990, University of California (Los Angeles); PhD, 1995, University of California (Los Angeles)

Solorio, Maria Rosa 1995; MD, 1989, University of California (San Diego); MPH, 1999, University of Washington

Stern, Marc Francis 2007, (Affiliate); MD, 1982, University of Buffalo; MPH, 1992, Indiana University

Taubman, Sarah L. 2012, (Affiliate); MS, 2004, Harvard University; ScD, 2008, Harvard University

Valenzuela, Matias Javier 1995, (Affiliate); MA, 1996, University of California (San Diego); PhD, 2000, University of Washington

Wernli, Karen Joanne 1999, (Affiliate); MS, 1998, University of Texas (unspecified); PhD, 2006, University of Washington

Williams, Emily Caterina 2003; MPH, 2003, Boston University; PhD, 2009, University of Washington

Senior Lecturers

Bezruchka, Stephen A. 1978; MA, 1967, Harvard University; MD, 1973, Stanford University; MPH, 1993, Johns Hopkins University

Condon, James Vincent 2014; MS, 2002, Central Michigan University; EdD, 2013, Georgia Southern University

Hanken, Mary Alice 1991; MEd, 1974, Seattle University; PhD, 1989, University of Washington

House, Peter James 1974; MHA, 1974, University of Michigan

Kwan-Gett, Tao Sheng Clifford 1991; MD, 1991, Harvard University; MPH, 1998, University of Washington

Mackenzie, Sara Louise Campbell 1992; MD, 1992, University of California (Davis); MPH, 2005, University of Washington

Murphy, Gretchen Cecelia 1992; MEd, 1973, University of Washington

Okamoto, Carole 2003; MBA, 1983, Houston Baptist University

Peterson, Kathleen 1998; MS, 1994, Central Michigan University

Sappington, Jeremy Lee 1992, (Emeritus); MPH, 1964, University of North Carolina

Steele, Marsha C. 2006; MS, 1980, University of Washington

Stillman, Dennis 1987; MHA, 1979, University of Washington

Lecturers

Katz, Aaron 1988; CPH, 1975, University of Toronto (Canada)

Thompson, John Robert 1989, (Emeritus); MSW, 1976, University of Washington

Welton, William Edwin 2001; MHA, 1972, University of Michigan; DPH, 1999, University of Michigan

Reserve Officer Training Corps

Aerospace Studies

Professor

Bigger, Brent D 2014; MS, 1996, University of Oklahoma; MA, 2008, Air University

Assistant Professors

Bowen, Spencer J. 2011; MS, 2009, Air Force Institute of Technology

Mengistu, Isseyas H. 2013; MS, 2011, Air Force Institute of Technology

Woodard, Kyle S. 2014; BS, 2010, University of Portland

Military Science

Professor

Mountcastle, John C. 2011; MA, 2003, Duke University; PhD, 2006, Duke University

Assistant Professors

Kovalsky, Michael P. 2011; BA, 2005, Seton Hall University

Pierce, Ryan N. 2010; MBA, 2010, City University (Seattle)

Pola, William 2006; BA, 1988, California State University, Sacramento

Naval Science

Professors

Deehr, John David 2014; MS, 2004, U.S. Naval War College

Melin, David Whiting 2012; MBA, 1990, University of Maine; MA, 1996, Naval War College

Associate Professor

Maxwell, Michael David 2013; MBA, 2011, Trident University

Assistant Professors

Boehm, Matthew Joseph 2013; BS, 2008, Us Naval Academy

Gardner, Daniel E. 2011; BS, 2007, Maine Maritime Academy

Hall, Alvis Gibson Jr. 2014; BBA, 2009, University of West Georgia

Kigin, Shane Michael 2013; BS, 2006, Us Naval Academy

Nelson, Garrett Dale 2013; BA, 2004, University of Illinois

Social Work

Professors

Catalano, Richard F. 1979; MA, 1976, University of Washington; PhD, 1982, University of Washington

Conte, Jon Robert * 1990; MSW, 1974, University of Washington; PhD, 1979, University of Washington

Courtney, Mark Edward 2007, (Affiliate); MA, 1987, John F. Kennedy University; MSW, 1992, University of California (Berkeley); PhD, 1992, University of California (Berkeley)

de Haan, Benjamin Daniel 2010, (Affiliate); MPA, 1986, Lewis And Clark College; PhD, 1997, Portland State University

Fredriksen Goldsen, Karen Ilene * 1993; MSW, 1986, University of Washington; PhD, 1993, University of California (Berkeley)

Gilchrist, Lewayne Dorman 1981, (Emeritus); MA, 1967, Stanford University; MSW, 1977, University of Washington; PhD, 1981, University of Washington

Gillmore, Mary Louise 1977, (Emeritus); MS, 1970, University of Michigan; MA, 1977, University of Washington; PhD, 1983, University of Washington

Hawkins, John David 1976; MA, 1969, Northwestern University; PhD, 1975, Northwestern University

Herrenkohl, Todd Ian 1995; MSW, 1993, Simmons College; PhD, 1998, University of Washington

Hooyman, Nancy Runkle * 1979; MSW, 1970, University of Michigan; PhD, 1974, University of Michigan

Levy, Rona Leslie 1975; MSW, 1972, University of Michigan; PhD, 1974, University of Michigan; MPH, 1975, University of Michigan

Longres, John Frank * 1993, (Emeritus); MSW, 1966, University of California (Los Angeles); PhD, 1970, University of Michigan

Marcenko, Maureen Olivia * 1997; MSW, 1978, Wayne State University; PhD, 1988, McGill University (Canada)

Meyers, Marcia K. 2001; MPA, 1987, Harvard University; MSW, 1992, University of California (Berkeley); PhD, 1992, University of California (Berkeley)

Morrison, Diane Marie * 1980; MS, 1979, University of Washington; PhD, 1982, University of Washington

Nagda, Biren Amritlal 1996; MSW, 1989, University of Michigan; MA, 1996, University of Michigan; PhD, 1996, University of Michigan

Nurius, Paula Suzette * 1984; MSW, 1980, University of Hawaii; MA, 1983, University of Michigan; PhD, 1984, University of Michigan

Pecora, Peter John * 1990; MSW, 1977, University of Wisconsin (Milwaukee); PhD, 1982, University of Washington

Resnick, Herman * 1967, (Emeritus); MSS, 1956, New York University; PhD, 1970, Bryn Mawr College

Richey, Cheryl Ann * 1971, (Emeritus); MSW, 1971, University of California (Berkeley); DSW, 1974, University of California (Berkeley)

Roffman, Roger Alan 1972, (Emeritus); MSW, 1965, University of Michigan; DSW, 1983, University of California (Berkeley)

Uehara, Edwina S. * 1990; MSW, 1977, University of Michigan; PhD, 1987, University of Chicago

Van Soest, Dorothy 2001, (Emeritus); MSW, 1975, University of Minnesota; DSW, 1994, Catholic University

Walters, Karina Lynn 2000; MSW, 1990, University of California (Los Angeles); PhD, 1995, University of California (Los Angeles)

Weatherley, Richard Alan * 1975, (Emeritus); MA, 1963, University of Chicago; PhD, 1975, Massachusetts Institute of Technology

Wells, Elizabeth A. 1982, (Emeritus); PhD, 1984, University of Washington

Whittaker, James Kevin * 1970, (Emeritus); MSW, 1966, University of Michigan; PhD, 1970, University of Minnesota

Associate Professors

Aisenberg, Eugene Francis 2002; MA, 1984, St. John's Seminary; MSW, 1994, University of Southern California; PhD, 2001, University of Southern California

Almgren, Gunnar Robert 1986; MA, 1975, Pacific Lutheran University; MSW, 1979, Portland State University; PhD, 1990, University of Washington

Arthur, Michael Warren * 1991, (Research); MA, 1987, University of Virginia; PhD, 1990, University of Virginia

Balassone, Mary Lou * 1986; MSW, 1980, Syracuse University; DSW, 1987, University of California (Berkeley)

Balsam, Kimberly F. 2003, (Affiliate); MA, 1994, University of Oregon; PhD, 2003, University of Vermont

Berleman, William C. * 1965, (Emeritus); MSW, 1960, University of Washington

Dear, Ronald Bruce * 1970, (Emeritus); MSW, 1957, University of Pittsburgh; DSW, 1972, Columbia University

Duran, Bonnie M. 2007; MPH, 1989, University of California (Berkeley); DPH, 1997, University of California (Berkeley)

English, Diana Jane 1988, (Affiliate); MSW, 1978, California State University, Sacramento; PhD, 1985, University of Washington

Erera, Pauline * 1993, (Emeritus); MSW, 1981, University of Haifa, Israel; PhD, 1983, Cornell University

Evans-Campbell, Teresa Ann 2000; MSW, 1994, University of California (Los Angeles); PhD, 2000, University of California (Los Angeles)

Farwell, Nancy 1998; MSW, 1989, University of California (Berkeley); PhD, 1998, University of California (Berkeley)

Gavin, Amelia Ryle 2004; MSW, 2000, University of Michigan; PhD, 2004, University of Michigan

Haggerty, Kevin Pesch 1985; MSW, 1989, University of Washington; PhD, 2011, University of Washington

Harachi, Tracy Walsh * 1987; MSW, 1988, University of Washington; PhD, 1991, University of Washington

Herrick, James E. * 1966, (Emeritus); MSW, 1958, University of California (campus unspecified); DSW, 1966, University of Southern California

Ishisaka, Anthony Hideki 1971, (Emeritus); MSW, 1968, University of California (Berkeley); DSW, 1978, University of California (Berkeley)

Kelley, Jerry Lee * 1961, (Emeritus); MA, 1949, University of Chicago

Kemp, Susan Patricia 1994; MA, 1981, University of Auckland (New Zealand); PhD, 1994, Columbia University

Kruzich, Jean Marie * 1991; MSW, 1975, University of Minnesota; MA, 1976, University of Minnesota; PhD, 1982, University of Washington

Lindhorst, Taryn 2001; MSW, 1988, Southern University At New Orleans; PhD, 2001, Louisiana State University

Lustbader, Wendy Iris 1989, (Affiliate); MSW, 1982, University of Washington

Romich, Jennifer L. 2002; MA, 2000, Northwestern University; PhD, 2002, Northwestern University

Sohng, Sung Sil * 1990; MSW, 1979, Wayne State University; PhD, 1989, University of Pittsburgh

Stuber, Jennifer 2006; PhD, 2002, Yale University

Tajima, Emiko A. 1999; MS, 1987, University of Pennsylvania; PhD, 1999, Bryn Mawr College

Teather, Edward Charles * 1966, (Emeritus); MSW, 1962, University of British Columbia (Canada)

Assistant Professors

Allen, Allethia Lee * 1966, (Emeritus); MSW, 1950, Boston University; PhD, 1986, Walden University

Crook, Barbara Jeanne 1996, (Affiliate); MSW, 1976, University of Washington

Kosturn, Carole F. 1979, (Affiliate); MSW, 1974, University of Washington

Lewis, Jordan Paul 2012; MSW, 2000, Washington University; PhD, 2009, University of Alaska

Martinson, Melissa Louise 2012; MSW, 2003, University of Minnesota; PhD, 2010, Columbia University

Moore, Megan 2012; MSW, 2006, University of California (Berkeley); PhD, 2012, University of California (Berkeley)

Richards, Martha 1979, (Affiliate); MSW, 1970, University of Washington

Ryder, Rita Maureen 1982, (Affiliate); MSW, 1971, Catholic University of America

Shaw, Mary Elizabeth 1998, (Affiliate); MSW, 1989, University of Washington

West, Margaret Ann * 1975, (Affiliate); MSW, 1968, University of Washington; PhD, 1984, University of Washington

Senior Lecturers

Amidei, Nancy Jean 1992, (Emeritus); MSW, 1968, University of Michigan

Averill, Lloyd James 1984, (Emeritus); MDiv, 1950, Colgate Rochester Divinity School; MA, 1952, University of Rochester; MTh, 1966, Colgate Rochester Divinity School

Pearce, Diana May * 1998; MSW, 1969, University of Michigan, Ann Arbor; PhD, 1976, University of Michigan, Ann Arbor

Spearmon, Margaret Lavelle 1992; MSW, 1975, Washington University; PhD, 1999, University of Washington

Lecturers

Bagshaw, Michelle Christine 1998; MEd, 1996, Western Washington University; MSW, 2004, University of Washington

Briner, Leslie R 2009; MSW, 2010, University of Washington

Brower, Jennifer 2002; MSW, 2002, University of Washington

Capestany, Sheila A 1995; MSW, 1997, University of Washington; MPH, 1998, University of Washington

Carrigan, Lynn 1981, (Emeritus); MSW, 1981, University of Washington

De Fries, Stacey A. 2010; MSW, 2000, Hunter College

De Mello, Stan J. 1996; MSW, 1982, Dalhousie University (Canada); MPA, 1983, Dalhousie University (Canada)

DeLong, James Barrett 1985; MSW, 1979, University of Washington

Etnyre, William Strickler 1990; MSW, 1975, University of Washington; PhD, 2005, Smith College

Forrester, Martha Glosson 1997; MSW, 1998, University of Washington

Hetherington, Zynovia Yvette 2000; MSW, 1995, Eastern Michigan University

Jackson, Thomas Ronald 1984; MSW, 1976, University of Washington

Preston, Leon T. 1981; MSW, 1973, University of Washington

Ranchigoda, Tanya Dawn 1999; MSW, 2001, California State University, Long Beach

Rivara, J'May Bertrand 1979; MSS, 1975, Bryn Mawr College

Roberson, Kendra Corr 2003; MSW, 1993, Boston College; PhD, 2003, University of Maryland

Ryan, Alice C. 2012; MSW, 1997, Western Michigan University

Sarka, Ebasia Belina 1994; MSW, 1996, University of Washington

Shultz, Bonnie 2002; MSW, 1985, University of Washington

Vesneski, William M. 1997; JD, 1991, Seattle University; MSW, 1998, University of Washington; PhD, 2012, University of Washington

Watts, Julie Lynne 1997; MSW, 1999, University of Washington

Wells, Aida Villeda 1991; MSW, 2000, Washington University

Wilson, Stephen Tierri 1992; MSW, 1982, University of Washington

Winn, Scott Willis 2002; MSW, 1994, University of Washington

